High Performance HR Practices and Employee Well-being: A Theoretical and Empirical Investigation

By

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DECLARATION

This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidature for any degree.

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In the Name of Allāh, the Most Gracious, the Most Merciful

And they (angels) said: 'Glorified are You [Allah], we have no knowledge except what you have taught us.
Verily, it is You, the All-Knower, the All-Wise.'

(Al-Qur'an, Surah Al-Baqarah: 32)

'O Allah benefit me with what You have taught me, and teach me that which will benefit me, and grant me knowledge which will benefit me.
Praise is to Allah in all circumstances'.

(Sunan Ibn-Maja)

DEDICATION

… To the loving memory and the vision of my dearest father

… To the unyielding support and love of my dearest mother

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The prime objective of this study is to determine whether employer attempts to introduce high performance work practices is associated with mutual gains for both employees and employers or intensifies the labour process to the disadvantage of employees, by analysing the relationships between high performance HR (HP-HR) bundles, perceived job demands and employee well-being. As perceived job demands (work intensification) are central to the debate within the HRM literature, the study proposes that they are likely to be an important mediating mechanism between the HP-HR bundles and employee well-being. Perceived workplace resources (job control, managerial support and family support) are introduced as moderators of the mechanism between perceived job demands and employee well-being. Drawing on data from 2011 Workplace Employment Relations Survey (WERS), the path analysis convention of structural equation modelling is used for analysis.

The findings suggest that the linking mechanisms between the HP-HR bundles and well-being are complex, and vary in relation to different types of bundle. Neither a mutual gains nor a labour process perspective solely accounts for the complexities of this association. Job resources significantly reduce the negative impact of perceived job demands and improve well-being. HP-HR bundles, generally, impact negatively on perceived job demands and employee well-being. The empirical findings show that: 1) The skills and ability-enhancing bundle increases job-related anxiety and depression, but, otherwise, does not have a significant relationship with well-being directly or indirectly through perceived job demands. 2) The motivation-enhancing bundle reduces perceived job demands, but has no significant direct association with well-being. 3) The opportunity-enhancing bundle improves overall employee well-being, but simultaneously intensifies the labour process. 4) The commitment-enhancing bundle increases both anxiety and perceived job demands, and reduces both job satisfaction and organisational commitment. 5) Perceived job demands reduce the perceived sense of well-being. 6) Perceived job demands are negative mediators of the relationship between both the opportunity-enhancing and commitment-enhancing bundles and employee well-being. 7) Perceived job demands are positive mediators of the relationship between the motivation-enhancing bundle and employee well-being. 8) Perceived job control reduces the negative influence of job demands and improves well-being. 9) Perceived managerial support buffers job demands and reduces both job-related anxiety and depression. 10) Perceived family support moderates the negative influence of job demands and improves job-related anxiety, depression and job satisfaction, but does not have a significant relationship with organisational commitment.

Overall, the research indicates that current HRM models are too simplistic to capture the complex nature of the HP-HR/well-being association, and require an integrated framework incorporating both mediating and moderating factors that guide this association. The balance between job stressors and job resources is the crucial missing link that increases our understanding of the most debated differential impact of HP-HR on employee well-being.

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LIST OF ABBREVIATIONS

AMO	Ability-Motivation-Opportunity Model
AMOC	Ability-Motivation-Opportunity-Commitment Model
ANX	Job-Related Anxiety
AVE	Average Variance Extracted
CBI	Confederation of British Industry
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CIPD	Chartered Institute of Personnel and Development
CITTC	Corrected-Item-to-Total-Correlation
COR	Conservation of Resources Theory
CR	Composite Reliability
CV	Convergent Validity
DEP	Job-Related Depression
DV	Divergent/Discriminant Validity
ERI	Effort Reward Imbalance
ERM	Effort Recovery Model
ESOS	Employee Share Ownership Schemes
FIML	Full Information Maximum Likelihood
FWA	Family Work Arrangements
FWP	Flexible Work Practices
FV	Face Validity
GLS	Generalised Least Squares
HP-HR	High Performance HR
HRM	Human Resource Management
HPWS	High Performance Work Systems
HPW	High Performance Work/Working
HPWP	High Performance Work Practices
IRA	Inter-Rater Agreement
IRR	Inter-Rater Reliabilities
ITTC	Item-to-Total-Correlation
JCM	Job Characteristics Model
JD-R	Job-Demands-Resources Model
JDC	Job Demand-Control Model

JDCS	Job Demand-Control-Support Model
JS	Job Satisfaction
KMO	Kaiser-Mayer-Olkin Measure of Sampling Adequacy
KR20	Kuder Richardson Reliability Coefficient
KSA	Knowledge Skills and Abilities
LFS	Labour Force Survey
LP	Labour Process Theory/Perspective
LOG	Largest Occupational Group
MG	Mutual Gains Theory/Perspective
MIIC	Mean-Inter-Item-Correlation
MLE	Maximum Likelihood Estimation
MQ	Management Questionnaire
MSA	Measures of Sampling Adequacy
OBSE	Organisation-Based Self-Esteem
OC	Organisational Commitment
PIRK	Power, Information, Rewards and Knowledge
PJC	Perceived Job Control
PSS	Perceived Social Support
PFS	Perceived Family Support
PMS	Perceived Managerial Support
PNR	Physician-Nurse Relationship
P-O Fit	Person Organisation Fit
POS	Perceived Organisational Support
PSM	Public Service Motivation
RBV	Resource-Based View
RM	Ratio of Indirect Effect to Direct Effect
RMSEA	Root Mean Square Error of Approximation
R & S	Recruitment and Selection
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SEQ	Survey of Employees Questionnaire
SHRM	Strategic Human Resource Management
SPSS	Statistical Package for Social Sciences
SRMR	Standardised Root Mean Residual

SW1	Systems' Work Practices 1
ST	Signalling Theory
TLI	Tucker-Lewis Index
ULS	Unweighted or Ordinary Least Squares
VIM	Visualisation and Imputation of Missing Values
WERS	Workplace Employment Relations Survey
WLSMV	Weighted Least Squares Estimator

Chapter 1

Introduction and Rationale of the Research

1.1 Introduction

Employee well-being is a contemporary theme for organisations and on many a corporate agenda. Concerns for the health and well-being of the workforce have intensified since after the publication of Dame Carol Black's (2008) *Working for a Healthier Tomorrow*. It is claimed that health and well-being programmes produce economic benefits for businesses, whereas neglecting such initiatives can result in poor performance. In other words, employee well-being is considered fundamental to the study of work, because good health is considered good business (Kalliath and Kalliath, 2012; Black, 2008), and a critical ingredient for both individual and organisational performance (Wright, 2015; Clarke and Hill, 2012).

Studies linking human resource management (HRM) to organisational performance also suggest that positive employee outcomes (i.e. employee well-being) are of paramount importance (Guest, 2002). According to Boxall (2012), the way an organisation is managed impacts upon the well-being of its employees. A growing body of research emphasises that one must recognise the centrality of employees in work and evaluate how the HR system impacts the well-being of employees at work (Kramar, 2014; Zhang, Zhu, Dowling and Bartram, 2013; Delbridge and Keenoy, 2010; Paauwe, 2009; Boselie, Dietz and Boon, 2005; Peccei, 2004; Guest, 2002; Guest and Conway, 1999). Consequently, employee well-being has become a fundamental concern for modern day organisations (Grant, Christianson and Price, 2007).

1.2 Rationalising the Significance of Employee Well-being

It has been argued that the nature of the workforce has changed and that employees, generally, enjoy higher education levels, possess greater knowledge of the technological advancements and have more awareness of political and work rights. Improvements in the overall quality of the workforce entails a more pro-active approach in their administration, and, thus, necessitates incorporating employee well-being into organisational life (Charles, 1993). The changing economic context has attached an increasing economic value to managing the well-being of an organisation's

workforce. There has been a shift from an industry-based to a service-based economy and the nature of jobs has changed in the contemporary workplace. The old convention of employee-machine interaction has been replaced by employee-customer interaction. This requires a shift from technology-dependent productivity to labour-dependent productivity, requiring a greater need for discretionary employee effort (Dorenbosch, 2009; Belanger, Giles and Murray, 2002). Production and competitive advantage in these workplaces are highly dependent upon human factors such as skill, knowledge, supportive and problem-solving behaviours of the workforce processes due to the distinct service characteristics of intangibility, inseparability, heterogeneity and perishability (Kaya, Koc and Topcu, 2010; Koc, 2006; Parasuraman, Zeithaml, and Berry, 1985) and less dependent on the complexities and pace of production. Hence, the mental and physical well-being of these 'instigators' of effective discretionary effort and behaviour (Philpott, 2015; Appelbaum, Bailey, Berg and Kalleberg, 2000) are paramount.

The benefits of employee well-being have also been argued for both the performance and survival of organisations. In this respect, employee well-being has been argued to have serious consequences for employee motivation (Boxall and Purcell, 2003), which is one of the salient requirements for performance. Baptiste (2008) argues that performance pivots on employees' psychological and physical well-being. Fit-to-work employees herald considerable financial benefits in terms of saved costs for re-hiring, mentoring, re-training, absence control and lower turnover rates. Poor well-being is linked to under-performance, loss of skill base, absenteeism, presenteeism, incidence of sick leave and turnover (Baptiste, 2008).

Employee well-being has been shown to have significant consequences for the economic outcomes of a business (Black, 2008). Absenteeism due to ill health if left unabated could result in major costs for businesses. Each year, approximately 600,000 people in the UK are estimated to claim incapacity benefits - around 7% employees are on incapacity benefits and another 3% are off sick at any given time in the UK (Black, 2008). UK employers pay approximately £9 billion per year due to sickness absence and its associated costs (Black and Frost, 2011). According to a recent estimate, sickness and absence rates costs employers an average of £16 billion, or a median cost of £11 billion (XpertHR, 2015). Furthermore, the costs of ill-health to the taxpayer are estimated to be over £60 billion (Black, 2008). The overall median cost of absence per employee is estimated to be £554 (CIPD[1], 2015). The average sick pay cost per employee in 2015 is estimated to be £374, which equates to a total cost of £1 billion for the manufacturing sector alone (Jelf, 2015).

[1] Chartered Institute of Personnel and Development

Overall, two-fifths of the organisations report an increase in mental health problems (e.g. anxiety and depression) at work in 2015 (CIPD, 2015). Based on the estimates of Sainsbury Centre for Mental Health (2007), the total cost to UK employers of mental health problems – mental-health-related absenteeism, presenteeism and employee turnover – was nearly £26 billion each year. According to another estimate, the annual economic costs of sickness absence and worklessness due to working population's ill-health are estimated to be over £100 billion, greater than the entire UK National Health Service (NHS) budget (Black, 2008).

According to the estimates of the Confederation of British Industry (CBI), 43% of the 175 million working days lost were due to long-term sickness of 20 days and over (Black, 2008). Both the CBI and the CIPD, after surveying employers, arrived at similar estimates of time off due to illness in 2006; these were 7 days per employee in the CBI survey and 8.4 days in the CIPD survey (Black, 2008). Similarly, based on Labour Force Survey (LFS) estimates, 2.4% of the working time is lost because of sickness, which is approximately six days a year per worker, amounting to around 150 million working days of annual time off (Black, 2008). The average level of employee absence in the recent years also show alarming levels. One of UK's largest annual survey of sickness absence rates and costs showed that sickness absence was an average of 2.8% of working time per annum in 2014, equivalent to 6.5 days per employee (XpertHR, 2015). These estimates further increased from 6.6 days per employee in 2014 to 6.9 days per employee in 2015 (CIPD, 2015). Median figures stand at 2.5% of working time lost which translates to approximately 5.7 days per employee (XpertHR, 2015). These trends differ in relation to the sector of organisation, with public-sector organisations experiencing a median of 3.5% (i.e. 8.1 days per employee), and private-sector organisations experiencing a median of 2.2% (i.e. 5.1 days per employee) of working time lost due to sickness. Nevertheless, the vast majority of companies in the UK offer counselling, flexible working options, employee assistance programmes and have increased their well-being budget to combat mental health and stress-related issues at work (CIPD, 2015). Taking a pro-active approach in understanding employee needs and involving senior and line management in such activities is seen to reduce the detrimental impact of absence related to ill-health and herald significant benefits for businesses. The companies that offer the higher levels of staff engagement parameters, such as the employee well-being, line management and team-working, manifest 13% lower staff turnover and less than half the sickness absence of the UK average (Black, 2008).

1.3 Employee Well-being in the High Performance Framework: An Overview

Over the past two decades, the impact of high performance work systems (HPWS) on organisational performance has become a major topic in human resource management (HRM) research (Kaufman, 2010; Messersmith and Guthrie, 2010; Subramony, 2009; Chaudhuri, 2009; Paauwe, 2009; Boxall and Purcell, 2008; Sun, Aryee and Law, 2007; Tsai, 2006). Despite a considerable amount of literature on HPWS, researchers seem to have very different views on what high performance work practices or systems are (Ashton and Snug, 2002; Giles, Murray and Bélanger, 2002; Delery and Shaw, 2001; Guthrie, 2001). There is no universally agreed definition of the term HPWS because of the theoretical and empirical diversity in approaches used to conceptualise it (Macky and Boxall, 2007). In broad terms, an HPWS is described as a set of innovative human resource management practices, work arrangements and processes, which, when used in combinations are mutually reinforcing and yield synergistic benefits (Huselid, 1995).

A primary criticism levelled at the HPWS research is that it adopts a highly management-centric standpoint and that the effects of HPWS on employees are still under-researched (Kramar, 2014; Boxall, 2012; Boon, den Hartog, Boselie and Paauwe, 2011; Innocenti, Pilati and Peluso, 2011; Kroon, Van De Voorde and Van Veldhoven, 2009; Kalmi and Kauhanen, 2008; Sparham and Sung, 2007). Many argue that employee outcomes are either ignored (Farndale, Hope-Hailey and Kelliher, 2011; Paauwe, 2009; Boselie, Dietz and Boon, 2005; Paauwe and Boselie, 2005) or taken as a linking (mediating) mechanism between HPWS and organisational performance (Wood, van Veldhoven, Croon and de Menezes, 2012; Qiao, Khilji and Wang, 2009; Sparham and Sung, 2007; Boselie et al., 2005). This is because of two factors. First, the concept of high performance working was introduced to cater for the needs of organisations to remain competitive and enhance performance. Employee well-being was not at the heart of organisational outcome/agenda. In line with the Resource-based View (RBV; Barney, 1991), human capital was considered important and must be nurtured because its robustness provides rare, valuable, non-substitutable and inimitable resources that help retain organisational competitive advantage. RBV focuses on management's agenda and describes reasons for when, why and how human resources could advantage the organisation. Therefore, employee well-being is not deemed to be a strategic asset but a way to strategic competitiveness, and thus employee outcomes were not of prime importance (Farndale, et al., 2011; Paauwe, 2009; Boselie et al., 2005; Paauwe and Boselie, 2005).

Second, a majority of the studies examining the effects of high performance HR (HP-HR) have been conducted from a managerial standpoint taking managerial responses on the availability or

implementation of HP-HR practices/systems and evaluating organisational level benefits (Sparham and Sung, 2007; Gould-Williams, 2004). Consequently, research treating the employee as the 'subject' and giving due acknowledgement to their attitudinal and behavioural responses is lacking, and the redressing of this imbalance has been deemed critical (Grant and Shields, 2002). In particular, Guest (2002) stresses the potential benefits of including the satisfied and healthy worker in the organisations for effective performance. Consequently, it is arguable that there needs to be a shift towards evaluating the employee level impact of HP-HR practices/system.

1.3.1 Appraising the Significance of Employee Well-being in a High Performance Framework

Ensuring employee well-being is particularly important in the high performance framework. This is because the ultimate aim to reap superior performance within this framework is dependent on positive employee outcomes (Macky and Boxall, 2007; Delbridge, 2007; Godard, 2004; Guest, 2002). Overlooking the effects of the HP-HR practices on workers' well-being may negatively affect employee behaviours and productivity (Guthrie, 2001). This suggests that employee health and well-being is not only central, but may be even more important for performance in the high performance work environments.

The need to examine employee well-being in the high performance environment may be emphasised further due to an increasing interest in adopting the high performance work ideology in policy and research circles (Belt and Giles's, 2009). This shift in interest may be due to, first, the considerable amount of research pointing to the positive link of HPWS to performance (Macky and Boxall, 2009; 2007; Combs, Liu, Hall and Ketchen, 2006; Boselie et al., 2005; Appelbaum et al., 2000; Huselid, 1995). Second, increasing recognition in the industry of the potential benefits of utilising the core elements of high performance working, e.g. employees' skill utilisation and development, to maintain competitive advantage and economic performance. Third, a heightened notion on creating better quality jobs, conducive work environments and mutually-beneficial outcomes for businesses and individuals. Given the rising importance of high performance working, the spotlight turns to managing high performance through qualitative employee effort from a happy-healthy committed workforce (Tamkin, 2004).

In line with these new foci, the link between innovative managerial practices and employee well-being is impossible to ignore. According to Grant et al. (2007), managerial HR practices impact on employee well-being in three ways. First, through affecting their levels of satisfaction with jobs

and life i.e. by shaping their psychological well-being. Second, by affecting their general health and the incidence of workplace accidents i.e. their physical well-being. Lastly, by improving the interpersonal relationships between peers, sub-ordinates and managers i.e. by affecting their social well-being. If high performance work practices are poorly implemented and negatively experienced by employees, then there is a clear danger that it can undermine the purpose that it was set to achieve – the gaining of commitment and discretionary effort. Academics such as Ashton and Snug (2002) and Guest (2006) have attempted to highlight that the careful implementation of high performance work components may promote positive and optimal employee functioning. Attention is thus demanded on the implementation process of the so-called HP-HR practices to ensure mutually positive outcomes. Therefore, managing well-being of a high performing workforce gets ever more salient in the contemporary high performance workplace.

1.3.2 High Performance HR and Employee Well-being: Theoretical Debates

The growing interest in the question of impact of high performance HR practices on employee outcomes, specifically their well-being, has generated a considerable amount of academic research. Two contrasting views have emerged on the impact of HPWS on employee well-being - the mutual gains perspective (also known as optimistic perspective) and the labour process perspective (also referred to as the pessimistic perspective) (Peccei, Van De Voorde, and Van Veldhoven, 2013; Boselie, Brewster and Paauwe, 2009; Mack and Boxall, 2008; Sparham and Snug, 2007). Table 1.1 highlights the summary of theoretical stances used in the study to examine the associations between HP-HR practices and employee well-being.

1.3.2.1 Mutual Gains Perspective

The proponents of the mutual gains stream of literature posit overwhelming support for HP-HR practices in bringing positive outcomes for both employers and employees (Wright and McMahan, 2011; Macky and Boxall, 2008; Petrescu and Simmons, 2008; Bauer, 2004; Mackie, Holahan and Gottlieb, 2001; Appelbaum et al., 2000; Vandenberg, Richardson and Eastman, 1999; Kochan and Osterman, 1995). The gains for employers are noted in terms of high quality, productivity and performance (Becker and Huselid, 1998; Wood, 1999). Employees are seen to gain positively in terms of job attitudes, empowerment, discretionary effort, productivity, higher remunerations, knowledge and skill development (Datta, Guthrie and Wright, 2005; Guthrie, 2001; Huselid, 1995; Ichniowski, Shaw and Prennushi, 1997). Further, this literature advocates that using HR

Table 1.1: Summary of Theoretical Stances on Employee Well-being used in the Thesis

Theoretic Model	Assessment of HP-HR	View on Perceived Job Demands	Overall Impact on Employees	Impact on Individual Employee Well-being Measures			
				Depression	Anxiety	Job Satisfaction	Organisational Commitment
Mutual Gains	Mutually beneficial for employers & employees	No/ Implicit Acknowledgement (Discretionary Effort)	Positive	Negative	Negative	Positive	Positive
Labour Process	Negative for employees	Explicit Acknowledgement (Work Intensification)	Negative	Positive	Positive	Negative	Negative

practices strategically helps shape the nature of employee attitudes (Gellatly, Hunter, Currie and Irving, 2009; Batt, 2002). Within this perspective, extra work roles, additional involvement in the work process and the extra effort required to fulfil the extended work requirements is posited as beneficial for employees, because they add value to their overall work experience.

Many studies have found positive links between HP-HR practices/systems and employee well-being outcomes such as organisational commitment (Van De Voorde and Beijer, 2015; Jørgensen and Becker, 2015; Bryson and White, 2008; Macky and Boxall, 2007; Gould-Williams, 2004; 2003; Wright, Gardner and Moynihan, 2003; Appelbaum et al., 2000), job satisfaction (Boxall and Macky, 2014; Innocenti, Pelati and Peluso, 2011; Katou and Budhwar, 2010; Mohr and Zoghi, 2008; Petrescu and Simmons, 2008; Guest, 2002; Appelbaum et al., 2000), organisational citizenship behaviour (Paré and Tremblay, 2007; Sun et al., 2007) and employee trust in management (Alfes, Shantz and Truss, 2012; Innocenti et al., 2011; Macky and Boxall, 2007). Further, White and Bryson (2013) show improving employee attitudes at high levels of HRM intensity. The results of these studies theorise that since employees are invested in through training and development, are given more discretion and are encouraged to participate in their work, they feel valuable and experience a greater sense of meaningfulness in their working lives. Subsequently, they demonstrate positive work-related attitudes and behaviours towards the employing organisation (Wood et al., 2012).

1.3.2.2 Labour Process Perspective

The labour process view portrays more conflict-generating outcomes from high performance work practices. It is suggested that HP-HR practices/system are a form of covert exploitation designed to prompt greater levels of participation and effort from employees (Kroon, et al., 2009; Orlitzky and Frenkel, 2005; Ramsay, Scholarios and Harley, 2000; Legge, 1995; Willmott, 1993). HP-HR practices are seen to introduce more task autonomy, but at the expense of additional responsibilities, higher pressure to perform and less control over work processes.

Under this perspective, the added work demands are neither assumed to be subsumed in the work process nor regarded as beneficial for employees. Rather they are marked as job stressors and initiators of negative well-being and adverse job attitudes amongst employees (Green, 2004; White, Hill, McGovern, Mills and Smeaton, 2003). Additionally, it is argued that perceptions of an intensification of the work process are likely to escalate when proper autonomy and monetary

benefits to compensate for the added work demands are lacking (Macky and Boxall, 2008; Bauer, 2004; Green, 2004).

In support of the labour process view, empirical research has produced mixed results. Largely, HP-HR practices are seen to increase work pressures and negatively affect employee well-being and health. Findlay, McKinlay, Marks and Thompson (2000) associate employee discretion practices of the high performance paradigm to work intensification with potentially subsequent negative effects. On a similar note, Kroon et al. (2009) show a positive relationship between HP-HR and work intensification. Heffernan and Dundon (2012) and Jensen, Patel and Messersmith (2013) also show a strong positive relationship between HP-HR and work intensification.

However, Godard (2001) argues in favour of balanced levels of HP-HR practices to bring benefit to employees, highlighting that over-zealous levels become stressful. On a more sceptical note, Godard (2004), questions the benefits from high performance working for both employers and employees. Ramsay et al. (2000) fails to establish a significant relationship between HP-HR practices and work intensification. Wood and de Menezes (2011) exhibit that HPWS increases anxiety, but has no effect on job satisfaction. Green and Whitfield (2009) show that employee experiences of high involvement practices varies according to the HR practice in question. These findings challenge the view about positive gains from the high performance approach, and suggest that the intensification of work is dysfunctional for workers' job attitudes and behaviours (Tuten, Presha and Neidermeyer, 2004).

1.3.3 Evaluating Theoretical Stances linking High Performance HR and Well-being

Generally, HPWS research has been criticised for relying too much on casual empiricism and thus having a paucity of sound theoretical models to guide the associations within this framework (Fleetwood and Hesketh, 2008). The current state of theory underpinning research on the impact of HPWS on employee well-being seems no exception. As such, the HRM literature seems to illustrate either very optimistic or very pessimistic views arguing win-win or win-lose models of thoughts on the HP-HR/employee well-being association. Little progress appears to have been made on the theoretical rationales to substantiate the suggested associations. The accumulation of a significant body of empirical research in this area, however, has acknowledged this limitation, and encourages researchers to place such associations between HP-HR practices and employee well-being into a clearly-articulated theoretical framework. Such a framework would need to address issues such as whether the pathways from HP-HR practices to employee well-being are

direct or conditional (White and Bryson, 2013; Wood and de Menezes, 2011; Kalmi and Kauhanen, 2008; Boselie et al., 2005; Ramsay et al., 2000; Guest, 1997). The deceptively simple relationship between HP-HR practices and employee work-related well-being, on closer examination, seem complex and need rigorous empirical probing to uncover mechanisms that may generate positive or detrimental employee outcomes. Exploring the underlying mediating and/or moderating variables in the HP-HR/employee well-being association, in this respect, may provide an understanding of the complex relationship that seems to motivate the domain of the management of well-being.

On the one hand, the HRM literature seems to over-simplify and illustrate naïve optimism in signifying the extra work effort by employees as 'discretionary'. On the other hand, it calls into question the two-faced nature of the so-called HP-HR practices, emphasising the dark-side of introducing such labour management principles. In the constant strife of HRM researchers to prove one point of view over the other, the main question of how to maintain the well-being of workers in high performance workplaces gets by-passed and remains a blind spot. Empirical research in the occupational stress domain and the work psychology literature, examining the determinants of employee well-being, addresses remedying the dysfunctional nature of work effort to improve well-being.

1.4 Employee Well-being: Defining the Concept

Despite the burgeoning literature on employee well-being, there remains a considerable variation in the conceptualisation of employee well-being (Danna and Griffin, 1999). Generally well-being is conceptualised in two main ways: firstly, as people's overall well-being or happiness, and secondly, as particular domains of well-being such as work or family (Diener, Suh, Lucas, and Smith, 1999).

Based on these distinct conceptualisations, employee well-being has been defined differently in the general and academic contexts. Wood (2008) argues that the term 'well-being' generally has two connotations. In a more general and mundane view, it usually refers to the physical soundness of individuals. In contrast, in the more psychological perspective, it incorporates both the physical and the mental (psychological) resilience of individuals.

The most holistic definition of the concept is provided by Warr (1987), who sees well-being as the overall quality of an employee's experience and functioning at work. The existing literature in the

fields of healthcare, philosophy, psychology and sociology mirrors this definition and distinguishes three core dimensions of well-being at work. These are psychological, physical and social well-being (Rahimnia and Sharifirad, 2015; Grant et al., 2007). All three dimensions are valued significantly to capture an individual's well-being in its entirety, as ends in and of themselves and not as means to other ends (Finn, 1992).

Psychological (happiness) well-being encompasses the subjective experiences and functioning at work of employees, for example their overall job satisfaction and organisational commitment, agency, self-respect and capabilities. Psychologists and social scientists have further divided the psychological aspects into hedonic and eudemonic components of well-being (Bryson, Forth and Stokes, 2014). Hedonic well-being relates to the subjective experiences of pleasure and how an individual balances the negative and positive thoughts and feelings in their judgements (Ryan and Deci, 2001). Job-related experiences, such as overall job satisfaction, satisfaction with pay, training, autonomy, involvement in work decisions or organisational commitment are prime examples of hedonic well-being of employees in their work-life. Eudemonic well-being, on the other hand, relates to the realisation of human potential, fulfilment and purpose in the work life of an employee (Bryson et al., 2014; Wrzesniewski, Dutton, and Debebe, 2003). Psychological well-being in the eudemonic approach is gauged through the meaning and engagement that employees derive from their organisational life.

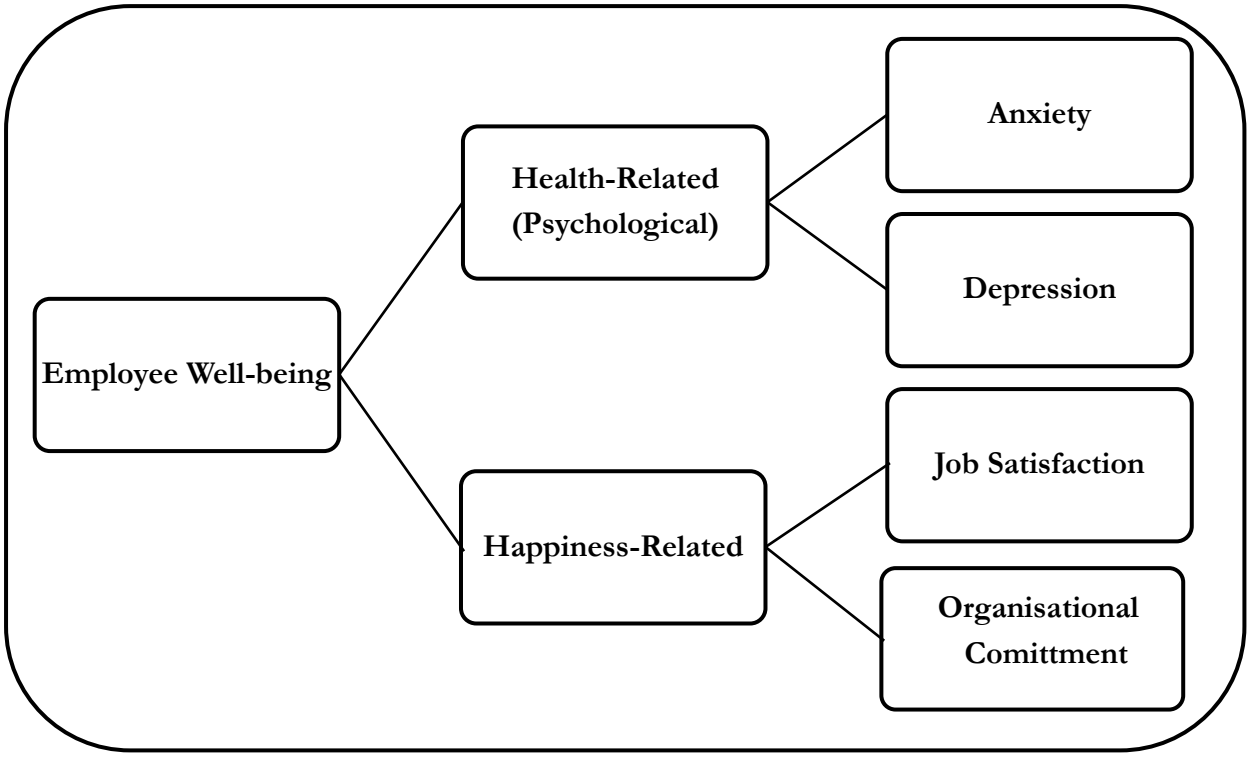
Physical (health) well-being relates to bodily health and functioning at work. Both physiological (i.e. objective physiological measures) and psychological indicators of well-being (i.e. subjective experiences of bodily health) constitute health-related well-being in the workplace. Thus, injury, disease, stress, anxiety, depression and geographical or contextual factors that may affect health and well-being of an individual relate to the physical aspect of well-being at work (Grant et al., 2007). Overall, both the first and second dimensions of well-being (i.e. happiness and health) relate to properties of individual employees at work.

However, distinguished from the first two individual focused dimensions, the third dimension of well-being at work i.e. social (relationship) well-being incorporates relational experiences and functioning at work (Grant et al., 2007). It focuses on the interactions that occur between employees, between employees and their supervisors or generally within the organisation. Aspects relating to trust, social support, reciprocity, leader-member exchange, cooperation and integration at work are all significant examples of social well-being in the workplace.

All three dimensions of well-being are important outcomes in themselves. Thus, it is important to distinguish between the various dimensions of well-being at work from the outset for two reasons. Firstly, the dominant theoretical frameworks used to explain the relationship between HP-HR, employee well-being and performance make a distinction between various aspects of well-being at work. Secondly, the existing literature shows that trade-offs are possible between various indicators of well-being in different work situations (Appelbaum, Bailey, Berg and Kalleberg, 2000; Campion and McClelland, 1993; Grant et al., 2007; Godard, 2001; Ramsay et al., 2000). For example, studies conducted by Ramsay et al. (2000) and Appelbaum et al. (2000) show that high performance HR may positively influence the job satisfaction, trust and organisational commitment of employees, but at the cost of increased stress levels. Empirical evidence further suggests that work redesign practices may positively affect job satisfaction but by increasing the stress levels of employees (Campion and McClelland, 1993; Wood et al., 2012).

This thesis acknowledges divergences between the three dimensions of job-related well-being and classifies categories of indicators of well-being into their respective dimensions. In particular, the study incorporates two dimensions of employees' work related well-being i.e. the psychological aspects and happiness-related subjective experiences of the individuals at work. Work-related anxiety and depression are studied as the negative indicators of the employees' psychological well-being while, job satisfaction and organisational commitment are included as the positive state of subjective experiences (happiness) at work, see Figure 1.1. All the four indicators of well-being are examined independently in this study, because incorporating all four measures provides a more comprehensive assessment of an individual's overall level of well-being and identifies if trade-offs exist between various facets of well-being. Different dimensions of well-being may exhibit varying relationships with the predictor variables. Therefore, examining each of these facets separately may elicit greater insights into the employee well-being domain (Karmerāde and McKay, 2015).

Figure 1.1: Employee Well-being Components and Dimensions used in the Thesis



1.5 Rationale for Research

The primary aim of this research study is to empirically evaluate the relationships between HP-HR, job demands and resources and well-being guided by a conceptual framework which is underpinned by theory and empirical research. This will help advance knowledge on the 'black box' that has dominated much of the debate in the HRM literature, particularly concerning the HRM-performance link and the role of employee well-being within this association. The study aims for a better understanding of the processes through which actual HP-HR practices affect well-being of employees, which is a prerequisite to improving knowledge about how HRM, generally, has contributed to organisational effectiveness (Macky and Boxall, 2007). Recognising the effects of implemented HP-HR practices on employees' work-related well-being, attitudes and behaviours is also important for HR practitioners (i.e. HR professionals and line managers), and will help identify how HR practices may be designed, conveyed and implemented without compromising the interests of different stakeholders.

The theoretical model is guided by the Job-Demands-Resources (JD-R) model. The mutual gains and the labour process perspectives are used to explore the debates on enhanced versus

compromised well-being and the conflicting stances on perceived work intensification within the HRM literature. The labour process perspective is used as a lens to understand the mechanisms that guide the association between HP-HR and well-being. The principles of the JD-R model are used as a lens to manage the well-being of a workforce that is exposed to high work demands. A focus on the nature of workplace resources, borrowed from the JD-R model, is important in high performance work environments as they can affect individual's perceptions about their ability to sustain workloads without compromising their sense of well-being.

1.6 Research Questions

Arising from the above context, this research study aims to investigate the following key questions. See Table 1.2 for a detailed overview.

1. How do high performance HR practices influence the perceptions of employees' about their job-related well-being?

2. How do high performance HR practices influence the perceptions of employees about their work demands?

3. Do employees' perception of their job demands mediate the relationship between high performance HR practices and employee well-being?

4. Do job resources moderate the relationship between employee perceptions of their job demands and well-being in a high performance work environment?

Table 1.2: Overview of Research Questions (RQs) and Research Objectives per Chapter

RQ	Research Objectives	Chapter	Type	Approach
1	To examine the relationship between HP-HR bundles and different components of employees' perceptions of their job-related well-being at the workplace level.	2 6	Conceptual/ Explanatory Empirical	Using extant HRM & well-being literature.
2	To investigate if specific HP-HR bundles have heterogeneous effects on perceived job demands at the workplace level.	2 6	Conceptual/ Explanatory Empirical	Using extant HRM literature.
3	To examine the mediating effects of perceived job demands between high performance HR bundles and different components of work-related well-being at the workplace level; and to see how it affects the pathways linking HP-HR bundles to employee well-being.	2 6	Conceptual/ Explanatory Empirical	Using extant HRM & well-being literature.
4	To investigate the role of employee perceptions of task-level job control on different components of work-related well-being at the workplace level; and to investigate how task-level job control affects the pathways linking HP-HR bundles to employee job demands and well-being components at the workplace level. To investigate the role of perceived managerial support at work on different components of work-related well-being at the workplace level; and to investigate how managerial support perceptions at work affects the pathways linking HP-HR bundles to employee job demands and well-being components at the workplace level. To investigate the role perceived family support at work on different components of work-related well-being at the workplace level; and to investigate how family support perceptions at work affects the pathways linking HP-HR bundles to employee job demands and well-being components at the workplace level.	3 6	Theoretical Empirical	Integrating HRM & work Psychology literature.

1.7 Research Methodology

The study is positioned within the positivist paradigm and employs a cross-sectional design. Workplace Employment Relations Survey (WERS) 2011 data set is used to explore the research questions. Since the measures of the HP-HR practices are taken from the management questionnaire (MQ), these depict the actual organisational practices (irrespective of how are these viewed by employees). On the other hand, the endogenous and outcome variables are taken from the survey of employee questionnaire (SEQ), and depict employee perceptions of their job demands, job-related anxiety, job-related depression, job satisfaction, organisational commitment, job control, managerial support and family support.

The data are analysed using the path analysis conventions of structural equation modelling (SEM). Aggregated employee level data is used in path analyses. Mplus software version 7.1.1 is used to carry out the analysis. Anderson and Gerbing's (1988) two-step procedure is followed in the SEM technique, in which the measurement model at the individual level is estimated prior to assessing the structural model (i.e. path analysis).

1.8 Significance of the Study: Theoretical and Empirical Contributions

Previous HP-HR research has been criticised for being insufficiently guided by theory, overly relying on single source of information (mainly HR managers), lacking in the robust articulation of HP-HR, less employee focused than it should be, and limited in highlighting linkages between HPWS and employee/organisational outcomes (Boselie et al., 2005). This research extends knowledge in the existing HPWS literature by addressing these limitations in a number of ways. First, the present research attempts to link the HRM, specifically HPWS, literature with work psychology models. Associating the perceptions of job control, managerial and family support with the literature pertaining to HP-HR practices and perceived job demands, this study builds on previous studies mainly by using a theoretical foundation indicating how and why HP-HR practices might affect employee well-being, and examining when this association can be mutually meaningful for the stakeholders.

Second, the study attempts to connect with a vast body of literature investigating the highly discounted effects of HP-HR practices on employee outcomes (Liao, Toya, Lepak, and Hong, 2009; Nishii, Lepak, and Schneider, 2008; Lepak, Taylor, Tekleab, Marrone, and Cohen, 2007). In so doing, it examines employee well-being as an end in itself. A matched employer-employee data

is used in the study which provides a good evidence base to glean from employee reports in terms of their personal experience about the levels of job demands, job-related anxiety, job-related depression, job satisfaction and organisational commitment. By comparing the attitudes of those who report the presence of HR practices against those who experience them, the study gains useful insight into how high performance HR practices affect workers' perceptions (Guest, 1999).

Third, the study uses an encompassing conceptual framework for selecting HP-HR practices. In this thesis, the concept of high performance working is considered as a normative description of set of HR practices, based on the Ability-Motivation-Opportunity-Commitment (AMOC) model (Guest and Conway, 2007), that have four interrelated motives. These are namely: to enhance employees involvement and participation in the work process; increase their skills and abilities to handle the participation process; provide incentives for employees in order for them to exercise their superior skills and earned discretion; and to facilitate their work life by offering them optimal flexibility, fairness and equality that enhance their level of well-being and commitment (Guest and Conway, 2007; Batt, 2002; Way, 2002). Furthermore, the study supports the concept of the heterogeneity of the effects of HP-HR practice bundles on employee outcomes. It is important to explore the differential effects of HP-HR bundles, because recent research supports the view that different bundles of HP-HR practices could have an impact on the same employee outcome in heterogeneous ways (Gardner, Wright and Moynihan, 2011; Shaw, Dineen, Fang and Vellella, 2009; Takeuchi, Chen and Lepak, 2009; Wright and Kehoe, 2008). In particular, Jiang et al. (2012) call for researchers to explore the mediating mechanisms between the HP-HR practices and employee outcomes and analyse the differential effects of dimensions of HP-HR bundles on these relationships. Echoing this, the study explores the additive effects of dimensions (bundles) of HP-HR practices on employee well-being through its mediating and moderating pathways. This expands the scope of examination in HP-HR research to incorporate the effects of different dimensions of HR systems on employees.

Fourth, the study probes the effects of HP-HR practice bundles on various indicators of employee well-being. This is valuable because the dominant theoretical frameworks used in HRM to describe the relationship between HP-HR, employee well-being and performance show that trade-offs are possible between various indicators of well-being depending on different work situations (Grant et al., 2007; Godard, 2001; Appelbaum et al., 2000; Ramsay et al., 2000; Campion and McClelland, 1993).

Fifth, this study acknowledges the work of Ogbonnaya (2013) and identifies the labour process perspective as a theoretical lens through which the associations between HP-HR practices and employee well-being could be explained. In this way, the study contributes to better understanding the 'black box' of HPWS by incorporating the role of perceived job demands as a mediator between HP-HR and employee well-being. By so doing, the research assists in deciphering the pathways between organisational-level HR practice bundles and individual-level employee outcomes. The majority of previous studies, including Ogbonnaya (2013), explore the mediating processes using individual HP-HR practices (Guest, 2002) and/or consistent sets of high performance HR practice configurations (system approach) (Ichniowski et al., 1997; Appelbaum et al., 2000). However, it is possible that some sub-components of HPWS have differential impacts on the mediators (Takeuchi et al., 2009). Specifically, we make the argument that perceptions of job demands depend on the specific HP-HR bundle in question.

Sixth, the study contributes to the HPWS literature by arguing that positive employee psychological and health outcomes prevail when HP-HR practices are introduced with effective job resources, irrespective of the type or configuration of the HP-HR practices/systems in place. Thus, in line with the JD-R model, workplaces are seen to potentially engender employee well-being by cultivating resourceful work environments to deal with the high work pressures inherent in the high performance paradigm. Employee perceptions regarding job control, managerial and family support are related to individual's work-related well-being outcomes such as anxiety, depression, job satisfaction and organisational commitment in a high performance workplace.

1.9 Structure of the Study

This thesis is divided into seven chapters see Figure 1.2. **Chapter 1** has provided an overview of the study highlighting its rationale and significance.

Chapter 2 highlights the relationship between HP-HR practices and employee well-being. In so doing, the chapter defines the concept of HP-HR and presents the two main perspectives of HRM on employee well-being i.e. mutual gains (MG) and labour process (LP) perspective. The chapter substantiates the arguments of both MG and LP perspectives through extant empirical evidence in support of their respective arguments. It further highlights gaps in the existing HP-HR research and the HRM literature. Hypotheses are developed and presented after a review of the related literature.

Chapter 3 offers conceptual and empirical evidence to argue that the workplace support system (i.e. job resources) is the missing link in the HRM and employee well-being debate. The chapter outlines the conceptual model deployed in the thesis.

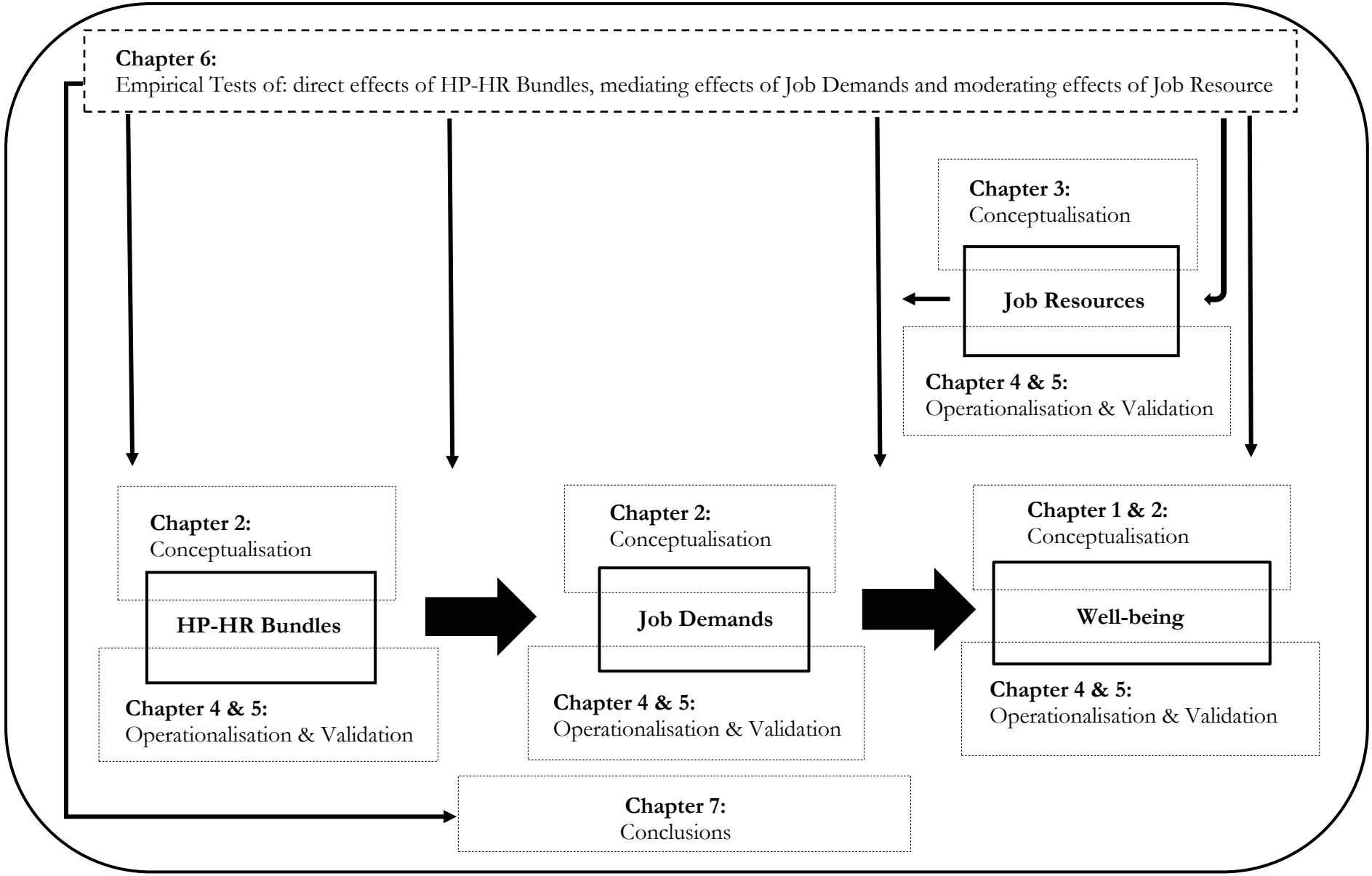
Chapter 4 outlines the methodology of the thesis to link the conceptual model and the empirical analysis. The chapter provides a detailed discussion of the choices made concerning the research paradigm, research strategy, and research data, the chosen level of analysis, data analysis techniques, and highlights issues around reliability, validity and replicability of the research findings.

Chapter 5 presents the results of the preliminary analysis of the data. This chapter is divided into three sub-sections. The first section looks at the data preparation and screening procedures. This sub-section describes the results of the missing value analysis, the detection of outliers and tests of normality. Section two presents the results of exploratory (EFA) and confirmatory factor analyses (CFA) of the dependent variables taken from the SEQ. EFA results highlight the appropriate factor structure of the variables and CFA results exhibit that the individual latent constructs along with the overall measurement model at the individual level are duly validated. The justification of aggregation of the individual constructs of job demands, job control, managerial and family support, job-related anxiety, job-related depression, job satisfaction and organisational commitment is presented in the final section of Chapter 5.

Chapter 6 explores the hypothesised relationships between the observed variables of the study using the path analysis conventions of SEM. The chapter relates the results of the direct, indirect and conditional indirect relationships explored in the study respectively. The results of the control variables are presented last in the chapter.

Chapter 7 is the final chapter of the study and presents an overall discussion of the study results vis-à-vis their theoretical underpinning. The chapter highlights the implications and the significance of the study. Finally, the chapter discusses the study limitations and highlights future research directions.

Figure 1.2: Overview of linkages between the main chapters of the thesis



Chapter 2

Evaluation of Empirical Research on High Performance HR and Employee Well-being

2.1 Introduction

Since the mid-1990s, it has been argued extensively that certain HR practices, commonly referred to as high performance HR practices, can improve the performance of individual employees and their employing organisations (Jungblut and Storrie, 2011; Combs et al., 2006; Boselie et al., 2005; Huselid, 1995). Such management innovations are often claimed to positively influence employee well-being, which in turn is assumed to positively relate to employee and organisational performance (Wright and Cropanzano, 2000; Wright and Staw, 1999; Arthur, 1994; Lawler, 1988; 1986; Walton, 1985). However, in recent years, the so-called positive view has been challenged and a more negative view has been argued, according to which high performance practices impair employee health and well-being (Thompson and Harley, 2007; Wallace and Chen, 2006; Godard, 2001; 2004; Ramsay et al., 2000).

The goal of this chapter is to set out and evaluate the current debates in the HRM literature that underline the research agenda of the present study. In particular, the chapter aims to outline and evaluate the dominant viewpoints on the impact of high performance HR practices on employee well-being. The central question is whether high performance HR has positive effects on employee well-being (optimistic - mutual gains view) or negative effects on well-being (pessimistic/skeptical - labour process view). This theme is further explored in relation to the sub-theme i.e. the contextual factors that may influence the fundamental association between HP-HR and well-being. The gaps in the existing HRM literature on the HP-HR/well-being association are identified, and are used to propose an alternative framework to examine employee well-being in high performance workplaces.

2.2 What is High Performance Working?

The concept of high performance work (HPW) systems has emerged as a distinct, recognisable model or paradigm over the last two decades. The high performance paradigm has achieved

increasing importance both as an academic concern and a practitioner movement, and has motivated a series of significant changes within the contemporary workplace (Hughes, 2008). Its core concept is embedded in Storey's (1995) 'soft version of HRM' or the commitment-based approach, which is underpinned by a strong partnership between employers and employees (Whitener, 2001). The HPW ideology breaks away from the old mould of Tayloristic principles, outlined in Storey's (1995) 'hard version of HRM'. Instead, it signifies an underlying change in the way production is handled and businesses are structured (Belt and Giles, 2009; Ashton and Snug, 2002; Bélanger et al., 2002).

A wide range of terminologies have been used to refer to HPW (with or without the same intended meanings) such as 'high involvement management/HR practices', 'high commitment management/HR practices', 'high performance HR practices' and 'high involvement work systems' (Wood, 1999). Notably, a debate exists on the choice of appropriate terminology to refer to this system (Wood and Wall, 2007; Wall and Wood, 2005; Wood, 1999). It is argued that terminologies which imply increased performance 'can be misleading in the absence of clear empirical tests of their actual link to economic performance in a given situation' (Pil and MacDuffie, 1996, p. 423). With the recognition that HPW is not an end in itself but outcome-oriented, a lot of emphasis has been given to understanding the complexities inherent in the paradigm, and how it operates.

Academics have defined the HPW concept in varying ways. Ashton and Sung (2002, p. 1) define high performance work practices as 'new ways of organising work, rewarding performance and involving employees in the decision-making process in the workplace'. On the other hand, Guest (2006, p. 3) describes high performance working as a 'distinctive approach to managing people at work that raises productivity while also improving the well-being of employees'. Philpott (2006, p. 158) suggests that what is commonly known as high performance working is 'people management practices that enable staff to work smarter rather than harder'. According to the definition cited on EEF/CIPD (2003, p. 8) 'The high performance workplace encourages the development of workers' skills and taps into their emotional capital and tacit knowledge in order to enhance organisational performance'. Further, according to Takeuchi, Lepak, Wang and Takeuchi (2007, p. 1069) cited in Messersmith, Patel, Lepak, and Gould-Williams (2011), high-performance work systems (HPWS) have been defined as 'a group of separate but interconnected human resource (HR) practices designed to enhance employees' skills and effort'. Tamkin et al. (2005, p. 12) provide a general description of what HPW constitutes, stating that 'High performance workplaces

or organisations have been described in various ways, but there is a general emphasis on engaged and empowered workforces, and on high quality goods and services'.

The above discussion shows that there are three inter-related notions embedded in the ideology of high performance work: work practices, their systemic effects and performance (Boxall, 2012; Macky and Boxall, 2009). In terms of work practices, there is a profound lack of consensus on which to include in a high performance system (Bello-Pintado, 2015; Harley, Sargent and Allen, 2010; Boselie et al., 2005; Delery and Shaw, 2001; Guest, 2001; Guthrie, 2001; Wood, 1999; Delery, 1998; Becker and Gerhart, 1996).

There is a general consensus in the high performance literature that HR practices should correspond to the outcomes they are designed to ensure (Guest and Conway, 2007), and that there is commonality in terms of broadly defining themes included among HP-HR practices. For example, Philpott (2006) identified three categories of HP-HR i.e. employment relations, performance management and rewards. Sung and Ashton (2005) grouped their list of practices around three related themes i.e. high involvement, human resource practices, reward and commitment. Generally, these themes include activities involving how people are managed within the organisation e.g. the pay and incentive structures, training and development opportunities and performance management criteria, such as the appraisal process. Further, it encompasses work organisation methods, e.g. the extent of team working and job design, along with approaches to general employment relations and management, leadership and the organisational development process. But the precise form it takes is seen to depend upon various contextual elements within the workplace (Ashton and Sung, 2006; Combs, et al., 2006; Cook, 2001; Becker and Huselid, 1998).

Generally, academics agree that the HPW approach is designed to augment the discretionary effort employees put into their work while motivating them and fully utilising and continuously developing the skills they possess (the AMO framework) (Wood, Burridge, Rudloff, Green and Nolte, 2015; Belt and Giles, 2009; Macky and Boxall, 2007). Consequently, many have selected the HR practices that are antecedents to enhancing employee competence, motivation and opportunities to contribute (Van De Voorde, Paauwe and Van Veldhoven, 2012; Jiang et al., 2012; Boxall and Macky, 2009; Appelbaum et al., 2000). Irrespective of how high performance work practices have been defined or conceptualised, the premise that motivates the high performance management ideology is that some sort of competitive advantage can be derived from the way work, employees and the labour process are managed.

2.3 Academic Debates on the impact of High Performance HR on Employee Well-being

A range of academic disciplines explore the effects of work and organisational factors and processes on employee well-being. In particular, the existing literature and empirical research in the field of industrial relations, stress management and occupational health focus on employee well-being as a criterion of interest. However, depending on the discipline, the antecedents of employee well-being differ - each discipline explains the variance in well-being of employees as a consequence of a multitude of predictors. For example, the occupational health literature explores well-being as a consequence of subjective work demands and job resources.

The extant literature highlights three dominant perspectives on the relationship between high performance HR and employee well-being, namely the optimistic perspective, pessimistic perspective and sceptical perspective (Peccei, 2004). Each of these theoretical lenses provide unique theoretical and empirical contributions on the causal linkages and tensions in the management of employee well-being within the high performance paradigm, the main aim of which is enhancing organisational performance.

2.3.1 Optimistic Perspective: Mutual Gains Theory

The origins of the optimistic view can be traced back to the Human Relations movement in the 1930s. The mission of the Human Relations School was the humanisation of the alienated work force by identifying those work and organisation factors that would stimulate intrinsic work motivation in employees, which in turn would benefit their employing organisations. Hence, at the heart of the optimistic view lies the enhancement of meaningful work, intrinsic motivation and a feeling of self-worth for employees (Brödner and Forslin, 2002). The optimistic view works through two inter-related processes. First, it puts the fulfilment of the social and psychological needs of individual employees on management's agenda, and then postulates how the fulfilment of these employee needs relate to improved organisational efficiency and productivity. In essence, this is a bottom-up and employee-centred approach that builds on an industrial relations tradition that emphasises some notion of partnership between management and unions (Guest, 2002).

Within the HPW paradigm, empirical evidence showing positive gains to performance and employee well-being is both sizable and persuasive (Campbell and Garrett, 2004; Way, 2002). The simultaneous fulfilment of both employee and employer needs is the main premise of this view. The alignment of employee and employer interests/needs and the assumptions of *'Mutual Gains'*

resulting in a win: win scenario for both is the mainstream perspective on the effects of high performance HRM on both employee well-being and performance (Peccei, 2004; Kochan and Osterman, 1995).

Three underlying theories are used to explain the mutual gains scenario that steers positive effects of HRM on both employees' attitudes and behaviours and employers. The first is the *'Behavioural Theory'* which postulates that the role of HRM is to elicit and control positive employee behaviours to the benefit of the organisation (Wright and MacMahan, 1992). '*Social Exchange Theory'* (Blau, 1964) is the second most commonly-cited theory that explains the positive effects of high performance HR on employees' well-being and organisational performance simultaneously. Blau referred to social exchanges as 'favors that create diffuse future obligations, not precisely specified ones, and the nature of the return cannot be bargained about but must be left to the discretion of the one who makes it' (p. 93). According to this perspective, high performance HR practices are indicative of an organisation's ideology and transmit signals about the organisation's care and support for their employees. When employees perceive that their organisation is committed to them, willing to invest in their development and is good at accommodating their interests, their sense of well-being increases. Employees perceive the use of HR practices as the organisation's invitation to build a social exchange relationship with them. Based on the norm of reciprocity (Gouldner, 1960), employees reciprocate in commitment, satisfaction and trust (Whitener, 2001). For example, employee involvement in work-related meetings motivates employees to apply their skills and to develop their talent for further growth, and thereby stay with the organisation for longer (Wu and Chaturvedi, 2009; Way, 2002).

Finally, Appelbaum et al. (2000), drawing on Bailey's (1993) framework, postulate that high performance HR practices, such as training, induction, rigorous recruitment, information sharing, job design and incentive-based compensation, have a positive effect on employee skills and abilities, opportunities and motivation to participate i.e. *'AMO Theory'* (Messersmith et al., 2011; Liao et al., 2009; Lepak, Liao, Chung, and Harden, 2006; Macky and Boxall, 2003). Consequently, employees perceive higher well-being – an increase in their job satisfaction, trust and organisational commitment level and at the same time lower their stress and anxiety levels.

To summarise, under the general rubric of the mutual gains perspective, behavioural theory, social exchange theory and AMO theory imply that high performance HR practices have positive effects on employees' perceptions of their well-being (happiness, health and interpersonal relationship)

through individual level mechanisms, which then translate into improved organisational performance. Hence, mutual gains are attained for employees in terms of their well-being and for employers in terms of extra effort of employees to gain organisational performance, see Figure 2.1. On the basis of mutual gains theory, high performance HR practices are seen to have a positive effect on employee well-being.

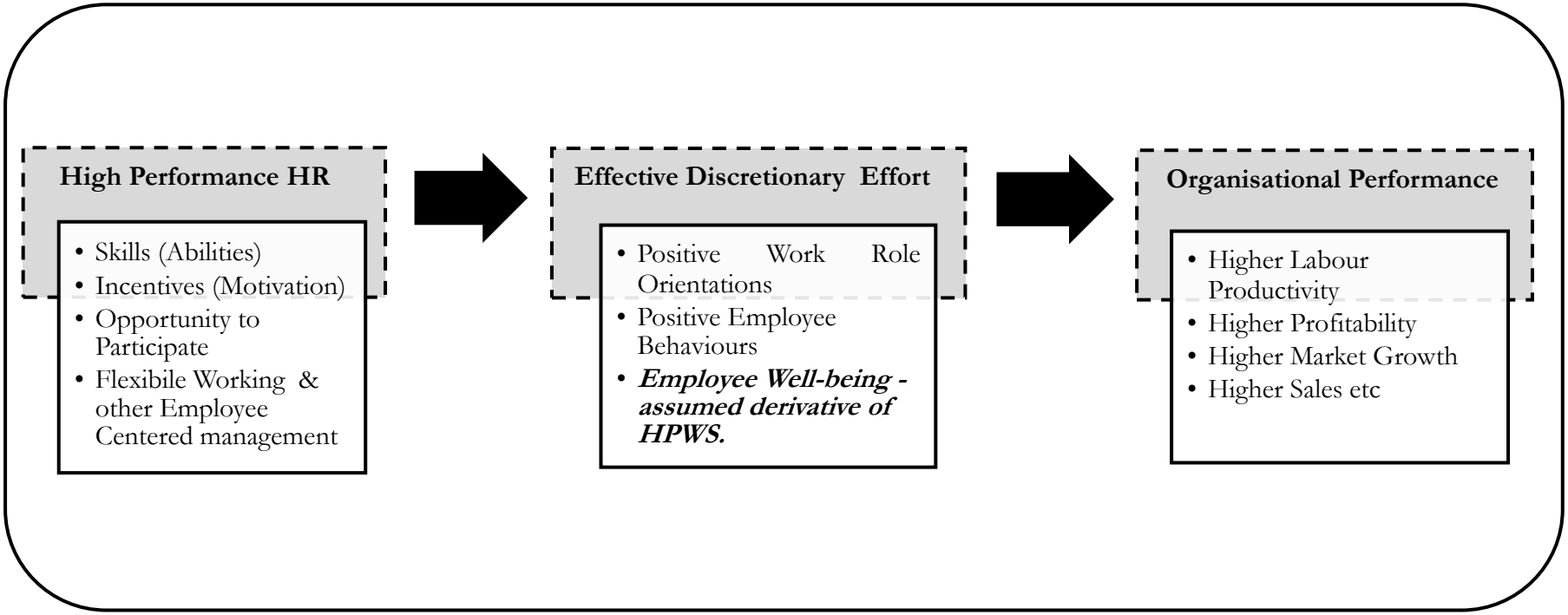
2.3.2 Pessimistic Perspective: Labour Process Theory

The pessimistic view, also referred to as the conflicting outcomes perspective (Wood et al., 2012), is another view that explains employee well-being in the high performance paradigm (Peccei et al., 2013; Peccei, 2004). Proponents of the pessimistic approach are less convinced of mutual gains, which assumes the alignment of employee-employer interests to enhance affective employee well-being and organisational performance while also reducing job strain. On the contrary, the pessimistic view holds that employee interests are not in the vanguard of the high performance paradigm (Peccei, 2004). Instead, the acknowledgement of 'trade-offs' between employee well-being and organisational performance is the central tenet of the pessimistic view.

Two streams of the literature highlight the underlying processes that govern the pessimistic view. These are namely the interdisciplinary work design framework (Campion, 1988; Campion and Thayer, 1987) and labour process theory (Godard, 2001; White et al., 2001; Ramsay et al., 2000). The interdisciplinary work design framework compares mechanistic, motivational, perceptual and biological models of job design and their consequences for employees (Campion and Thayer, 1987). Drawing heavily on motivational job design models, this perspective argues that, contrary to the win: win assumptions of the optimistic models, trade-offs between employee well-being and performance are structurally inevitable (Campion and McClelland, 1991).

Compared to the interdisciplinary work design framework, labour process theory is the more widely-used perspective. Labour process theory is grounded in the Industrial Relations literature and questions the theoretical basis of the mutual gains thesis and high commitment/involvement HRM. The main tenet of this perspective is the strongly conflicting nature of interests between employees and employers, which bring about trade-offs in the outcomes of the innovative work processes.

Figure 2.1 Employee Well-being in High Performance Work and Organisational Performance Link – (Optimistic) Mutual Gains Perspective



Source: Adapted From Bailey (1993) in Appelbaum et al. (2000, p. 27)

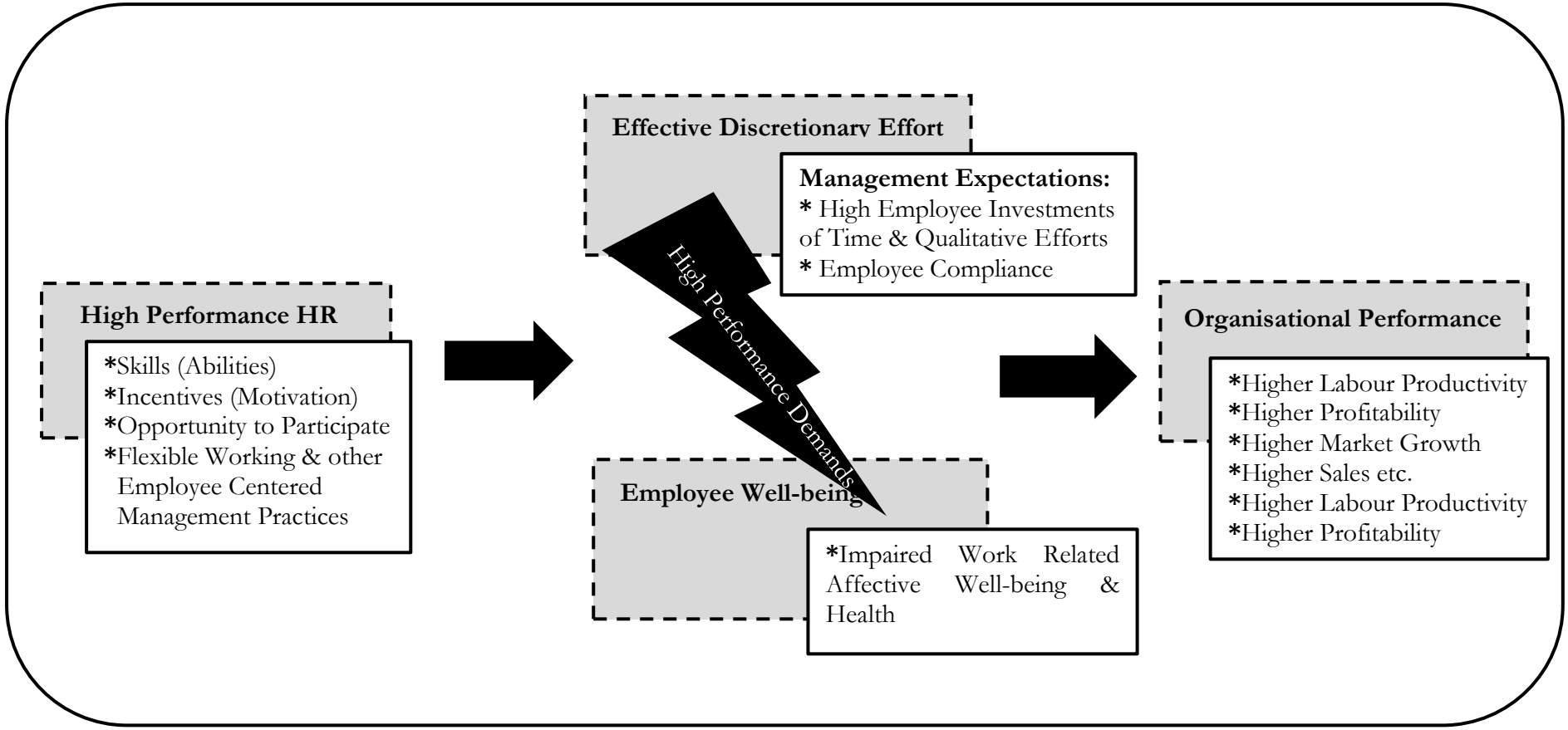
According to labour process theorists, new management practices and prerogatives are in essence sugar-coated managerial control strategies aimed at maximising labour inputs through management-by-stress and work intensification (White et al., 2001; Godard, 2001; Ramsay et al., 2000; Delbridge and Turnbull, 1992). The so-called high performance paradigm is seen to facilitate a 'concertive control strategy' (Barker, 1993) to create a situation whereby committed workers direct themselves and their peers into expending high levels of effort.

Proponents of the labour process view highlight the exploitive nature of HRM (Legge, 1995). High performance work practices are seen to provide employees with benefits, career avenues, job discretion and the necessary skills in order to compel them to comply with the extra work demands levied upon them (Harley, 1995). Hence, the committed and obliged worker is skilfully asked to accept an increase in job demands in order to reciprocate employer obligations and boost their levels of productivity accordingly. A paradoxical situation is seen to emerge for employees in which they may experience satisfaction and commitment, but also job fatigue, anxiety and depression due to self-inflicted stress i.e. a win-lose situation for the employer and employee respectively. Based on this view, Godard (2001) established that any positive gains of HRM practices for employees tend to decline or diminish beyond certain point, due to higher stress levels.

A conflicting claims scenario is suggested as an offshoot of the pessimistic stance, based on which high performance HRM has been argued to have no significant effect on well-being. This standpoint entails a 'sceptical view' of well-being and performance in a high performance paradigm (Peccei, 2004). It is argued that the high performance HR practices that improve employee well-being might not be the same as those that maximise organisational performance. Hence, organisations might need to make a trade-off in terms of deciding the appropriate HR practices for their organisation based on the intended outcome.

In essence, labour process theory highlights that new management prerogatives used under the rubric of the high performance paradigm trick employees into accepting higher job demands that ultimately lead to better performance for the employer, but at the expense of lower well-being and adverse health effects for employees. Thus, workers do not benefit from the high performance paradigm, and it may even be harmful for them, see Figure 2.2. On the basis of labour process theory, high performance HR practices are seen to have negative effect on employee well-being.

Figure 2.2: Labour Process View on Employee Well-being in High Performance Paradigm



Source: Adapted from Dorenbosch (2009)

2.4 Conceptualisation of Employee Well-being in HRM Studies

The existing literature on high performance HR and employee well-being examines the employee-level implications of HP-HR in terms of improved employee attitudes and the overall quality of employee mental health and psychological functioning at work (Van De Voorde et al., 2012). Employee attitudes include measures such as job satisfaction, organisational commitment, employee trust in management and organisational citizenship behaviours, and refer to those behavioural and dispositional responses that depict employees' experiences of work (Danford, Durbin, Richardson, Stewart, Tailby and Upchurch, 2008; Gould-Williams, 2003; Whitener, 2001). On the other hand, employee mental health and psychological functioning at work is associated with negative feelings of anxiety, worry, stress, lack of enthusiasm, depression, emotional exhaustion, fatigue and positive feelings of enthusiasm, motivation and high cognitive functioning (Wood et al., 2012; Van De Voorde et al., 2012; Daniels, Beesley, Cheyne and Wimalasiri, 2008).

Generally, employee well-being is referred to a state in which employees appraise their experiences of the organisational processes and innovations either positively or negatively. Both employee attitudes and employee appraisals of their mental and psychological health are, generally, referred to as employee well-being, and the terms are used interchangeably in the HRM literature. However, more recently, Van De Voorde et al. (2012) have drawn attention to differences between various dimensions of employee well-being, noting the possibility that HP-HR may impact upon employee attitudes and mental/psychological states in contradictory ways, see Table 2.1.

2.4.1 Job-related Anxiety and Depression

Stress/strain is one of the most widely studied employee level outcomes in the high performance HR literature. According to Warr (1990), both anxiety and depression are two major dimensions of strain. Anxiety and depression are psychological indicators of well-being which relate to health-related (physical) well-being in the workplace (Grant et al., 2007). Both anxiety and depression manifest negative effects on individuals which contribute to their poor work-related well-being.

Table 2.1: Summary of empirical studies using various conceptualisations of employee well-being (EWB)

Studies	ANX	DEP	Stress/Strain	EE/BO	Fatigue	JS	OC	EWB
Ahmad & Schroeder (2003)							✓	
Akdere (2009)						✓		
Allen et al. (2003)						✓	✓	
Appelbaum et al. (2000)			✓			✓	✓	
Barling et al. (2003)						✓		
Bauer (2004)						✓		
Boon et al. (2011)						✓	✓	
Brown et al. (2008)						✓		
Bryon & White (2008)							✓	
Danford et al. (2008)			✓			✓	✓	
De Joy et al. (2010)						✓	✓	
Den Hartog et al. (2013)						✓		
Fan et al. (2014)				✓				!!!✓
García-Chas et al. (2014)						✓		
Godard (2001)			✓			✓	✓	
Gould-Williams (2004; 2034)						✓	✓	
Guest & Conway (2002)							✓	✓
Guest & Conway (2007)						^^✓	^^✓	
Guest & Peccei (2001)						✓	✓	
Guest (1999)						✓		
Guest (2002)						✓		
Guest et al. (2003)						✓	✓	
Harley et al. (2010)				✓		✓	✓	
Hoque (1999)						✓	✓	
Innocenti et al. (2011)						****✓	****✓	
Jiang et al. (2012)						**✓	**✓	
Kalmi & Kauhanen (2008)			^^^✓			✓		
Katou & Budhwar (2010; 2006)						****✓	****✓	
Kaya et al. (2010)						✓		
Khilji & Wang (2006)						✓		
Kooij et al. (2010)						✓	✓	
Macky & Boxall (2008)			✓		✓	✓		
Macky and Boxall (2007)						✓	✓	
Mendelson et al. (2011)						✓	✓	
Messersmith et al. (2011)						✓	✓	
Mohr & Zoghi (2008)			✓			✓		
Mostafa & Gould-Williams (2014)						✓		
Nishii et al. (2008)						****✓	****✓	

Ogbonnaya et al. (2013)		✓			✓	✓	
Orlitzky & Frenkel (2005)		✓			^^✓	^^✓	
Park et al. (2003)					****✓	****✓	
Paul & Anantharaman (2003)						✓	
Peccei (2004)		✓					*✓
Qiao et al. (2009)						✓	
Ramdania et al. (2014)						!!✓	
Ramsay et al. (2000)		✓			!✓	✓	
Rhoades & Eisenberger (2002)						✓	
Roirdan et al. (2005)					✓	✓	
Rose & Wright (2003)					✓		
Scheible & Bastos (2013)						✓	
Takeuchi et al. (2009)					✓	✓	
Vandenberg et al. (1999)					✓	✓	
Van De Voorde & Beijer (2015)		✓				✓	
Vanhala & Tuomi (2006)		✓	✓		^✓		✓
Vanhala et al. (2004)			✓		^✓		^✓
Wei et al. (2010)					✓		
White & Bryson (2011)					✓	✓	
White & Bryson (2013)					✓	✓	
Whitener (2011)						✓	
Wood & de Menezes (2011)	✓				✓		
Wood et al. (2012)	✓				✓		
Wright et al. (2003)						✓	
Wright et al. (2005)						✓	
Wu & Chaturvedi (2009)					✓	✓	
Zatzick & Iverson (2011)					✓		
Zhang & Morris (2014)					***✓	✓	
Zhang et al. (2013)					✓		

ANX=Anxiety; **DEP=**Depression; **EE=**Emotional Exhaustion; **BO=**Burnout**; JS=**Job Satisfaction; **OC=**Organisational Commitment

*Composite measure - (including JS, lower stress)

Composite measure **- employee motivation (including JS, OC, perceived org. support, org. climate & citizenship behaviour).

*** Composite measure - employee outcomes (including JS &OC)

**** Composite measure - employee attitudes (including JS & OC)

^General satisfaction and well-being

^^ Composite measure - employment relations (including JS & OC)

^^^Composite measure (anxiety & depression)

! Satisfaction with pay

!! Composite measure - employee performance (including OC, motivation, flexibility/adaptability, work effort and working longer than required)

!!! Composite measure – subjective well-being including (life satisfaction and affect satisfaction)

Conceptually, depression and anxiety are distinct. Depression portrays a state of low perceived ability of an individual to attain anything of significance in life. It depicts a classical state of loss of self-esteem and incentive in an individual. In general, depression is associated with a reduced motivation to overcome challenges and in extreme cases to totally avoiding challenges (Hollman and Wall, 2002). Job-related depression (DEP) refers to feelings of irrelevance and loss of interest that individuals face in relation to fulfilment of their job requirements.

Anxiety is seen to be based on fear-related symptoms (Lovibond and Lovibond, 1995). According to Freud (1936), anxiety is something an individual feels. It is seen to be an emotional state that includes feelings of apprehension, tension, nervousness and worry, accompanied by physiological arousal. Work-related anxiety (ANX) refers to tensions or pressures an individual faces due to their job requirements.

The extent of an individuals' strain (as reflected by anxiety and depression) is seen to depend upon a numbers of factors. For example, in the job design literature, the working environment and the nature of work (work overload, role ambiguity and role conflict) have been seen as the antecedents of job strain (Örtqvist and Wincent, 2006). On the other hand, the work psychology literature views an individual's personality traits as important precursors of strain and stress (Hart, Wearing and Heady, 1995; Parkes, 1994). In the HRM literature, it is argued that the employee involvement aspect of the high performance paradigm gives workers greater control over their work and that leads to a reduction in perceived job stress (Mackie et al., 2001), and positive health effects (Ettner and Grzywacz, 2001). According to Appelbaum et al. (2000) HP- HR practices bring about positive effects for employees in terms of better job attitudes and well-being (reduced anxiety/stress) for many reasons. For example, the authors argue that the opportunity to participate in decision-making helps cultivate trust between employees and their supervisors. Further, workers classify their jobs as challenging and intrinsically rewarding due to job enlargement. Consequently, the feeling of trust and intrinsic rewards translate into positive employee attitudes (i.e. organisational commitment and high job satisfaction) and low work-related stress/anxiety. In a similar vein, having autonomy over the work process has been linked to a reduction in perceived job stress (Mackie et al., 2001), and positive health effects (Ettner and Grzywacz, 2001). However, an opposite mechanism is envisaged by the critical scholars, who see increase in job involvement as the source of increased job roles which ultimately causes role conflict and induces job stress (Danford et al., 2008; Örtqvist and Wincent, 2006).

2.4.2 Job Satisfaction

Job satisfaction (JS) has been defined in a number of ways. In a simple definition, Locke (1976) describes job satisfaction as 'a pleasurable or positive emotional state, resulting from the appraisal of one's job experience' (p. 1304). According to Weiss (2002), it is 'a positive (or negative) evaluation of one's job or work situation' or 'an evaluative judgment one makes about one's job or job situation' (p. 175). In the view of Cotton and Tuttle (1986), job satisfaction is an affective response to certain work-related aspects. For Weiss and Cropanzano (1996) it refers 'to both an individual's cognitive evaluation of various job characteristics and their emotional experiences at work'. Spector (1997, p. 2) defines it as 'the extent to which people like or dislike their jobs'.

It may therefore be inferred that job satisfaction is an opinion of significant importance that employees hold about their work, workplace and organisation, which has enormous consequences with respect to hiring and retaining appropriate employees (Kaya et al., 2010). Dissatisfaction with the job may bring about various negative attitudes and behaviours in employees, such as quitting the job, going to work late, and delivering low quality services – all of which are factors that enhance organisational costs (Wilkinson, 1992).

Academics have examined job satisfaction from various angles and approaches. Some have viewed it as an intrinsic perspective which deals with the experience of the job itself, ignoring the influence of any external factor that may motivate the employee. Others have studied it from an extrinsic perspective that incorporates the external factors that gratify employees in the job, such as rewards or other non-monetary benefits (Sparham and Sung, 2007). Another approach is to deal with job satisfaction as an overall aspect of happiness with the job (i.e. a global perspective) that may involve many aspects of work or facet-specific satisfaction (i.e. satisfaction with pay, training, autonomy, involvement in work decisions).

Job satisfaction has been shown to be related to almost all aspects of a HP-HR system, for example, job security (Ashford, Lee and Bobko, 1989), training (Birdi, Allan and Warr, 1997), feedback inherent in information-sharing, and team support (Major, Kozlowski, Chao and Gardner, 1995). Blau (1964), using social exchange theory (SET), argued that high performance HR practices may influence the job satisfaction of employees. A high performance organisation can invest in the development of its employees and give them the opportunity to exercise their skills and, based on the norm of reciprocity (Gouldner, 1960), the employees are likely to pay back with positive job attitudes (i.e. exhibit satisfaction with work and organisation (García-Chas, Neira-

Fontela and Castro-Casal, 2014). Allen, Shore and Griffeth (2003) found that supportive HR practices lead to job satisfaction.

Similarly, Hackman and Oldham's (1980) framework has also been used to underline the mechanism through which high performance HR practices influence employee satisfaction. HPWS are seen to enhance the meaningfulness of work for employees, increase their sense of responsibility and enhance the scope of their knowledge and skills, which ultimately leads to increased job satisfaction.

Messersmith et al. (2011) propose another perspective as to why HP-HR practices may have satisfied employees. According to the authors, high performance working starts with selecting employees with appropriate attributes and then refining them with targeted training to match the job, which reduces the chance of poor person-to-job fit and simultaneously promotes employee perceptions of being good at their job. This alignment of person-to-job fit augments satisfaction with the job. To further this feeling, other components of high performance working based on information sharing, higher levels of job security, and tighter linkages between employee performance and compensation play their role in enhancing the level of satisfaction with their work. Contrarily, high performance initiatives are seen to decrease job satisfaction by others, due to the associated increase in workload and work pressure (Wood et al., 2012; Godard, 2001).

2.4.3 Organisational Commitment

The concept of organisational commitment (OC) gained importance from 1970 onwards as an important aspect relevant to all types of organisations. However, its importance increased with the rise of HRM theory and practice. In HRM theory, it was argued that organisational commitment may be the pioneering factor that narrows the gap between what may be of value to the employee and the employing organisation (Bryson and White, 2008). Proponents of HRM theory argued that committed employees will be most likely to align themselves with the organisational ethos, actively developing firm-specific skills and knowledge, enthusiastically contributing to improved organisational methods, eagerly promoting innovation and willingly remaining with the organisation longer (Beer et al., 1984; Walton, 1985; 1987; Kochan and Osterman, 1995). Thus, OC is considered an important indicator of work-related attitudes and employee behaviour (Qaio et al., 2009; Thoresen, Kaplan, Barsky, Warren and de Chermont, 2003).

In general terms, organisational commitment may be described as the level of attachment an employee feels towards his/her employing organisation (Bartlett, 2001). Porter, Steers, Mowday, and Boulian (1974) have suggested that organisational commitment is the individual's identification with the organisation's goals and values, their readiness to exercise effort for the organisation, and their desire to remain in the organisation. For Mowday, Steers and Porter (1979, p. 27) it represents 'the relative strength of individuals' identification with and involvement in a particular organisation'. In the words of Kalleberg and Berg (1987) organisational commitment is an employees' identification with the goals and values of its employer, leading to their willingness to exert effort on its behalf. Meyer and Allen (1991, p. 67) define it as 'a psychological state that characterises the employees' relationship with the organisation and has implications for the decision to continue or discontinue membership in the organisation'.

Organisational commitment is seen to be multi-dimensional, with three core components, namely affective, continuance and normative commitment (Meyer and Allen, 1984; 1997; 1991; Bartlett, 2001; Bryson and White, 2008; Gould-Williams and Davies, 2005). According to Meyer and Allen (1991), it is important to distinguish between the three components of organisational commitment because they reflect different emotional states and give differing rationales for employees to stay with their organisations. Together, the three components portray a holistic picture of the reason employees remain with the organisation. Affective commitment refers to the psychological attachment that an employee feels with the employing organisation – the psychological reason an employee wants to stay. Continuance commitment refers to the aspiration of the employee to remain with the organisation in relation to the costs of leaving the organisation – the reason an employee needs to stay. Normative commitment reflects the employee's perceived obligation to remain in the organisation – the reason an employee's personal values compel/oblige them to stay on because they feel indebted to the organisation (Meyer and Allen, 1991).

Generally, research has more explicitly focused on affective commitment as a measure of organisational commitment (Bryson and White, 2008; Meyer and Allen, 1991; O'Reilly and Chatman, 1986). As affective commitment refers to 'an affective or emotional attachment to the organisation such that the strongly committed individual identifies with, is involved in, and enjoys membership in the organisation' (Allen and Meyer, 1990, p. 2), it is believed that this component depicts wilful attachment of the employee to the organisation without any compulsion or ulterior motive. Meyer, Stanley, Herscovitch and Topolnytsky (2002) also argue that work experiences are

most strongly related to affective commitment than to either continuance or normative commitment.

The theory of HPW posits that organisations that adopt HR practices and treat employees as valuable resources rather than commodities to be bought and sold will nurture higher levels of affective commitment (Mendelson, Turner and Barling, 2011). According to Ogilvie (1986), this emotional attachment (i.e. affective commitment) is predicted by how positively employees perceive the organisation's human resources practices.

Social exchange theory (Blau, 1964) provides a lens to decipher this reciprocal relationship. It is argued that high performance organisations select and recruit employees with organisationally-aligned values. The recruited employees are then further trained to correspond to the required skills in the organisation, given enough opportunities to exercise these skills and innovate as required. In this way, employees are involved in prospects to develop and implement the HR and other work-related policies. Meyer and Herscovitch (2001, p. 323) argue that 'allowing members to participate in the development and implementation of policy is likely to create affective commitment'. Employees are seen to respond with a higher level of commitment to and identification with their organisation.

The rationale for a positive relationship between HP-HR and organisational commitment is provided by Messersmith et al. (2011). According to the authors, a reciprocity relationship, based on social exchange theory (Blau, 1964), guides this relationship in which employees are simply showing gratitude to their organisation for providing them with training and skill enhancement, opportunities to contribute, sharing greater levels of information and better job security. Employees' stronger sense of commitment obliges them to offer higher levels of commitment and identification to the organisation (Messersmith et al., 2011).

2.5 High Performance HR and Employee Well-being: Conflicting Empirical Stances

One strand of the HRM literature supports the view that HP-HR practices facilitate higher levels of discretion and skills, thereby contributing to higher employee satisfaction and commitment, while simultaneously reducing employee stress/anxiety to improve organisational performance (Ramsay et al., 2000). In order to gain from the HPW initiatives, employees accept higher levels of responsibility, exert more discretionary 'effort' and identify more readily with the performance goals of the organisation (Hughes, 2008). This view is in line with motivational models, which

argue that the increased involvement in work facilitated by HPW allows employees to fulfil their own higher order needs, thus rendering a higher sense of well-being (Vandenberg et al., 1999). A similar rationale has been provided by Wood and de Menezes (2011) who argue that the consultative elements of HPWS enhance employees sense of value, worth, and security, which in turn contributes to their job satisfaction and well-being.

Studies in the US report significant positive effects on worker's well-being due to implementing HP-HR (Appelbaum et al., 2000; Bailey, Berg, and Sandy, 2001; Freeman and Kleiner, 2000; Freeman, Kleiner, and Ostroff, 2000). Similarly, a positive association between clusters of HPW practices and employee gains have been professed in terms of higher pay (Handel and Levine, 2006), improved quality of work (Kalmi and Kauhanen, 2008), higher autonomy (Harley et al., 2007) and positive psychological effects (Guest, 2007; Tietze and Nadin, 2011).

As opposed to the positive effects thesis, a rather critical stance on the adoption of HP-HR practices by organisations relates to a systematic exploitation of employees (Delbridge and Turnbull, 1992), and a source of increased management and peer surveillance and monitoring (Bauer, 2004; Barker, 1993; Sewell and Wilkinson, 1992; Stewart et al., 2009; Lewchuk and Robertson, 1997; Delbridge, 1998; Danford, 1999; White et al., 2003) – all of which lead to an intensification of work process rather than discretionary effort and betterment. This infers that the proclaimed positive impetus of HPWS on organisational level performance is in fact due to work intensification (Ramsay et al., 2000) and not greater discretionary effort (Appelbaum et al., 2000), enhanced trust in management (Innocenti et al., 2011), or higher job satisfaction (Wood and de Menezes, 2011). Thus, workers under the HPW rubric end up being worse off – they forego job-related control, face a direct threat of job losses, subordinate their interests to those of the organisation and work harder, facing high pressure at work (Hughes, 2008; Peccei, 2004; Parker and Slaughter, 1988).

At the ideological level, proponents of the critical view proclaim that the HPW paradigm acts like a smoke screen to conceal the truth about the exploitative nature of HRM from workers (Guest, 2002; Legge, 1995). HPW regimes are seen to make the exploitation of workers less discernible by manipulating organisational culture to the advantage of employers (Keenoy, 1997; Legge, 1995), and, thus, more palatable in the name of greater employee involvement and empowerment (Peccei, 2004; Marchington and Grugulis, 2000; Keenoy, 1997; Willmott, 1993). In addition, the criticism raised by Guest (2002) and other British writers, such as Legge (1995) and Keenoy (1997), is that

even though the HPW paradigm is theoretically based on a 'high road' ideology, it is often largely a pretence. The reality is systematic labour relegation rather than worker 'empowerment'.

Theoretical and empirical studies relating to critical accounts of HP-HR on employees provide evidence supporting one side or other of the mutual gains debate. A few empirical studies support negative effects in the form of longer working hours, stress and perceptions of job insecurity (Berg and Frost, 2005; Godard, 2004; 2001), while others show a combination of positive and negative associations. For instance, Ramsay et al. (2000) show a combination of positive and negative associations between three measures of HRM systems and variety of employee motivational outcomes. Furthermore, some argue in favour of an overall insignificant relationship between HP-HR and employee outcomes, proclaiming the HP-HR as a mere 'window dressing' (Harley et al., 2010; Harley, 2002).

2.5.1 Evaluation of Empirical Literature on High Performance HR and Employee Well-being

The effects of the adoption of the HPW practices have been noted for a number of employee outcomes, such as job satisfaction, organisational commitment, stress, anxiety and, more recently, trust in management and citizenship behaviour (Paré and Tremblay, 2007; Sun et al., 2007). The majority of studies report a positive and significant association between HP-HR practices and various measures of employee well-being (Boxall and Macky, 2014; García-Chas et al., 2014; Zhang and Morris, 2014; Mostafa and Gould-Williams, 2014; White and Bryson, 2013; Ogbonnaya, Daniels, Connolly and Van Veldhoven, 2013; Jiang et al., 2012; Wood et al., 2012; Innocenti et al., 2011; Messersmith et al., 2011; Boon, Hartog, Boselie and Paauwe, 2011; Harley et al., 2010; Kaya et al., 2010; Wei, Han and Hsu, 2010; Katou and Budhwar, 2010; Wu and Chaturvedi, 2009; Macky and Boxall, 2008; Mohr and Zoghi, 2008; Danford et al., 2008; Appelbaum et al., 2000). However, other studies report that HP-HR practices have reducing effects on various measures of employee well-being (Ramdania, Mellahib, Guermatc and Kechad, 2014; Jensen, Patel and Messersmith, 2013; Heffernan and Dundon, 2012; Wood et al., 2012; White and Bryson, 2011; Wood and de Menezes, 2011; De Joy, Wilson, Vandenberg, McGrath-Higgins and Griffin-Blake, 2010; Akdere, 2009; Brown, Forde, Spencer and Charlwood, 2008; Danford et al., 2008; Nishii et al., 2008; Guest and Conway, 2007; Gould-Williams, 2004; Askenazy, Vincent and Caroli, 2002; Godard, 2001; Ramsay et al., 2000).

Though the majority of studies are cross-sectional in nature, a few employ a longitudinal research design (De Joy et al., 2010; Brown et al., 2008; Mohr and Zoghi, 2008). Others conduct a multi-level analysis (Den Hartog, Boon, Verburg, and Croon, 2013; Heffernan and Dundon, 2012; Wei et al., 2010; Zatzick and Iverson, 2010; Akdere, 2009; Takeuchi, Chen and Lepak, 2009; Wu and Chaturvedi, 2009; Whitener, 2001), and some employ meta-analytic techniques (Jiang et al., 2012; Kooij, Jensen, Dikkers and De Lange, 2010).

Employee well-being is seen to be a multi-dimensional concept, reflecting an individual's state of well-being in a number of ways. Accordingly, a majority of studies examine the impact of HP-HR practices on different dimensions of employee well-being. For instance, a number have examined the effects of high performance HR practices on stress, anxiety, burnout and emotional exhaustion in employees (Ogbonnaya et al., 2013; Wood et al., 2012; Harley et al., 2010; Macky and Boxall, 2008; Mohr and Zoghi, 2008; Danford et al., 2008; Vanhala and Tuomi, 2006; Peccei, 2004; Godard, 2001; Appelbaum et al., 2000), see Appendix A, Table A-1. Others evaluate the nature of the association between HP-HR practices and both job satisfaction and organisational commitment (García-Chas et al., 2014; Mostafa and Gould-Williams, 2014; Zhang and Morris, 2014; Den Hartog et al., 2013; Ogbonnaya et al., 2013; Jiang et al., 2012; Mendelson et al., 2011; Messersmith et al., 2011; Zhang et al., 2013; White and Bryson, 2013; 2011; Zatzick and Iverson, 2011; Katou and Budhwar, 2010; Kaya et al., 2010; Kooij et al., 2010; Boon et al., 2011; Innocenti et al., 2011; Wei et al., 2010; Takeuchi et al., 2009; Wu and Chaturvedi, 2009; Brown et al., 2008; Nishii et al., 2008; Guest and Conway, 2007; Khilji and Wang, 2006; Peccei, 2004; Allen, Shore and Griffeth, 2003; Guest, 2002), and between HP-HR practices and organisational commitment (Ramdania et al., 2014; Scheible and Bastos, 2013; Heffernan and Dundon, 2012; Qiao et al., 2009; Bryson and White, 2008; Wright, Gardner, Moynihan and Allen, 2005; Riordan, Vandenberg and Richardson, 2005; Gould-Williams, 2004; 2003; Ahmed and Schroeder, 2003; Wright et al., 2003; Paul and Anantharaman, 2003; Park, Mitsuhashi, Fey and Bjorkman, 2003), see Appendix A, Tables A-2 and A-3.

A number of studies support the positive-sum view that HP-HR practices promote employee well-being by reducing work-related stress (Sattar, Ahmad and Hassan, 2015; Ogbonnaya et al., 2013; Wood et al., 2012; Danford et al., 2008; Vanhala et al., 2006; Peccei, 2004), and increasing job satisfaction and/or organisational commitment (Mostafa and Gould-Williams, 2014; Zhang and Morris, 2014; Ramdania et al., 2014; Scheible and Bastos, 2013; Ang, Bartram, McNeil, Leggat and Stanton, 2013; Den Hartog et al., 2013; White and Bryson, 2013; Jiang et al., 2012; Boon et al.,

2011; Innocenti et al., 2011; Mendelson et al., 2011; Messersmith et al., 2011; Wood and de Menezes, 2011; Kaya et al., 2010; Katou and Budhwar, 2010; Kooij et al., 2010; Akdere, 2009; Wu and Chaturvedi, 2009; Takeuchi et al., 2009; Brown et al., 2008; Harley and Sargent, 2007; Macky and Boxall, 2007; Rose and Wright, 2005; Orlitzky and Frenkel, 2005; Bauer, 2004; Barling, Kelloway and Iverson, 2003; Guest and Peccei, 2001).

These studies explain the positive-sum gains for employees by drawing on the tenets of high performance working. For instance, it is argued that high performance work approach allows employees to increase their level of participation in work-related affairs and make their jobs intrinsically more rewarding. Increased involvement in work-related decisions gives workers greater control over their work, which ultimately leads to a reduction in perceived job stress (Mackie et al., 2001). Similarly, it is argued that increased involvement in work promotes self-worth, better working relations and trust between employees and their supervisors, which leads to enhanced employee outcomes (Wood et al., 2012; Appelbaum et al., 2000). A large body of literature also supports the view that elements of HPWS based on the ideology of Hackman and Oldham's Job Characteristics Model (JCM) improve the level of job satisfaction amongst employees (Mohr and Zoghi, 2008; Macky and Boxall, 2007; Harley, 2002). For example, skill development and employee participation have been argued to improve job satisfaction (Boxall and Macky, 2009).

Similarly, it is also argued that HPWS empower employees to make their own work-related decisions (Lawler, 1986). Empowered employees are more involved in their jobs and involved employees are more satisfied because they use their insights to improve their job satisfaction. In this respect, opportunities to work flexibly incorporating both work and non-work commitments and the ability to air concerns or discontentment in the job further the sense of contentment. This shows that autonomy to balance dual work roles and having a voice in the workplace is a significant predictor of job satisfaction. Similarly, satisfaction may also be derived from learning on the job, problem-solving opportunities, team cooperation, training to enhance skills and knowledge or doing a good job. All of these relationships imply that jobs with a high degree of employee involvement increase satisfaction (Mohr and Zoghi, 2008). Guest (2004; 1999) has also argued that obtaining more career-related feedback from supervisors and co-workers adds to the satisfaction level of employees.

HP-HR practices such as information sharing, intensive training to develop skills, linking pay and bonuses to performance and/or performance appraisals, internal promotions and promotions based upon merit are expected to enhance organisational commitment (Heffernan and Dundon, 2012; Messersmith et al., 2011; Qaio et al., 2009). It is argued that HP-HR is based on the principles of investment and developmental opportunities to employees beyond those in direct economic or transactional terms. This non-transactional nature of the employment relationship gives employees a feeling of worth and security. Consequently, employees identify more with, and develop more commitment towards their organisations (Wu and Chaturvedi, 2009). Furthermore, high levels of affective commitment may simply be based on employees' perceptions that the organisation is committed to caring about their well-being (Eisenberger, Fasolo and Davis-LaMastro, 1990). This positive perception instils strong belief in and acceptance of their organisation's values, objectives, and goals (Mowday et al., 1979).

A substantial number of studies, on the other hand, provide support for the negative or zero-sum gains by providing contradictory evidence, indicating an increase in job-related anxiety and stress (Jensen et al., 2013; De Joy et al., 2010; Mohr and Zoghi, 2008; Guest and Conway, 2007; Green, 2006; Robinson and Smallman, 2006; Truss, 2001), reduction in job satisfaction and/or organisational commitment of the individuals as a result of implementing high performance HR regimes (Heffernan and Dundon, 2012; White and Bryson, 2011; 2008; Nishii et al., 2008; Guest and Conway, 2007; Gould-Williams, 2004; Godard, 2001; Ramsay et al., 2000), or an insignificant association between different components of a set of HP-HR practices and measures of employee well-being (Wood et al., 2012; Wood and de Menezes, 2011). A small number of studies further provide contradictory evidence by reporting trade-offs in relation to the measures of well-being. For instance, Wood et al. (2012) highlighted that HR practices that increase involvement of employees in the work process reduce both their level of work-related anxiety and job satisfaction, whereas HR practices that are based on the principles of job enlargement/design improve the level of job satisfaction of employees, but have no significant effect on their job-related anxiety. Wood and de Menezes (2011) suggest that HPWS increases employee anxiety, but is not related to job satisfaction. Vanhala and Tuomi (2006) show that HR practices representing employee development are not only negatively related to emotional exhaustion, but also to employees' general satisfaction. Danford et al. (2008) report that fair treatment has a positive impact on job satisfaction, but a negative impact on organisational commitment.

Although there is empirical support for both sides of the debate, the dominant part of the literature supports that HP-HR practices are beneficial for employees. Based upon the majority of the evidence that supports the view that HP-HR practices, individually, in different configuration or as an overall system, influence employee well-being positively, the following can be hypothesised:

Hypothesis 1: HP-HR practices have a positive and significant association with employee well-being.

Nevertheless, the mounting number of contradictory evidence suggesting reducing effects of HP-HR practices on employee well-being cannot be ignored. Academics have attributed the methodological and contextual differences as a significant source of the contradictory evidence in the high performance literature (Hesketh and Fleetwood, 2008; Wall and Wood, 2005). A closer inspection of the studies examining the association between HP-HR practices and various measures of employee well-being also highlighted varying nature of contextual and methodological difference amongst the studies. Therefore, the contradictory evidence can be attributed to differences in the contextual and methodological aspects of these studies, and, thus, provide a useful basis to further examine these relationships.

2.5.1.1 High Performance HR and Employee Well-being Studies: Methodological Differences

2.5.1.1.1 Measurement of High Performance HR Practices: Sets vs. Individual Practices

A majority of studies examined the effects of a coherent set of HP-HR practices, grouped as an index or a system, on stress-related outcomes (Van De Voorde and Beijer, 2015; Jensen et al., 2013; Wood et al., 2012; Wood and de Menezes, 2011; Vanhala, von Bonsdorff, and Janhonen, 2009; Vanhala and Tuomi, 2006; Orlitzky and Frenkel, 2005; Appelbaum et al., 2000). Other studies examined the effects of individual HP-HR practices that comprise the high performance work system on stress-related outcomes (Harley et al., 2010; Mohr and Zoghi, 2008; Peccei, 2004; Harley, 2002; Godard, 2001). The studies concluded that the various components of the HP-HR practices individually or as a system have mixed effects on stress/anxiety. For example, Jensen et al. (2013) report that HPWS perceptions in employees lead to job-related anxiety. A similar positive association is observed between HPWS and anxiety in other studies (Wood and de Menezes, 2011; de Joy et al., 2010; Guest and Conway, 2007; Ramsay et al., 2000). Similar results of an increase in job-related anxiety are also reported in studies that measured the effect of individual HP-HR

practices on anxiety/stress-related outcomes (Topcic, Baum and Kabst, 2016; Danford et al., 2008; Guest and Conway, 2007; Godard, 2001). On the other hand, a similar dichotomy can be observed in studies that report a negative association between HP-HR and job-related anxiety/stress. For instance, in some studies a coherent set of HP-HR practices/HPWS has been associated with reduced job-related anxiety (Van De Voorde and Beijer, 2015; Ogbonnaya, et al., 2013; Wood et al., 2012; Wood and de Menezes, 2011; Vanhala et al., 2009), while in others individual HP-HR practices have been reported to reduce the level of job-related anxiety/stress (Harley et al., 2010; Macky and Boxall, 2008; Mohr and Zoghi, 2008; Peccei, 2004; Appelbaum et al., 2000). This implies that the way HP-HR are measured may not have contributed substantially to the conflicting associations estimated between HP-HR practices and stress-related outcomes.

Positive results of increased job satisfaction and organisational commitment are generally reported amongst the studies that measured high performance HR practices as a coherent set of HP-HR practices. For instance, Macky and Boxall (2008) report that sets of HPW practices incorporating principles of Lawler's (1986) 'power, information, rewards and knowledge' (PIRK) model show positive relationship with job satisfaction. Ang et al. (2013) associate employee perceived HPWS to affective commitment. Meyer and Herscovitch (2001) suggest that the HPW process nurtures affective commitment. Similar results of a positive association between coherent sets of HP-HR practices/HPWS and both job satisfaction and/or organisational commitment have been reported in other studies (Boxall, Hutchinson and Wassenaar, 2015; Sattar et al., 2015; Van De Voorde and Beijer, 2015; Den Hartog et al., 2013; García-Chas et al., 2014; Mostafa and Gould-Williams, 2014; Zhang and Morris, 2014; Zhang et al., 2013; Jiang et al., 2012; Mendelson and Turner, 2011; Messersmith et al., 2011; Zatzick and Iverson, 2011; Boon et al., 2010; De Joy et al., 2010; Park et al., 2010; Qiao et al., 2009; Takeuchi et al., 2009; Wu and Chaturvedi, 2009; Macky and Boxall, 2007; Katou and Budhwar, 2006; Bauer, 2004; Wright et al., 2003). However, a few studies also highlight contradictory evidence in relation to the effects of system/sets of HP-HR practices on job satisfaction and organisational commitment. For instance, Innocenti et al. (2011) generally report a positive impact of HRM practices, ability-enhancing and motivation-enhancing bundles on employee attitudes (job satisfaction and organisational commitment), but a negative impact of an opportunity-enhancing bundle on job satisfaction and organisational commitment. Similarly, Guest and Conway (2007) show that sets of practices that constitute an opportunity-enhancing bundle have a positive perception with employment relations and organisational commitment, and practices that make-up the commitment-enhancing bundle have a negative association with job satisfaction and organisational commitment. Few studies provide contradictory evidence based on

the intensity of usage or adoption level of HP-HR practices. For instance, White and Bryson (2013) relate higher intensity of usage of HP-HR to higher job satisfaction and organisational commitment. Contrarily, Godard (2001) associates higher adoption of alternative work practices (AWP) to lower job satisfaction and Heffernan and Dundon (2012) report that both high and low levels of HPWS have a negative association with both job satisfaction and organisational commitment.

Those studies that examine the effects of individual high performance HR practices tend to show greater variation in results illustrating varying effects of various HR practices on job satisfaction. For instance, Gould-Williams (2004) highlighted that out of the ten practices examined only three (training, employee' relationship with their supervisors and empowerment) had a positive association with job satisfaction. Riordan et al. (2005) reported that only two (participative decision making and information sharing), out of five HR practices examined, positively related to job satisfaction. Peccei (2004) associated only eighteen out of the thirty three HR practices examined with increased composite well-being (job satisfaction), while eleven had a negative association and four had no association with well-being (job satisfaction). Godard (2001) reported that team working, multi-skilling, job rotation and information sharing are positively related to job satisfaction, whereas just-in-time practices and team autonomy are negatively related to job satisfaction. Green and Whitfield (2009) show that employee experiences of high involvement practices varies according to the HR practice in question. For instance, quality circles relate to negative employee experiences, while briefing groups generate positive employee experiences.

A similar trend of varied results is seen for the effects of individual HP-HR practices on organisational commitment. For instance, Boselie (2010) showed that only three (skills training, general training and coaching) out of six HR practices examined increased commitment levels of employees. Gould-Williams and Gatenby (2010) related performance-related rewards schemes, training and development and performance appraisal to higher organisational commitment. Cantarello, Filippini and Nosella (2012) associated multi-task training, team-working and integration with increased commitment, while job rotation with reduced commitment. Gould-Williams (2004) positively associated six (training, team-working, involvement in decision making, inter-personal relationships between peers and interpersonal relationships between workers and supervisors) out of the ten HR practices examined with organisational commitment, whereas reduced status and communication had significant negative effects on commitment. Generally, recruitment, training and compensation aspects of HP-HR have been shown to influence

employee commitment positively (Buchko, 1992). Contrarily, Su, Baird and Blair (2013) showed that both the HR practices examined (training and pay for performance) had no significant effect on employee affective commitment. Godard (2001) reported that moderate adoption of alternate work practices (AWP) positively related to organisational commitment, while high adoption of AWP had an insignificant effect on organisational commitment.

Overall, the association between HP-HR practices and both job satisfaction and organisational commitment showed mixed results, highlighting both positive and negative relationships. Positive effects of the HP-HR practices on job satisfaction and organisational commitment are, generally, noted when HP-HR practices is seen as a coherent system. In comparison, more variations in the results are observed when individual effects of the HP-HR practices or effects of sub-components of HR practices are examined. This tendency suggests that there may be a case for exploring the individual effects of sets of practices on employee outcomes.

2.5.1.1.2 Research Design: Cross-sectional vs. Longitudinal, Meta-analysis and Multi-level Analysis

Using research design as a distinguishing criterion also highlighted notable trends in studies examining the relationship between HP-HR practices and job-related anxiety/stress, job satisfaction and organisational commitment. A majority of the studies investigating the relationship between HP-HR and employee outcomes of interest rely on cross-sectional analysis (Boxall et al., 2015; Ang et al., 2013; Den Hartog et al., 2013; Zhang et al., 2013; Harley et al., 2010; Kaya et al., 2010; Qaio et al., 2009). Cross-sectional studies report mixed results on the association between HP-HR practices and stress-related outcomes, whereas longitudinal studies report a positive association between HP-HR practices and job-stress (De Joy et al., 2010; Mohr and Zoghi, 2008; Truss, 2001).

A few studies investigating the relationship between HP-HR practices and job satisfaction (Brown et al., 2008; Mohr and Zoghi, 2008) and between HP-HR and both job satisfaction and organisational commitment (De Joy et al., 2010) also employ a longitudinal design. Others used meta-analytic techniques (Jiang et al., 2012; Kooij et al., 2010), to examine the effects of HP-HR on both job satisfaction and organisational commitment, and others used multi-level analysis to study the association between HP-HR and job satisfaction (Zatzick and Iverson, 2011; Akdere, 2009) and between HP-HR and both job satisfaction and organisational commitment (Heffernan and Dundon, 2012; Takeuchi et al., 2009; Wu and Chaturvedi, 2009). The results of the cross-

sectional analyses report mixed results, illustrating both increased and decreased levels of job satisfaction and organisational commitment. In comparison, the results of all of the longitudinal analyses generally highlight increasing levels of job satisfaction and commitment. Similarly, both the studies based on meta-analysis reported positive associations between HP-HR and both job satisfaction and organisational commitment. Similarly, Meyer et al's. (2002) meta-analysis findings generally support the expected positive impacts of HP-HR practices on affective commitment. Similar results of improved job satisfaction were obtained from studies based on multilevel analysis, except for Heffernan and Dundon (2012), which reported a negative association between HPWS and both job satisfaction and organisational commitment.

2.5.1.1.3 Sample Size: Large vs. Medium and Small Sample

Studies that investigate the association of HP-HR practices on employee outcomes are based on samples that range from over one hundred to thousands. This variation in sample size could be the reason of variations in findings, as the smaller samples may suffer from selectivity bias. However, a closer examination of these studies indicates that the differences in findings may not be due to sample size variations. Specifically, sample size does not seem to be a contributing factor in determining the effect that the HP-HR practices have on job-related anxiety, stress or emotional exhaustion. Studies based on both large representative survey samples (Ogbonnaya et al., 2013; Jensen et al., 2013; Wood et al., 2012; Wood and de Menezes, 2011; Mohr and Zoghi, 2008; Guest and Conway, 2007; Robinson and Smallman, 2006; Orlitzky and Frenkel, 2005; Peccei, 2004; Ramsay et al., 2000) and small to medium sample size (Danford et al., 2008; Vanhala and Tuomi, 2006; Vanhala et al., 2004; Godard, 2001) equally report both negative and positive effects of HP-HR on job-related anxiety and stress-related outcomes.

Similarly, the majority of studies using large representative surveys report both positive and negative association between the HP-HR practices and job satisfaction. For instance, studies based on representative surveys (Orlitzky and Frenkel, 2005; Bauer, 2004; Barling et al., 2003; Guest, 1999) including the Workplace Employment Relations Survey (WERS) 2004 and 1998 generally suggest an increase in job satisfaction levels (Ogbonnaya et al., 2013; Wood et al., 2012; White and Bryson, 2013; 2011; Wood and de Menezes, 2011; Guest and Conway, 2007; Brown et al., 2008; Peccei, 2004; Ramsay et al., 2000). Nevertheless, using the same sample of WERS 2004, many studies have reported negative associations between the HP-HR practices and job satisfaction (Ogbonnaya et al., 2013; Wood et al., 2012; White and Bryson, 2011; Brown et al., 2008). For instance, White and Bryson (2011) examined the effects of HRM on workplace motivation

(intrinsic job satisfaction and organisational commitment). The authors report that intensive team working is negatively related to intrinsic job satisfaction. Guest and Conway (2007) highlight that at the individual level fringe benefits are negatively related to job satisfaction, and in terms of bundles, commitment-enhancing bundle negatively impacts employment relations. Other studies, using relatively smaller samples, arrive at similar dichotomy of results showing positive (García-Chas et al., 2013; Mostafa and Gould-Williams, 2013; Zhang and Morris, 2013; Zhang et al., 2013; Zatzick and Iverson, 2011; Boon et al., 2011; Katou and Budhwar, 2010; Harley et al., 2010; Khilji and Wang, 2006) and negative associations (Innocenti et al., 2011; Vanhala and Tuomi, 2006; Godard, 2001).

The variations in the results of the association between HP-HR practices and organisational commitment do not seem to be motivated by sample size. Studies based on both large representative survey samples (Ogbonnaya et al., 2013; White and Bryson, 2013; 2011; Guest and Conway, 2007; Orlitzky and Frenkel, 2005; Ramsay et al., 2000) and small to medium sample size (Su et al., 2013; Mukhtar, Sial, Imran and Jilani, 2012; Yang, 2012; Heffernan and Dundon, 2012; Boselie, 2010; Innocenti et al., 2011; Paré and Tremblay, 2007; Chew and Chan, 2008; Nishii et al., 2008; Gould-Williams, 2004; Godard, 2001) report both negative and positive effects of HP-HR on employees' levels of organisational commitment. On the whole, the existing empirical evidence suggests that there is a relatively greater tendency in the results to suggest a positive association between the HP-HR practices and both job satisfaction and organisational commitment, but sample size may not be a contributing factor for the variation in results.

2.5.1.2 High Performance HR and Employee Well-being Studies: Contextual Differences

2.5.1.2.1 Geographical Location: US versus UK and other Countries

Geographical location seems to be a contributing factor in the difference of effects that HP-HR practices are considered to have on stress-related outcomes, though a majority of studies conducted in the USA/Canada report a negative association between HP-HR practices and stress-related outcomes (Mohr and Zoghi, 2008; Bailey et al., 2001; Godard, 2001; Freeman and Kleiner, 2000; Freeman et al., 2000; Appelbaum et al., 2000). There is now an increasing evidence to support a negative association between the HP-HR practices and stress-related outcome in the UK (Ogbonnaya et al., 2013; Wood et al., 2012; Wood and de Menezes, 2011; Danford et al., 2008; Peccei, 2004), Europe (Vanhala and Tuomi, 2006; Vanhala et al., 2009), and South Pacific/Australia (Harley et al., 2010; Macky and Boxall, 2008; Orlitzky and Frenkel, 2005).

Nevertheless, a majority of studies that suggest a positive impact of HP-HR practices on employees' work-related anxiety and stress are also conducted in the UK (Jensen et al., 2013; Wood and de Menezes, 2011; Danford et al., 2008; Guest and Conway, 2007; Green, 2006; Robinson and Smallman, 2006; Truss, 2001; Ramsay et al., 2000), while relatively fewer studies from US/Canada (De Joy et al., 2010; Godard, 2001) and South Pacific/Australia (Macky and Boxall, 2008; Mohr and Zoghi, 2008) report higher job-related anxiety/stress-related outcomes as a consequence of high performance working.

The existing literature supporting the positive impact of high performance HR practices on employee outcomes does not seem to be context-specific in terms of geographical location. There is now increasing evidence to suggest that the studies that demonstrate a positive association between the HP-HR practices and job satisfaction originate from USA/Canada (Mendelson et al., 2011; Zatzick and Iverson, 2011; Akdere, 2009; Mohr and Zoghi, 2008; Allen et al., 2003; Appelbaum et al., 2000; Vandenberg et al., 1999), UK (Wood et al., 2012; Messersmith et al., 2011; Wood and de Menezes, 2011; Brown et al., 2008; Rose and Wright, 2005; Peccei, 2004; Gould-Williams, 2004; 2003; Guest and Conway, 2002; Guest, 1999), Europe (Boxall et al., 2015; García-Chas et al., 2013; Innocenti et al., 2011; Boon et al., 2011; Kaya et al., 2010; Katou and Budhwar, 2010; Vanhala et al., 2009; Bauer, 2004), Middle East (Mostafa and Gould-Williams, 2014), China/Far East (Zhang and Morris, 2013; Zhang et al., 2013; Wei et al., 2010; Takeuchi et al., 2009; Wu and Chaturvedi, 2009), and South Pacific/Australia (Harley et al., 2010; Macky and Boxall, 2008; Barling et al., 2003). In comparison, the studies that generally relate lower job satisfaction associated with HP-HR practices are predominantly conducted in the UK (Ogbonnaya et al., 2013; Wood et al., 2012; White and Bryson, 2011; Brown et al., 2008; Guest and Conway, 2007; Ramsay et al., 2000), and only a few from USA/Canada (Cappelli and Nuemark, 2001; Godard, 2001), and Europe (Heffernan and Dundon, 2012; Innocenti et al., 2011; Vanhala and Tuomi, 2006) establish a decrease in the levels of job satisfaction due to implementing high performance work practices.

Likewise, studies that suggest a positive association between the HP-HR practices and organisational commitment have been conducted in USA/Canada (Kehoe and Wright, 2013; Mendelson et al., 2011; Zatzick and Iverson, 2011; Vandenberg et al., 2009; Mohr and Zoghi, 2008; Paré and Tremblay, 2007; Riordan et al., 2005; Wright et al., 2005; Allen et al., 2003; Godard, 2001; Appelbaum et al., 2000), UK (Farndale, Hope-Hailey and Kelliher, 2011; Messersmith et al., 2011; White and Bryson, 2011; Gould-Williams and Gatenby, 2010; Brown et al., 2008; Bryson and

White, 2008; Rose and Wright, 2005; Peccei, 2004; Gould-Williams, 2004; 2003; Guest and Conway, 2002; Guest, 1999), Europe (Scheible and Bastos, 2013; Innocenti et al., 2011; Boon et al., 2011; Boselie, 2010; Kaya et al., 2010; Katou and Budhwar, 2010), Middle East (Ramdania et al., 2014), China/Far East (Zhang and Morris, 2013; Zhang et al., 2013; Wei et al., 2010; Takeuchi et al., 2009; Wu and Chaturvedi, 2009; Qiao et al., 2009; Park et al., 2003), India/Pakistan (Mukhtar et al., 2013; Paul and Anantharaman, 2003) and South Pacific/Australia (Ang et al., 2013; Sue et al., 2013; Harley et al., 2010; Chew and Chan, 2008; Macky and Boxall, 2007; Orlitzky and Frenkel, 2005). Studies that link HP-HR practices to lower commitments levels, generally, originate from the UK (Ogbonnaya et al., 2013; White and Bryson, 2013; 2011; 2008; Guest and Conway, 2007; Gould-Williams, 2004; Ramsay et al., 2000), and only a few form USA/Canada (Godard, 2001), and Europe (Heffernan and Dundon, 2012; Innocenti et al., 2011) suggest a decline in organisational commitment of employees due to high performance work practices. Overall, there seems to be an increase in the empirical support for the positive effects thesis from a number of countries. In comparison, a majority of studies that suggest a critical view on the association between HRM techniques and employee outcomes are, generally, based on UK and Europe.

To summarise, a review of the HRM literature indicates that the impact of the HP-HR practices on employee well-being is not a straightforward relationship as commonly assumed. Instead, it is anything but straightforward to elucidate. It seems that neither overly optimistic nor totally pessimistic depictions of the underlying relationship can properly accommodate the empirical evidence presented in recent research relating to this field. In fact, there is still a significant amount of contradictory evidence found in the literature ranging from positive to the negative to the insignificant association on HP-HR and employee well-being, which renders most academic explanations on the proposed linkages dubious. The exact character of this link, the route of influence, and whether a link exists at all, are some of the crucial concerns in this literature (Hughes, 2008; Grants and Shield, 2002). It may be argued that a number of differences may be due to the research design, variable measurement criteria and sample population (Wall and Wood, 2005). However, on several accounts, these differences have not proven to sufficiently account for the differentiating outcomes.

2.6 Shortcomings of the HRM Models - Theoretical and Empirical Gaps

2.6.1 Lack of Theory to Elucidate the Complexities of the Association between High Performance HR and Employee Well-being

The so-called high performance work paradigm has been criticised for not explicating how it achieves its intended purpose of higher performance, while being beneficial to the employees. The main thrust of the criticism is that there is a lack of a robust theoretical framework underpinning empirical investigations. Academic researchers (particularly quantitative researchers) have not acted consistently at the level of theorising and the theory presented is confused (Legge, 2005; Hesketh and Fleetwood, 2006). It is argued that the conceptual link established is 'statistical association in, and of itself, constitutes neither a theory nor an explanation' (Hesketh and Fleetwood, 2006, p. 678).

Echoing these concerns some scholars have tried to provide some theoretical underpinning as to why high performance practices may bring positive outcomes. In line with the Resource-Based View (RBV), it has been argued that high performance organisations invest in cultivating the human capital pool, because it is the human and social capital held by the workforce that constitutes the competitive advantage for that organisation (Guest, 1999). The investment in human capitals' knowledge, skills and abilities (KSAs) has a beneficial impact on employee motivation and well-being, and ultimately on firm performance. Human capital theory supports that when employees collectively use KSA's it turns into a win: win scenario for employee (i.e. positive attitudes and behaviours) and employer (in terms of organisational productivity) (Chi and Lin, 2011). However, this view in its core has been criticised for being management-led than employee-focused, and therefore, is seen to be limited in having sympathy for workers at heart.

The Ability-Motivation-Opportunity (AMO) model is another framework that has been used extensively to establish a conceptual link between HPWS and employee outcomes at the individual level (Knies and Leisink, 2014; Appelbaum et al., 2000). The AMO framework, although conceptually close to the RBV, is deemed to be more genuinely focused on employee outcomes. It has been argued that high performance working plays an important role in nurturing employees' skills and abilities, providing them with greater opportunities to exercise their improved skills and motivating them appropriately to exercise 'greater discretionary effort' (Boxall and Purcell, 2008). When management uses appropriate HRM practices, it positively influences employee outcomes (attitudes and behaviours), and these in turn positively influence organisational outcomes (Boselie, 2010).

Researchers have also regarded high performance HR practices as a prominent input and a source to establish a social exchange process in the workplace (Snape and Redman, 2010). Consequently, SET (Blau, 1964) has also been suggested as a framework to explain the linking mechanisms in high performance work systems. The uses of HP-HR practices are seen to signal to employees that the organisation values them and is serious about their development and well-being. Following the norms of reciprocity (Gouldner, 1960), employees respond with positive attitudes and behaviours, which ultimately benefits the organisation (Gould-Williams, and Davies, 2005). From another angle, it is argued that HP-HR impact is based on the principles of investment and developmental of the employees in non-transactional terms, which gives employees a feeling of worth and security. Consequently, employees reciprocate, showing commitment towards their organisations (Wu and Chaturvedi, 2009).

Other authors have endeavoured to theorise in terms of more complex conceptual arguments. For instance, Relational Theory has been suggested to explain a potential mechanism, where HPWS strengthen relationships among employees who perform different roles. The improved relational coordination at work is seen as a link between high-performance work practices and associated outcomes (Gittell, Seidner and Wimbush, 2009). In the light of Social Information Processing Theory (Salancik and Pfeffer, 1978) and organisational climate research, concern for employees' climate (Burke, Borucki, and Hurley, 1992) has also been argued to be an important social mechanism that explains how HPWS relate to employee attitudes (Takeuchi et al., 2009). The authors argue that in the globally shared organisational climate created by HPWS, employees' view that their organisations care about the success and well-being of its employees serves as a key mediating mechanism linking HRM systems to individual-level outcomes. Drawing on (HRM-specific) Attribution theory and Signalling theory, employees' attributions about management's purpose in implementing HR practices have also been associated with shaping individuals' perceptions about their well-being (Van de Voorde and Beijer, 2015; Nishii et al., 2008).

Others have used Role Conflict theory as a lens to explain theoretical connections in the high performance paradigm (Örtqvist and Wincent, 2006). It has been used to explain both negative and positive effects of high performance working. A negative mechanism suggests that the expanded job roles introduced in the high performance paradigm have made jobs conflicting, thereby having an overall reducing effect on individual level outcomes. Particularly, extensive consultation and team working aspects of HPWS generate role stress, role conflict and role ambiguity, which in turn causes role overload and leads to anxiety and stress (Danford et al., 2008;

Örtqvist and Wincent, 2006). Aspects of HPWS, such as the availability of flexible work practices (FWP), have been associated with reduced stress in employees because such practices help align employees' role conflict between work and non-work commitments. It is argued that employees who are encouraged to take up the provision of flexible working arrangements voluntarily are able to optimise their choice over the best option to align home and job responsibilities. Consequently, these individuals exert comparatively less extensive effort at work, face less work intensification and experience lower levels of stress, and higher happiness, contentment and calmness than their counterparts who do not work flexibly (Atkinson and Hall, 2011; Kelliher and Anderson, 2010).

Psychological contract fulfilment has also been suggested as a reason for employees to report greater satisfaction, job security and motivation - all of which ultimately translates into better organisational outcomes (Guest, 1999; 1998). Organisational Justice Theory has been taken as another route to explain the underlying links in the high performance paradigm (Heffernan and Dundon, 2012). Perceptions of a well-established system of justice and fairness in the workplace has been associated positively to individual level outcomes such as job satisfaction (Walker and Hamilton, 2011). Attempts at more comprehensive theorisation have attempted to establish a link with the demand-control theory (Karasek, 1989; 1979), and suggested that high performance practices are designed around the principles to delegate control and discretion to workers, which reduces their psychological strain and enables them to cope better with pressures of high performance working.

Despite the various theoretical viewpoints that have been used to explain the underlying mechanisms guiding the high performance paradigm, the view persists that this domain operates on loosely-defined and empirically-driven theory, and lacks a stronger theoretical underpinning. Further, it has been argued that any framework will only withstand theoretical scrutiny in the high performance work domain when it acknowledges the full range of participating actors in this field (Delbridge and Lowe, 1997).

2.6.2 Lack of Rigorous Empirical Evaluation of the Work Intensification Thesis

The relationship between HPWS and work intensification has gained considerable interest in the last two decades (Harley et al., 2010; Kroon et al., 2009; White et al., 2003). A high performance work system is seen to place greater job demands on employees in terms of their time and scope of work. Generally, job demands have been defined as any physical, psychological, organisational or social elements/conditions of the job that require continuous mental, psychological and/or

physical effort (cognitive and emotional) in order to fulfil the requirements of work (Panatik, O'Driscoll and Anderson, 2011; Bakker, Demerouti and Verbeke, 2004; Demerouti, Bakker, Nachreiner and Schaufeli, 2001). Job demands also connote work overload (Harvey et al., 2003), signifying those elements of work that potentially induce strain, when they exceed the employee's adaptive capability.

The independent effects of some HP-HR practices have been shown to be particularly salient to causing feelings of work intensification. For example, in situations where proper job discretion is lacking or where monetary benefits do not fully compensate for the effort involved, it is highly likely that feelings of work intensification may escalate (Bauer, 2004; Green, 2004; Macky and Boxall, 2008). This is because, theoretically, both autonomy and monetary compensation have a reducing rather than enhancing relationship with work intensification (Bakker and Demerouti, 2007; Macky and Boxall, 2007). When employees lack proper autonomy or do not have an adequate compensation policy, the practices may have little or no effect on their perceptions of work intensification.

Academic studies suggest that, when high performance work regimes are implemented without due consideration to employee interests, work pressures rise (Guest, 2007). Marchington and Wilkinson (2005) show that HR practices that promote employees' opportunity to participate bring about higher job stress. Generally, it is argued that, for instance, practices based on employee involvement compel employees to take on more responsibility and extra roles. A few adherents of the positive-gains view suggest that increased job roles and involvement in the work process are appreciated by employees as a way to fulfil their own higher order needs. Others argue that, it is often not the case, especially when involvement comes at the expense of employees' non-work commitments (i.e. care for children or elders) (Vandenberg et al., 1999). In such a situation, practices based on involvement are considered as work stressors (i.e. demands of work), and efforts to fulfil these demands are no longer considered discretionary, but rather as mandatory and expected (Jiang et al., 2012; Evans and Davis, 2005; Parker and Slaughter, 1988).

Another conflicting view exists on employee participation in decision-making, which is an essential HPW initiative. For many, employee participation in decision-making symbolises a lack of workplace formalisation and structure, which is seen to herald a lack of role clarity, which in itself, is a substantial source of role ambiguity and role overload (Bainbridge, 1998). This phenomenon is argued to be much more apparent in the presence of unions. As such, employee representation

through union platforms is believed to add additional burdens on employees because it lowers power distance and reduces hierarchical structures between employees and management (Bainbridge, 1998; Hyman and Mason, 1995). Thus, involvement and participation under such circumstances are tantamount to higher role stress, conflict and overload rather than beneficial employee outcomes.

HR practices that increase employees' opportunity to participate are seen to reflect a similar dichotomy of stances, i.e. as a source of work intensification and overload, and a form of delegation and power. Proponents of the positive-sum gains approach believe that self-managed teams are introduced to give employees power to decide, maintain harmony and reduce conflict within their teams. Team autonomy has been associated with higher organisational commitment (von Bonsdorff, Janhonen, Zhou and Vanhala, 2015). Contrarily, a more critical stance posits that teams are introduced to gain 'more insidious forms of control' (Marchington and Grugulis, 2000, p. 1105-1106), and are used to camouflage and strengthen management control. Team-working is seen to put employees under tight scrutiny, which ultimately results in intensifying the work process (Kalmi and Kauhanen, 2008; Bauer, 2004; Marchington and Grugulis, 2000). Barker (1993) endorses this viewpoint by suggesting that the positive effects of team-working may be reversed simply due to the inherent likelihood of peer surveillance within the team.

In a similar vein, performance management initiatives are seen to be associated with intensifying the work process, and creating extra work demands, which ultimately results in an overall reduction of well-being. Performance appraisal, a prominent high performance management technique, is believed to be a significant source of workplace stress and reduced well-being (Vaishnav, Khakifirooz and Devos, 2006; Brown and Benson, 2005; Green, 2001). One strand of the HRM literature supports that the performance appraisal system, when incorporated, signifies a positive, fair and equitable work environment which compensates employees objectively, and provides a positive impetus to their working experience. However, an opposite argument is given for performance appraisal to be a façade for managerial prerogatives, the main function of which is to put employees under the direct control of management pressure to work harder (Brown and Benson, 2005). The authors argue that by making rewards, promotions and other job-related perks contingent upon the performance appraisal outcome, management compels employees into expending more work effort to reap the associated rewards. Consequently, performance measurement objectives serve as the antecedents of work intensification and work pressures.

A similar negative underlying relationship is assumed between contingent rewards and employee outcomes (White et al., 2003; Gallie et al., 1998). It is argued that organisations devolve more responsibility to employees when they introduce monetary and non-monetary contingent rewards. White et al. (2003) show that employees are made to work harder in order to get the rewards, which exposes them to higher work pressures, strain and stress. This relationship is believed to be stronger when employees perceive that the associated rewards do not compensate for the effort expended. Effort Reward Imbalance (ERI) theory is used to explain this relationship. ERI theory postulates that when employees perceive a mismatch between the compensatory rewards and their efforts, they may lose their motivation to continue exerting more effort, evaluate the overall work scenario as negative, and develop negative attitudes towards the organisation and their fellow colleagues (Siegrist, Starke, Chandola, Godin, Marmot, Niedhammer and Peter, 2004; Bakker and Demerouti, 2007).

In sum, some adherents of the mutual gains perspective acknowledge that the high performance approach enlarges the work role and responsibilities of the individuals concerned (Macky and Boxall, 2008). However, in their view, the increased job pressures are a healthy source of managerial development, and a good opportunity to fulfil the higher order needs of the individuals. In stressful circumstances, employees learn to cope and deal with difficult circumstances, by putting more discretionary effort into their jobs. Consequently, they devise strategies to successfully meet the demands of work, and, thus, remain committed to their organisation (Dweck, 1999; Ohlott et al., 1994). Contrarily, for the critical scholars, high performance workplaces proclaim a managerial control strategy that emphasises employee benefits as a means to gain employee 'compliance' with work intensification, job insecurity, ambiguity and stress Harley (1995, cited in Ramsay et al., 2000).

The conflicting conceptual stances on the underlying principles that govern the high performance paradigm call for a rigorous examination of the intensification thesis (Guest, 1999). The existing HRM literature highlights key tensions between the two conflicting strands of theorising underpinning contemporary debates on the possible impact of HP-HR practices on extra work-demands. The association between high performance working and perceptions of job demands have been long established theoretically. However, the empirical evidence to support this direct relationship is relatively less explored, as to date very few empirical studies have investigated this relationship (Jensen et al., 2013; Ogbonnaya et al., 2013; Ehrnrooth and Björkman, 2012; Heffernan and Dundon, 2012; De Joy et al., 2010; Kaya et al., 2010; Kroon et al., 2009; Kalmi and

Kauhanen, 2008; Macky and Boxall, 2008; Orlitzky and Frenkel, 2005; Ramsay et al., 2000; Guest, 1999; see Appendix B, Table B-1). The findings of these studies suggest that HP-HP practices individually (Ogbonnaya et al., 2013; Kaya et al., 2010; Kalmi and Kauhanen, 2008), or as a system/index of HP-HR practices (Ogbonnaya et al., 2013; Jensen et al., 2013; Heffernan and Dundon, 2012; De Joy et al., 2010; Kroon et al., 2010; Orlitzky and Frenkel, 2005; Ramsay et al., 2000; Guest, 1999) have a positive association with work demands. Nevertheless, Ramsay et al. (2000) found insignificant support for HP-HR and work intensification. Based on the existing literature that posits a positive association between HP-HR practices and employee job demands, the following can be hypothesised:

Hypothesis 2: HP-HR practices have a positive and significant relationship with perceived job demands.

A closer examination of the above-mentioned studies indicate that, despite differing in terms of their context, design, data collection and analysis methods, the studies confirm a positive association between HP-HR and work intensification. However, two issues have been noted. First, a majority of the studies examine the impact of HP-HR as a coherent set of practices on work demands. In so doing, these studies suggest that in general a positive association exists between HP-HR and job-related demands. Examining the association between an overall HP-HR system and perceived job demands overlooks the possibility that certain dimensions of HP-HR practices may affect employee perceptions of work demands in heterogeneous ways. Employees may not think that all HP-HR practices intensify their work.

Second, the nature of work demands have been measured differently in the existing studies. For instance, Kalmi and Kauhanen (2008) study job intensity as a measure of work intensification. Kroon et al. (2009) examine employee burnout as a measure of work intensification. De Joy et al. (2010) show a significant positive relationship between HRM factors and workload, physical work demands and unpredictable work schedules. A majority of the studies define work intensification as pressures at work and time constraints to fulfil the demands at work. For instance, Macky and Boxall (2008) examine work intensification in terms of weekly hours worked, time demands and overload. Kaya et al. (2010) measure workload pressures/intensity as one dimension of organisational climate signifying employee perceptions of working with time constraints and having sufficient time available to deal with workload. Jensen et al. (2013) measure work intensification as the perceptions of work overload amongst employees. Similarly, Heffernan and

Dundon (2012) and the studies based on the WERS 2004 and 1998 measure workloads similarly as perceived job-related demands and time constraints to fulfil these (Ogbonnaya et al., 2013; Guest, 1999).

The academic literature, especially research pertaining to developmental job experiences, highlights two key dimensions of job demands – challenge-related and obstacle-related job demands (Wood and Michaelides, 2016; Bingham, Boswell and Boudreau, 2005). Challenge-related job demands include aspects of time pressures, having too many responsibilities, working harder and faster and heavy workloads. Obstacle-related job demands include those aspects of work that pertain to difficult social relations at work and adverse business conditions that impede an individual's daily work roles. It is argued that job demands take on a inhibiting role, and may turn into job stressors when meeting the desired work demands requires high effort from which the employee has not adequately recovered, or is incapable of providing (Meijman and Mulder, 1998, cited in Bakker, Demerouti and Schaufeli, 2003b). Conversely, when workload is either optimal or low in relation to time, or when there are no apparent pressures of time, role or organisational obligations, job demands may be referred to as low, and not necessarily detrimental.

2.6.3 Paucity of Mediating Tests within the HP-HR and Employee Well-being relationship

Outlining and assessing the precise mechanisms through which HP-HR practices and processes influence employee outcomes, and through these, firm performance is of prime importance. Boselie et al. (2005) argue that there are 'plenty of acknowledgements of the existence of the 'black box' and some speculation on its possible contents, few studies tried to look inside' (p. 77).

There is a disagreement on issues of causation regarding exactly how the performance gains are achieved in the high performance paradigm (Hughes, 2008; Wall and Wood, 2005). Despite widespread acceptance under the mutual gains perspective that HP-HR practices influence employee and organisational outcomes positively, the question remains as to what intermediate links drive this connection (Kehoe and Wright, 2013). According to the behavioural perspective (Wright and MacMahan, 1992), organisations use HR practices to instil organisationally-desirable behaviours and attitudes in employees (Jackson, Schuler and Rivero, 1989). Nevertheless, 'the literature fails to address how employees think and react to HRM practices, thus failing to appreciate how these practices create desirable outcomes' (Lam, Chen and Takeuchi, 2009, p. 2251).

On the contrary, the labour process view posits that HP-HR practices influence employee outcomes negatively. It has been argued that, since high performance work processes are known to intensify work through increased discretionary effort, it would not be wrong to posit that these should also bring about negative employee outcomes (Jensen et al., 2013). Research has shown that work environments or aspects of employment may create potential negative consequences for employees, such as work-to-home conflict, fatigue, anxiety, job dissatisfaction or other adverse psycho-physiological consequences (White et al., 2003; Demerouti et al., 2001). Work intensification or perceived excessive job demands are believed to have certain physiological and psychological costs. According to the JD-R model, demanding aspects of work lead to persistent overtaxing which ultimately causes exhaustion (Demerouti et al., 2001). Thus, it may be inferred that the high or unfavourable job demands that are associated with high performance working are predictive of reduced well-being. Brown and Benson (2005) have noted that individuals who feel that they are being over-worked or face long working hours, are more likely to report lower physical and psychological well-being.

Based on the existing literature that posits a positive association between HP-HR practices and employee work demands, the following mediating link can be hypothesised:

Hypothesis 3: Perceived job demands mediate the relationship between HP-HR practices and employee well-being**.**

2.6.4 Lack of an Integrated Approach to Maintaining Employee Well-being

Managing the involvement and/or intensification resulting from the HP-HR systems is crucial to ensuring mutually-beneficial gains (Boxall and Macky, 2009). Influenced by the contradictory academic evidence on HP-HR practices and employee outcomes, and echoing the concerns of Ramsay et al. (2000) and others, a few academics have suggested alternative explanations to the win: win and win: lose scenarios (see Table 2.2).

Zhang et al. (2013) emphasise the importance of the nature of HPWS in place. They show that employee outcomes of the HPWS depend upon the perception of the nature of employee-employer relationship. Zhang et al. argue that two types of HPWS are in practice. The first is profit-oriented HPWS, which is primarily implemented to boost the financial performance of the firm (Sparham and Sung, 2007). The second is what they refer to as the 'win–win type' HPWS - implemented primarily to boost organisational performance through employee commitment,

discretionary effort and job satisfaction (i.e. well-being). When employees perceive that organisational rationale is sacrificing their interest (i.e. economic exchange perception only), it is more likely to produce burnout and job dissatisfaction (Ramsay et al., 2000; Sparham and Sung, 2007).

On the other hand, when employees perceive that employee interests are the prime reason of implementing the HPWS (social exchange perception), it is less likely to lead to burnout and job dissatisfaction. The perception of the employee-employer relationship is seen to moderate the relationship between HPWS and employee outcomes. The study demonstrates that an economic exchange perception links positively to the possibility that HPWS leads to employees' emotional exhaustion. Contrarily, a social exchange perception minimises the possibility that HPWS leads to employees' work engagement. However, it may be argued that employees may perceive the same HR system differently. Therefore, the explanation of positive/negative well-being based on the view proposed by Zhang et al. may be difficult to generalise in a high performance workplace. According to Van De Voorde and Beijer (2015), management's employee-oriented philosophy determines employee reactions to the HP-HR practices. When enacted HPWS seems to be motivated by a concern for employee well-being, it promotes well-being. When the goal of HP-HR practices seems to be maximising employee performance, it induces job strain.

Fan et al. (2014) do not distinguish between the types of HP-HR practices. Instead, they perceive the components of HPWS to influence employee outcomes homogeneously. According to the authors, the distinguishing factor is the individual level intervention of organisation based self-esteem (OBSE) and organisational level intervention of physician-nurse relationship (PNR), which determines if employees will feel better-off or worse-off with the implementation of HPWS. This explanation may be argued to be highly context-specific and difficult to generalise to different high performance workplaces. The study correctly emphasises to look beyond conventional outcomes of HP-HR practices on employees and acknowledge the ways in which organisations could promote employee self-esteem and good peer-relationship at the workplace. Nevertheless, due to the complexities involved in managing the psychological intervention (OBSE) and contextual intervention (PNR), the application of this theoretical model may be limiting for most organisations.

Table 2.2: Alternative explanations on the HPWS-Employee Well-being linkage

Authors	Differentiating Factor	Corresponding Measures	Theoretical Foundation	Outcome
Godard (2004)	**Type of HPWS**			
	1. Lean System.	Efficiency-focused HR practices: just-in-time, inventory management.	Neo-Fordism; Labour Process View	Performance gains via cost effectiveness and work intensification.
	2. Team System.	Commitment-focused HR practices: genuine team-autonomy and no just-in-time strategies.	Post-Fordism; Mutual Gains View	Performance gains via employee involvement and commitment.
Wood, Veldhoven, Croon & de Menezes (2012)	**Type of HPWS**			
	1.High Involvement Management (HIM) (organisational level involvement).	Employee involvement HR practices: functional flexibility, quality circle, suggestion schemes, team working, induction, interpersonal skills training, information disclosure, team-briefing, and appraisal system.	High Involvement/Commitment Models of HPWS: grounded in ideas of pro-activity, flexibility and collaboration from workers.	Decreased job satisfaction and lower anxiety; reduced economic performance due to decreased job satisfaction.
	2. Enriched Job Design (role level involvement).	Autonomous work-design HR practices: task variety, discretion over how work is to be carried out, and control over the work process.	Job Design Theory: based on element of discretion and flexibility over how employees' execute and manage their primary tasks.	Higher job satisfaction and no effect on anxiety; increased economic performance due to increased job satisfaction.
Zhang, Zhu, Dowling & Bartram (2013)	**Perceived nature of the employee–employer relationship.**			
	1.Economic exchange perception (profit-oriented system).	Perceived economic exchange between employers and employees: A fair day's work for a fair day's pay, relationship with my organisation is impersonal, and little emotional involvement at work.	Equity Theory, Social Exchange Theory and Psychological Contract Theory.	Perception of economic exchange moderates HPWS-well-being link - decreased worker engagement, higher emotional exhaustion/burnout and job dissatisfaction.
	2. Social exchange perception (win – win system).	Perceived social exchange between employers & employees: relationship with my organisation is based on mutual trust, I don't mind working hard today, and I will be rewarded by my organisation.	Equity Theory, Social Exchange Theory and Psychological Contract Theory.	Perception of social exchange moderates HPWS-well-being link - increased worker engagement, and less likely burnout/emotional exhaustion and job dissatisfaction.

Fan, Cui, Mingqiong, Zhu, Härtel & Nyland (2014)	**Perceptions of positive organisational based self-esteem (OBSE) & the nature of work-related relationship between doctors and nurses (PNR).** Second-order latent construct of HPWS based on the AMO approach to categorising HR practices.	OBSE: Employees' perceived level of competency and ability to satisfy their needs by participating in the organisation. PNR: Clear doctor-nurse role descriptions, open communication, no unresolved disagreements between physicians and nurses. Nurses do not feel marginalised in their jobs. Ability practices: skills training programmes. Motivation practices: job security, job description clarity and performance appraisal. Opportunity practices: employee voice and communication.	Social Exchange Theory, Socio-emotional needs perspective and Contingency Theory (based on two context-specific contingencies/interventions) First, OBSE – an individual intervention – using plasticity hypothesis as a theoretical lens. Second, PNR – an organisational intervention – as a theoretical lens.	Perception of high OBSE moderates HPWS-well-being link. When individuals perceive high OBSE, the cognitive evaluation of the impact of HPWS on their subjective well-being and workplace burnout is not compromised. Perception of positive PNR moderates HPWS-well-being link. When there is high PNR, HPWS are well-being-enhancing and burnout-reducing.
Van De Voorde & Beijer (2015)	**HR attribution regarding management's employee-oriented philosophy.** 1.HR-wellbeing Attribution 2.HR-performance Attribution Five areas of HPWS grouped under the AMO bundles.	Intended goals of HR practices reflect a concern for employee well-being. Intended goals of HR practices are motivated by maximising employee performance. Selective hiring, career opportunities & employee development, rewards, performance evaluation, participation & communication.	Attribution Theory, Social Exchange Theory, and literature on Perceived Organisation Support & the JD-R model.	When HPWS reflects HR-well-being attribution, it improves organisational commitment and reduces job strain. When HPWS signals HR-performance attribution, it induces job strain.
Topcic, Baum & Kabst (2016)	**Type of HPWPs** 1. Challenge demand HPWPs. 2.Job resource HPWPs.	Performance evaluation system & continuing education. Flexible working hours & participation in decision making.	The JD-R model.	Challenge demand HPWPs and participation in decision making induce stress and flexible working hours are not related to stress.

The remaining studies differentiate between different types of high performance work practices (HPWPs) and their subsequent effects on well-being. Godard's (2004) team approach envisages an improved well-being following the principles of the mutual gains view, while the lean approach follows the labour process predictions of improved performance via work intensification and lower well-being. Topcic, Baum and Kabst (2016) argue that some HPWPs are challenging and overburdening, and activate an energy depletion process which reduces well-being (induces stress), while others act as job resources, because they facilitate autonomy and activate a motivational process which promotes well-being. Wood et al. (2012) also link employee well-being to a dichotomy of HPWS. They suggest that HPWS which incorporate principles of high involvement management (HIM) reduce perceived job satisfaction and anxiety. On the contrary, HPWS which work on the principles of job redesign and job enlargement, bring about higher perceived job satisfaction, but do not affect work-anxiety. According to the authors both mutual gains and labour process outcomes occur, depending on the type of the HPWS organisation employed.

Wood et al. classify HIM and enriched job design with few prescriptive HR practices, thereby assuming no overlap in the HR practices pertaining to the respective HPWS. However, in practice, it may be difficult to keep both types of HPWS separate. For example, team working may incorporate aspects of team autonomy, in which employee may have discretion over how work is to be done, or decide the order or pace of work they are responsible for. Similarly, having functional flexibility may depict that employees have variety in their work, if they are trained to do jobs other than their own. This shows that organisations may have a mix of practices from both the systems highlighted by Wood et al. (2012) working simultaneously. Thus, the conclusion pertaining to any type of HPWS may only partially solve the debate in the HRM literature.

Further, Wood et al. (2012) show that a particular type of HPWS impacts on different employee outcomes, differently. For example, on the one hand, involving employees in the work process may reduce their levels of anxiety, because they are now involved in the work processes. On the other hand, the involvement process may reduce their overall sense of satisfaction with their jobs, because now they have too much job responsibility. Similarly, the study shows that giving employees more discretion over their jobs, or increasing variety in their work may increase the satisfaction levels of individuals, but may not have any effect on their levels of work-related anxiety. Such conclusions infer that simply classifying types of HPWS may be an over-simplification of the reasons for positive or negative employee outcomes in a high performance workplace.

The current research addresses this shortcoming by arguing that the plausible causes of positive or negative well-being may be attributed to other significant factors, one of which may be the way an organisation implements the HP-HR practices, and the levels of job resources available in the workplace. An employee-focused theory that incorporates employee perspectives on the balance between their job demands and job resources may be a potential mechanism to managing employee well-being in HPW environments. Accordingly, we argue that the subject area will benefit from engagement with the JD-R model, and the following can be hypothesised:

Hypothesis 4: HP-HR and employee well-being association can be better understood by building on the principles of the JD-R model, and integration of the components of the JD-R model (specifically, perceived organisational and social support) will buffer the negative effects of perceived job demands on employee well-being.

2.6.5 Lack of Conceptual Clarity on High Performance HR and its Sub-components

According to Guest (2001), the most difficult methodological issue in the HPWS research is that of which HR practices to include as high performing HR practices. A disagreement exists amongst the researchers in terms of *which* and *why* certain HR practices should be included within the scope of the term HP-HR (Wood et al., 2015; Harley et al., 2010; Boselie et al., 2005; Wood and Wall, 2005; Delery and Shaw, 2001; Guest, 2001; Guthrie, 2001; Becker and Gerhart, 1996; Delery, 1998; Wood, 1999). The lack of conceptual clarity in terms of the practices to include within the scope of the term HP-HR can be linked to a lack of a robust theoretical framework in this paradigm (Boselie et al., 2005; Guest, 2001). Since a majority of the researchers do not have a theoretical framework to explain why certain HR practices should be used to conceptualise HP-HR practices in their studies in a particular way, they, generally, pick and choose practices commonly used in other empirical studies. Wall and Wood (2005) show that the most commonly used HR practices in the HRM studies are: sophisticated selection, communication, training, teamwork, participation, job design, appraisal, empowerment, harmonisation, job security and performance-related pay/promotion. However, why these were included does not follow a specific rationale (Heffernan and Dundon, 2012). Boselie et al. (2005), on the other hand, identified the four most commonly used HR practices as: training and development, contingent pay, recruitment and selection processes and performance management practices including appraisals.

This lack of agreement on the taxonomy of HP-HR practices is also apparent from the fact that out of the fifteen practices identified in the UK dataset WERS 1998 as high performing, only seven

were present within the studies conducted in USA (Legge, 2001). There has been a considerable interest in categorising, assessing and understanding which specific practices make up HPWS, and what combinations of practices work best. Many argued in favour of additive effects of practices suggesting that the more the better. Some favoured the best practice 'universalistic approach' to HPW (Huselid, 1995), while others duly acknowledged the impracticalities of 'off the shelf success formula' and endorsed the 'contingency or best fit approach' in the paradigm (Kaufman, 2010). Prior research in the Strategic HRM (SHRM) domain advocated that HRM bundles create a combined synergistic effects that are greater than those of individual practices (Combs et al., 2006; Guest, 2004; 2002; 1997; Appelbaum et al., 2000; Cappelli and Neumark, 2001; Ashton and Sung 2002; Way, 2002; Becker and Huselid, 1998; Ichniowski et al., 1997; Delery and Dotty, 1997; MacDuffie, 1995).

Owing to the above reasons, researchers have studied the HP-HR/well-being association operationalising the HP-HR practices in various ways. Some have followed the SHRM argument, and explored the effects of the composite system of HP-HR practices on components of employee well-being (García-Chas et al., 2014; Zhang and Morris, 2014; Zhang et al., 2013; White and Bryson, 2013; Boon et al., 2011; Takeuchi et al., 2009; Vu and Chaturvedi, 2009; Macky and Boxall, 2007; Bauer, 2004; Varma et al., 1999), while others have evaluated the impact of individual HR practices on employee outcomes (Ogbonnaya et al., 2013; Harley et al., 2010; Brown et al., 2008; Macky and Boxall, 2008; Mohr and Zoghi, 2008; Peccei, 2004; Guest, 2002). The present research fills in the gap of conceptual ambiguity on selection of the HP-HR practices, by identifying a robust theoretical framework for conceptualising the HP-HR practices used in the study based on the Ability-Motivation-Opportunity-Commitment (AMOC) model (Guest and Conway, 2007). It is argued that the HP-HR practices should be selected in a way that influences employees' ability, motivation, opportunity to participate and commitment to the organisation.

Recently, it has been argued that it is very important to explore the differential impact of components of HR practices that constitute the HPW environment. The existing assumption that all types of HR practice bundles may impact the well-being of employees homogeneously has been challenged, and it has been argued that different HR bundles may impact the same employee outcome differently (Topcic et al., 2016; Jiang et al., 2012; Subramony, 2009; Takeuchi et al., 2009; Wright and Kehoe, 2008). Disentangling the HPWS construct may be more insightful, for an overall HPWP index might obscure important differences of the specific HR practice bundles and their corresponding influence on employee well-being (Topcic et al., 2016). This suggests that

some subsets may be more significant than others for their effects on well-being. There is paucity of research exploring the HP-HR on employee well-being which takes into account the differential impacts of bundles of HP-HR practices on well-being. A very small number of studies have incorporated this approach (Boxall et al., 2015; Wood et al., 2012; Bryson and White, 2011; Innocenti et al., 2011; Katou and Budhwar, 2010; Wright and Kehoe, 2008; Guest and Conway, 2007). These studies confirm that components of the HP-HR practices have varying effects on employee outcomes, and buttress the differential effects argument to further highlight the scope of the value of bundling in the HPWS research in detail. Addressing this shortcoming, this research explores the differential effects of the HP-HR bundles that constitute a HP-HR system on employee outcomes based on the AMOC model. An additive version of the effects of each HP-HR system component will be investigated, for parsimony. Consequently, the following can be hypothesised:

Hypothesis 5: Different components of the Ability-Motivation-Opportunity-Commitment (AMOC) model will have differential effects on employee outcomes.

2.6.6 Lack of Consistent Conceptualisation of Employee Well-being

The existing literature distinguishes between different dimensions of employee well-being at work, generally denoting employees' subjective experiences at work, their work-related health and, most recently, their social well-being at work (Danna and Griffin, 2009; Grant et al., 2007). The existing HRM literature also makes a distinction between the three dimensions of well-being, and includes the different dimensions of employee well-being in most of the conceptual models linking HRM to employee outcomes and performance (Gould-Williams, 2004; Guest, 2001; 1999; Appelbaum et al., 2000). The happiness component refers to the employees' appraisal of their subjective experiences at work, such as job satisfaction and organisational commitment. The second component, health-related well-being, encompasses the psychological indicator of employees' level of organisational stress (Danna and Griffin, 1999). The third component, social well-being, is focused on all of the interaction that occur in a workplace - between employees, co-workers, supervisors and so on (Grant et al., 2007).

Consequently, the existing empirical literature investigating the association between HP-HR practices and employee well-being utilises various dimensions of employee well-being, and there are numerous empirical inquiries on the effects of HRM practices on employees' perceived levels of anxiety, stress, strain, emotional exhaustion and burnout (see Table 2.1). Further, the existing

studies highlight trade-offs between different dimensions of employee well-being as a consequence of high performance working (Wood et al., 2012; Appelbaum, 2000). While HPWS are, generally, seen to positively associate with happiness-related well-being, a limited body of empirical evidence also suggests negative association between HPWS and employee health-related well-being (Van De Voorde et al., 2012). Therefore, to be able to manage the employee well-being process better, it is essential to probe the varying influences of the HP-HR practices on various dimensions of employee well-being. This study aims to fill in this gap by examining the associations between HP-HR practices and various dimensions of employee well-being simultaneously. Based on the evidence that suggests that HP-HR practices will influence different well-being dimensions differently, and may exhibit trade-offs therein, the following can be hypothesised:

Hypothesis 6: HP-HR practice bundles will have varying impacts on various aspects of employee well-being.

2.7 Chapter Summary

This chapter provides an overview of the academic debates that steer arguments on employee work-related well-being in the high performance paradigm and highlights the theoretical and empirical gaps in the current HRM literature. The chapter reviews the two dominant perspectives on employee well-being in the high performance regime, namely the mutual gains (MG) and the labour process (LP) perspectives. The empirical support for higher and lower employee well-being exhibits that any definitive conclusion on this link may be premature according to the current state of knowledge and requires more research.

Addressing the shortcomings of the existing HRM models, the study develops six core hypotheses which investigate the gaps in the knowledge by: 1) introducing a robust theoretical framework which incorporates: a) employee reactions to implemented high performance HR practices, and b) stresses the role of workplace support mechanisms as the vital elements in the high performance workplaces. 2) examining if HP-HR practice bundles induce work demands by: a) examining this association taking a more nuanced approach to HP-HR practices and not treating it as a coherent system of HP-HR practices, and b) measuring work intensification as perceived demands at work with time constraints, to facilitate comparison of results with previous research; 3) proposing that perceived job demands, may serve as an intermediary mechanism through which HP-HR practices may have positive/negative associations with employee well-being; 4) investigating the differential influence of HP-HR bundles on employee outcomes to analyse how different elements

constituting an HPW environment might associate differently with employee outcomes; 5) examining the relationship between HP-HR bundles and different dimensions of employee well-being simultaneously; 6) building on the work psychology literature (i.e. the JD-R model) to emphasise the importance of having workplace resources in the current HRM literature. The next chapter establishes how the principles of the JD-R model may be employed to managing employee well-being in high performance framework.

Chapter 3

Integrating Job Resources and High Performance Working – A Research Framework

3.1 Introduction

This chapter develops a theoretical framework examining the process through which high performance HR practice bundles impact upon aspects of employee perceived job-related well-being. In so doing, it seeks to address the theoretical and empirical gaps identified in Chapter 2, specifically, about the empirically-driven nature of the theory within this field of inquiry.

The theoretical perspective adopted in this thesis emerges from an integration of the existing HRM perspectives on the association between HP-HR practices and employee well-being and the JD-R model, which is a prominent work psychology framework for managing job-related well-being. This chapter considers the theory and principles of the JD-R model as a lens to understand the mechanisms and better cope with the demands inherent in a high performance work environment. Building on the principles of the JD-R model, the chapter examines the role of job resources and their application to high performance work environments. Perceived job resources, reflected by perceived organisational and social support in the workplace, are seen as important determinants of a variety of important employee well-being outcomes. The chapter concludes with a formal presentation of the research framework, which guides the setting up of the statistical model and its corresponding tests to address the research hypotheses.

3.2 The Job-Demands-Resources Model

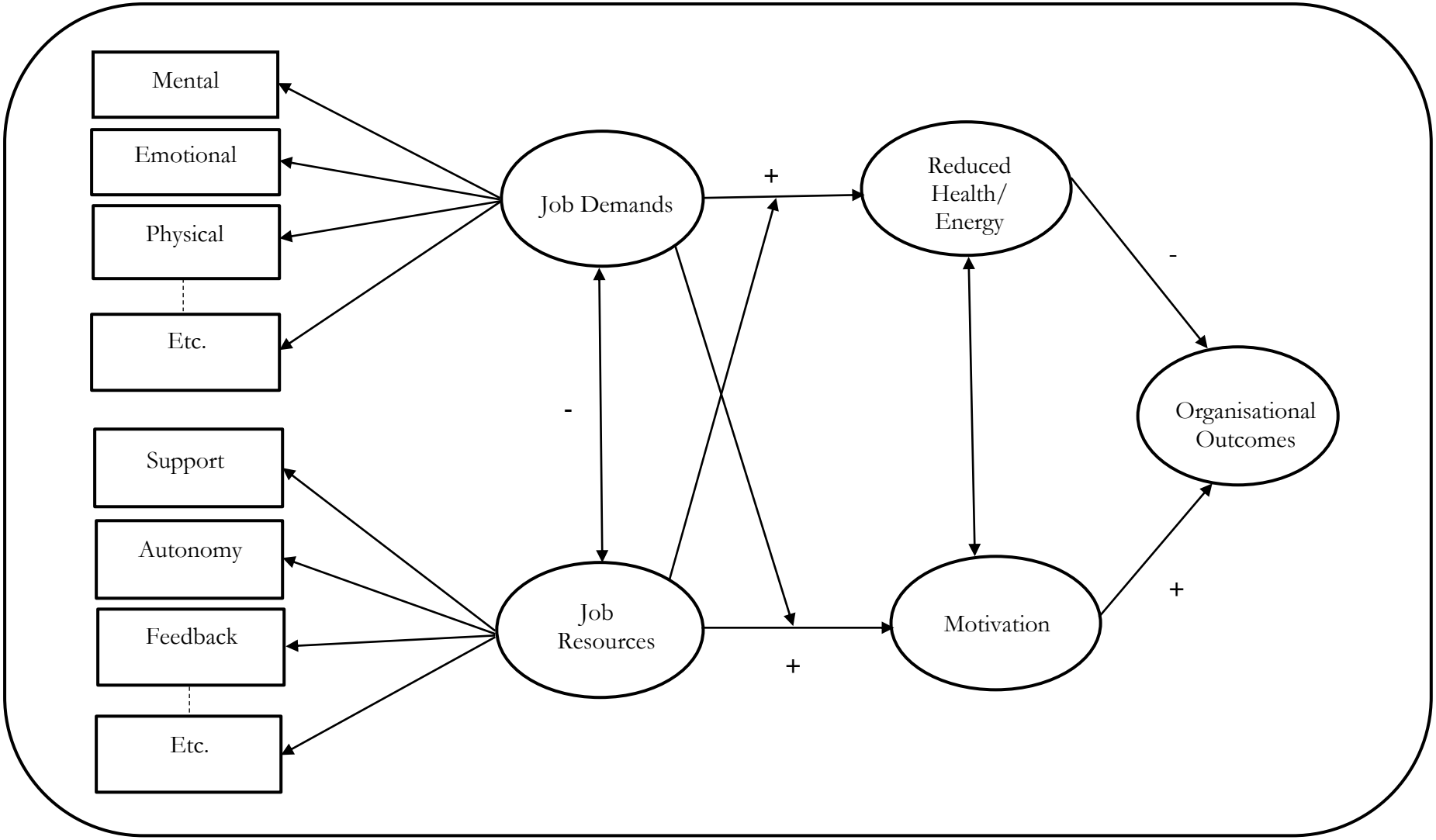
The Job-Demands-Resources (JD-R) model is one of the most widely-used theoretical frameworks explaining the effects of job characteristics on health and well-being (Bakker and Demerouti, 2007; Bakker, Demerouti, De Boer, and Schaufeli, 2003a; Bakker, Demerouti, and Verbeke, 2004; Demerouti et al., 2001). Specifically, the model examines how employee well-being may be influenced by two aspects of workplace conditions, job demands and job resources (Bakker, Hakanen, Demerouti and Xanthopoulou, 2007).

According to Bakker et al. (2007), the JD-R model is based on the tenet that work characteristics evoke two psychologically different processes, and employee well-being is dependent upon the net effects of both of these simultaneous processes in the workplace. In the first, additive process, demanding work conditions and constant work-related pressures lead to the persistent over-taxing of individuals, which eventually translates into lower well-being. Thus, individuals feel worse off when the perceived level of workloads in their jobs exceeds their thresholds and adaptive capability. In the second process, job resources (i.e. the enabling characteristics of the work environment) exert their direct motivational effects. These intrinsically and/or extrinsically motivational effects propagate a sense of engagement, well-being and performance in individuals, thereby lowering their level of cynicism (Hu, Schaufeli and Taris, 2011; Demerouti and Bakker, 2011).

In addition to the suggested main effects of job demands and resources, the JD-R model posits interaction or buffer impacts of the work environmental characteristics, and argues that matching the challenging aspects of jobs with the perceived ability of the individuals to cope with the challenges is crucial. The buffer hypothesis of the JD-R model postulates that employee well-being is determined by the balance of job demands and available job resources (Tadić, Bakker and Oerlemans, 2015; Bakker et al., 2007; Bakker and Demerouti, 2007; Bingham et al., 2005; Demerouti et al., 2001), see Figure 3.1. The availability of job resources is considered to be particularly relevant in the presence of high job stressors. Individuals are deemed to be more likely to use job resources as a coping mechanism, or stress-reducing agents under most stressful conditions. Summarising, the JD-R model maintains that lower well-being and health impairment is the result of a disturbance in the equilibrium between the demands employees are exposed to, and the resources they have at their disposal (Bakker et al., 2007). In support of this argument, the buffer hypothesis proposes that job resources can buffer the negative impact that job demands may have on employee outcomes (Bakker, Demerouti, Taris, Schaufeli and Schreurs, 2003c; Bakker, Demerouti and Euwema, 2005), because resources energise employees and boost their motivation (Hackman and Oldham, 1980).

The JD-R model serves as an alternative model to the previously used Job Demand-Control (JDC) (Karasek, 1979) and Job Demand-Control-Support (JDCS) models (Johnson and Hall, 1988; Karasek and Theorell, 1990). The JDC model, also known as the job strain model (Karasek, 1979), is the most commonly used conceptualisation to illustrate the interactive and additive effects of the job autonomy, decision-latitude and job control on employees, and has been the most crucial

Figure 3.1: Two Underlying Psychological processes that guide the JD-R model



Source: Demerouti and Bakker (2001, p. 3)

determinant of work-related well-being and health (Linfords, Meretoja, Toyry, Luukkonen, Elovainio, and Leino, 2007; Karasek, 1979; Karasek and Theorell, 1990). The JDCS model, which extends the JDC model, is based on the interplay between job demands, job control and social support, and has been the most widely tested model of occupational stress (De Lange, Taris, Kompier, Houtman and Bongers, 2003). The JDC and JDCS models suggest that those workers who enjoy more autonomy, job control and social support in their daily work routines report less strain (Ibrahim and Ohtsuka, 2014; Kaldenberg and Becker, 1992; Karasek, 1979). The lack of stress and strain is linked to perceived psychological well-being and effective performance.

The JDC and JDCS models have been criticised for their 'static character', simplicity and narrowness in defining sets of predictor variables that may be related to well-being (Bakker and Demerouti, 2007). Both models assume that perceptions of higher job demands lead to lower well-being in the absence of autonomy in the JDC, and autonomy and social support in the JDCS model. Both have also been criticised for not including other work-related factors that can (and have been found to) be related to well-being.

The JD-R model overcomes these weakness by postulating that the concept of job demands and resources cannot be reduced to only a handful of variables. Instead, it is acknowledged that every occupation has its own particular sets of work-related risk factors, which may become potential stressors. However, these stressors may be managed when effective and valuable job resources are offered to employees according to the requirements of those work settings (Demerouti and Bakker, 2011; Bakker and Demerouti, 2008; 2007). It is argued that the basic tenets of the model can be applied to any occupational setting and working environment in which the environment can be categorised into job demands and job resources, irrespective of the particular demands and resources involved.

The JD-R model also recognises that buffering variables can reduce the tendency of organisational properties to generate specific stressors, can alter the perceptions and cognitions evoked by such stressors, and can moderate responses that follow the appraisal process or reduce the health-damaging consequences of such responses (Kahn and Byosiere, 1992, p. 622). Support of the extended nature of the buffer hypothesis proposed in the JD-R model is consistent with Kahn and Byosiere (1992), which supports that the buffering or interaction effect can take place between any pair of variables in the stressor–strain sequence, thereby, conceptually enlarging the list of potential job stressor-resources options.

3.3 Perceived Job Resources and Employee Well-being

Perceived job resources, also known as psycho-social resources or situational referents at the workplace, are those aspects of the work environment that do any of the following: a) boost an individual's personal growth, learning and development at work; b) functionally help to achieve work goals; c) reduce the exasperating psychological or physiological effects of the inappropriate work overloads (Bakker and Demerouti, 2007; Demerouti et al., 2001). Put differently, any physical, organisational, psychological or social conditions at the workplace which aid an individual in meeting the requirements of their job is referred to as a job resource (Baker and Demerouti, 2007; Harvey et al., 2003; Parker et al., 2003; Demerouti et al., 2001).

According to Richter and Hacker (1998) job resources may be categorised into two distinct groups, i.e. external and internal job resources. External resources include organisational and/or social factors at the workplace that facilitate individuals in fulfilling their work roles. Internal resources, on the other hand, incorporate cognitive abilities and other characteristics of an individual that affect their ability to perform at work.

External resources can be further categorised into organisational and social factors at the workplace. Organisational factors are varied in nature and include aspects that reflect an organisation's stance on involving employees into work roles and creating an inclusive work environment that is conducive to working effectively. At the organisational/macro level, these may include aspects of pay, career opportunities and job security. At the level of the task, organisational factors may refer to elements of skill variety, task identity, task significance, task variety, performance feedback, job control and discretion latitude. In terms of the organisation of work or specific job positions, organisational resources refer to aspects of role clarity and involvement in decision making. Social resources comprise work-related factors that are influenced by interpersonal and social relations at work, and include aspects such as team climate, support from peers, managers, subordinates and family members (Demerouti and Bakker, 2011; Demerouti et al., 2001).

Job resources are expected to help employees in one of three ways: a) by directly mitigating negative outcomes; b) by interacting with stressors to reduce the strength of their potential negative effects; c) by weakening the strength of stressors themselves (Beehr and McGrath, 1992). Numerous studies suggest that job resources tend to have direct positive effects on employee well-being and attitudinal variables (Salanova, Agut and Peiró, 2005; Taris and Feij, 2004; Demerouti et

al., 2001). It is argued that job resources such as social support, performance feedback, or job control (autonomy), activate a motivational process in individuals that furthers their job-related learning, work engagement, and organisational commitment (Demerouti and Bakker, 2011; Bakker and Demerouti, 2007). Thus, employees in organisations with such resources in place feel in control and in partnership with the organisation.

3.4 Relevance of Job Resources in High Performance Workplaces

As discussed in Chapter 2, the labour process tradition relates the HPW paradigm to work intensification (Ramsey et al., 2000), and a systematic exploitation of worker interests (Keenoy, 1997; Legge, 1995), leading to compromised well-being. Based on this argument, perceived job demands are the explanatory variable in the chain of links that explain the negative association between high performance HR practices and perceived work-related well-being. Since work, happy/healthy individuals and performance have a close inter-relationship, the 'black box' of the association between high performance HR practices and employee well-being needs to be unpacked such that the positive effects of HP-HR practices on employee well-being are not undermined. This means that, in addition to identifying the simple/linear linking associations working in the HPW paradigm, the literature can benefit the most from a greater understanding of the well-being-enhancing and work intensification-reducing mechanisms.

According to Lazarus and Folkman (1984), individuals get stressed and have a compromised sense of well-being only when they perceive that they lack adequate resources to contend with demanding events. When appropriate resources are offered to them, a potentially threatening work environment can be perceived benign. Elements of the work environment that apprises individuals of 1) the reason of presence of a stressor (e.g. information sharing); 2) the extent of their predictability (e.g. feedback by colleagues); 3) the way to control their undesirable effects (e.g. autonomy and flexible work schedules) serve as workplace/job resources that help aid cognitive processes and enhance coping capabilities of the individuals. This entails that supportive and resourceful environments could make the organisation a pleasant place to work in, which can positively affect employees' sense of well-being.

Stressing the significance of workplace resources further, Bakker and Demerouti (2007) argue that job resources are important for two reasons. First, they motivate and stimulate the ability of individuals to deal with job demands at work. Hackman and Oldham's (1980) Job Characteristics Model (JCM) helps explain the motivational role of job resources. JCM posits that task-related

characteristics, such as discretion at work (i.e. autonomy), performance feedback, and task significance signify the motivational potential of job resources because they stimulate individual's intrinsic and extrinsic motivation at work. Employees are intrinsically motivated because job resources foster their growth, learning and development in the job. At the same time, job resources are extrinsically motivating because they are instrumental in functionally achieving work goals. This is because job resources positively influence the likelihood of task completion and the effective attainment of work goals. The effort-recovery model (Meijman and Mulder, 1998) underpins this process and postulates that facilitating work environments (i.e. offering many resources) motivate individuals extrinsically by increasing their willingness to invest their efforts and abilities for the successful completion of the task wilfully (Demerouti and Bakker, 2011).

Second, job resources are salient because they serve as means to achieving or protecting other valued ends and/or resources. In other words, job resources are important elements in their own right. The conservation of resources theory (COR; Hobfoll, 2001) helps explain the saliency of job resources. According to COR, individuals, by nature, seek to procure and retain resources that are of value to them. Access to resources are, in themselves, considered means to the achievement or protection of other valued resources and thus reduce the susceptibility of any potential loss. Therefore, psychologically, resource availability/acquisition is a valued element - to deal with threatening conditions and prevent negative outcomes (Bakker and Demerouti, 2007; Bakker et al., 2007). In sum, irrespective of which underlying motivational route it follows, the presence of job resources relates to positive outcomes at work, whereas their absence evokes a cynical attitude towards work.

The existing high performance work literature acknowledges that HP-HR practices enlarge the scope of work for employees which requires them to exert more effort (Fan, Cui, Zhang, Zhu, Härtel and Nyland, 2104; Macky and Boxall, 2007). The so-called high performance HR practices have been seen as a double-edged managerial approach that introduces employees to undue work pressures, the net effects of which have been debated for employees. Consequently, high performance workplaces are considered stressful work environments. How to best manage the well-being of the employees working in high performance work environments, where employees are required to manage the extra role/job demands at work, is of great significance. This is because when individuals encounter a stressor, such as the demands at work in high performance work environments, they evaluate them with regards to their well-being. This evaluative process is the core of the subsequent cognitive appraisal (Simmons and Nelson, 2007). Having the appropriate

job resources to balance the demanding work conditions in the high performance work environment may help enhance the coping capabilities of individuals. The work psychology literature supports the view that workers should have greater autonomy in their job tasks, have the incentive to exert discretionary effort, and have the necessary workplace social support to cope with the stress of enlarged role requirements. In the absence of proper job resources, work stressors, such as workload and emotional demands, have been found to be related to exhaustion and low psychological well-being (Bakker, et al., 2005; Bakker, Demerouti, and Schaufeli, 2003b). High performance workplaces may be a prime example of work environments that can benefit the most from the availability of workplace support mechanisms to foster the sense of well-being of their employees, and demonstrate a win-win scenario for the organisation. Therefore, the principles of work psychology models have potential application in high performance work environments.

Job resources can be of a varied nature and derive from various sources to fortify employees' work-related well-being in high performance work environments. For instance, the provision of open and fair pay procedures, unbiased career progression channels and job security may be considered well-being enabling organisational mechanisms, which give employees a clear indication of what their efforts bring about, thereby preventing them from appraising the extra effort required as something negative, threatening or harmful for their perceived well-being. Other organisational characteristics that have been suggested to influence employee outcomes are morale, rewards impartiality, recognition and leader credibility (Gould-Williams and Mohamed, 2010), and psychosocial safety climate (Garrick et al., 2014). Similarly, environmental factors such as job control, discretion latitude and situational factors influenced by interpersonal and social relations at work have been acknowledged to have profound enabling effects on employees' well-being in stressful work environments (Demerouti and Bakker, 2011; Fisher, 2010; Demerouti et al., 2001). According to Karasek and Theorell (1990), these characteristics cover the fundamental aspects of a work environment that enable well-being.

3.4.1 Perceived Job Control and Employee Well-being

Perceived job control (PJC), also referred to as job autonomy and decision latitude, is the degree to which individuals feel that they enjoy the freedom to independently make decisions at work – reflected by control and independence over deciding the pace, order and methods of work (Peccei and Rosenthal, 2001). Karasek (1979) defined job control as a 'working individual's potential control over his task and his conduct during the working day' (p. 289-290). In the words of

Hackman and Oldham (1975), job control measures 'the degree to which the job provides substantial freedom, independence, and discretion of the employee in scheduling the work and in determining the procedures to be used in carrying it out' (p. 162).

In general terms, job control can be defined as having influence over the work environment - including the ability and authority to stimulate the execution and the planning of work tasks (Mark et al., 2006). In other words, autonomous employees choose how tasks are completed, when tasks are completed and/or which tasks are completed (Jackson, 1989). Job control can also be defined as the perceived ability of individuals to design their job and freedom to choose which actions to engage in - decisions at work, discretion over pace of work and the order in which the work is carried out.

A substantial part of the extant literature on workload (i.e. job demands) highlights that the lack of a desirable level of autonomy instigates negative employee outcomes. It has been argued that having job control lessens the potentially harmful effects that job demands may exert on the psychological strain responses and health of individuals (Siegrist, 1996; Kaldenberg and Becker, 1992; Karasek, 1979). This infers that workloads may have different effects on the level of strain, anxiety, job satisfaction and job commitment of a worker who has some control over his/her work flow than the worker who has little control. The early psychology literature highlights the evidence of this argument. Warr (1987) posits that job demands and employees' perceived job control combine to impact upon the affective well-being of individuals. Similarly, Perrewe and Ganster (1989) report that higher job control diminishes the negative effect that workload has on anxiety. These arguments infer that autonomous workers make their workloads congruent with their personal requirements and offset any potential negative effects (Kaldenberg and Becker, 1992). Delegating authority (i.e. an organisational resource) brings meaningful change in the work environment and makes the impact of stressors controllable by the person who experiences it (Johnson and Hall, 1988).

In a high performance work environment, employees who have substantial control over the process, time and pace of their work may make their mandatory work effort (i.e. workloads) congruent with their personal circumstances and schedules. Consequently, they may be better able to cope with job demands and experience less mental strain and compromised sense of well-being, which occurs when apparent demands at work overcome job discretion (Karasek, 1979). Empirical evidence of the reducing effect of perceived job control (i.e. work-related autonomy) on work

demands has been considered the most crucial determinant of work-related well-being and health (Linfords et al., 2007; Karasek, 1979; Karasek and Theorell, 1990). It is argued that perceived job control buffers the influence of workload on strain (Karasek, 1979). Consequently, workers who enjoy more autonomy, job control and decision latitude in their daily work routines report less strain (Kaldenberg and Becker, 1992; Karasek, 1979).

3.4.1.1 Perceived Job Control and Employee Well-being: Empirical Evidence

The existing literature on employee well-being largely supports a negative link between perceived job control and negative indicators of well-being (i.e. stress, anxiety and health impairment). The meta-analytic review by Humphrey, Nahrgang and Morgeson (2007) provides a good evidence for positive effects of job control on employee well-being. The authors report a positive correlation between autonomy – work scheduling, work methods and decision-making authority – and job satisfaction. Specifically, autonomy is positively related to compensation and promotion satisfaction and organisational commitment and negatively related to anxiety, stress, burnout and overload. On the other hand, Griffin, Fuhrer, Stansfeld and Marmot (2003) relate that chronic exposure to workplace conditions with high job demands and low decision latitude lead to psychological strain, reflected by depression or anxiety. This relationship was stronger for women in the lowest or middle grades of employment than men.

The positive relationship between perceived job control and employee well-being is confirmed by several other studies (Jensen et al., 2013; Bakker, Boyd, Dollard, Gillespie, Winefield and Stough, 2010; Xanthopoulou, Bakker, Dollard, Demerouti, Schaufeli, Taris and Schreurs, 2007b; Bakker et al., 2005; Orlitzky and Frenkel, 2005; Bakker et al. 2004; Bakker et al., 2003a and b; Narayanan Menon and Spector, 1999). For instance, Bakker et al. (2003a) show that when sufficient job resources are available, employees facing high job demands are less exhausted. The support for the buffer hypothesis of the JD-R model is found in Bakker et al. (2005), which suggests that employee experience of adequate levels of autonomy, feedback, social support and good supervisory relationship buffer the undesirable influence of workload, emotional demands, physical demands and work-home interference on exhaustion and cynicism. Jensen et al. (2013) also highlight the buffering role of job control in a relationship between perceptions of high performance work systems, job overload and anxiety. The authors highlight that perceptions of job control ameliorate the negative effects of job overload and anxiety with subsequent positive effects for turnover intentions.

Several studies using WERS 2004 also highlight the positive effects of perceived autonomy on employee well-being (Carr and Mellizo, 2013; Jones, Latreille, and Sloane, 2011; Brown et al., 2008; Wood, 2008; Holman and Wall, 2002). Specifically, influenced by the Karasek (1979) JDC model, Wood (2008) hypothesised that workplace characteristics (including job demands, job control and employee voice) are the primary determinant of perceived employee well-being (job satisfaction and anxiety) in the workplace. The author finds evidence of this conceptual relationship, and reports that there is greater anxiety in more demanding jobs with lower levels of control. Overall, the studies suggest that workers report positive well-being when their perceived level of influence is high. This evidence lends support to the argument that, if employees working in high performing work environment have the ability to choose how they work and at which pace they carry out their tasks, it may have a significant positive influence on their level of well-being. Having low job control will have an adverse effect on the perceived sense of well-being of individuals working in high-strain, high-performing work environments.

3.4.2 Perceived Social Support and Employee Well-being

Perceived social support (PSS) relates to 'overall levels of helpful social interaction available on the job from co-workers and supervisors' (Karasek and Theorell, 1990, p. 69). Gottlieb (2000) defined social support more largely as the 'process of interaction in relationships which improves coping, esteem, belonging, and competence through actual or perceived exchanges of physical or psychosocial resources' (p. 28).

Social support is frequently recommended as a salient job resource for the treatment of occupational stressors, and is believed to bring meaningful changes in the work environment (Ng and Sorensen, 2008). Beehr, King and King (1990) maintain that the support gained from experienced superiors is particularly helpful in dealing with work-related issues. Further, it is claimed that support from colleagues is instrumental in getting the work done efficiently and effectively, and may alleviate the impact of work overload on strain (Van der Doef and Maes, 1999). Stress-buffering hypotheses support these arguments and argue that social support safeguards employees from the extreme consequences of stressful experiences, because it provides functional support in accomplishing work goals (Johnson and Hall, 1988). This suggests that the perception of social support (i.e. social resource) implies an enabling work environment, and conveys a sense of care that enhances the likelihood of task completion. Employees become less strained and anxious, and more content with and committed to their jobs, because they derive fulfilment from them (Hackman and Oldham, 1980).

Generally, managerial and co-worker support are two important elements of social support. Supervisor (i.e. managerial) support refers to the extent that individual employees feel that their management welcomes and incorporates their suggestions within the organisation, and keeps good intentions towards them in work-related matters. Supervisor support is also defined as 'an employee's perception of the support offered by an immediate supervisor in terms of concern for his/her general welfare, and work-related interests' (Kottke and Sharafinski 1988, cited in McCarthy, Cleveland, Hunter, Darcy and Grady, 2013, p. 1259). In other words, managerial support reflects employees' perceptions regarding the adequacy of the level of support in their work from their superiors. Managerial support includes factors relating to perceptions of trust in management, opportunities and effectiveness of consultation with management and ability for participative-decision making. In line with social exchange theory (Blau, 1964) and norms of reciprocity (Gouldner, 1960), when employees perceive that their management has good intentions, welcomes and allows their point of view, understands their non-work commitments, and encourages their independence in work- related matters, they have both a positive image of their management and positive reactions towards managerial decisions. Managerial support is considered a salient job resource, because it assures employees that they can count on their managers or supervisors for help 'when it is needed to carry out one's job effectively, and to deal with stressful situations' (Rhoades and Eisenberger, 2002, p. 698).

Managerial support in daily work-life is seen as a pertinent situational workplace resource that may have substantial implications in terms of employee well-being, especially in stressful high performance work environments. The extant literature on employee well-being has demonstrated that supportive and healthy inter-personal interactions make work more satisfying for workers (Ryan and Deci, 2001). Employees who enjoy good working relations with their supervisors and/or colleagues are seen to better cope with their burdens of work (Humphrey et al., 2007; Van der Doef and Maes, 1999; Johnson and Hall, 1988; Moyle, 1998), and are more resourceful in terms of making required adjustments to their work, aligning with organisational requirements and exerting full operational control to deal with the job requirements (Bakker and Demerouti, 2007). Conceptually, this is in line with the COR theory (Hobfoll, 2001), which postulates that individuals strive to attain and retain resources significant and relevant to them.

Inter-personal interactions and relations at the workplace, generally, include aspects such as perceived supervisor support, perceived nature of between-colleague relations, perceived consultation at work, perceived interpersonal trust and perceived extent of information sharing

between higher and lower hierarchies within the organisation (Wood, 2008). The significance of having such positive workplace initiatives that encourage good interpersonal relations is substantial in its own right for any work environment. It has been argued that, for instance, trust between employees and management positively influences employees' responses to HR practices (Macky and Boxall, 2007; Gould-Williams, 2003; Whitener, 2001; Appelbaum et al., 2000). However, the values of such initiatives may be doubly useful in high performance workplaces which are based upon cultivating employee commitment to get the desired performance effects. This is because perceived presence of such initiatives help reduce the potential negative aspects of the associated burdens of work and role overload in a stressful work environment. When employees perceive that their management supports and consults with them, their level of anxiety reduces. Perceived empowerment through adequate information-sharing and two-way consultation makes it possible for employees to comprehend the reason for managerial decisions (Wood, 2008). Informational flow as an indicator of managerial support helps reduce feelings of work overload and job strain, and other negative employee attitudes. Having poor social support in the workplace, especially in high strain high performance workplaces, translates into exhaustion and stress at work, because individuals remain incapable to deal with the burdens of work. Overtime and a persistent lack of support translates into perceptions of impaired well-being. Cohen and Wills (1985) theorise that the absence of social support in times of acute stress stimulates negative psychological states such as anxiety, helplessness, and depression.

3.4.2.1 Perceived Social Support and Employee Well-being: Empirical Evidence

Studies based on meta-analytic techniques establish a strong positive association between perceived social support and positive employee outcomes. For instance, Meyer, Stanley, Herscovitch and Topolnytsky (2002) has shown that job resources such as organisational support are positively related to affective commitment. Further, Humphrey et al. (2007) reported that social support has a positive relationship with a) compensation satisfaction, promotion satisfaction and organisational commitment; b) a negative relationship with anxiety, stress, burnout and overload. According to organisational support theory, supervisor support and favourable job conditions are associated with perceived organisational support (POS), and employees reciprocate POS with increased commitment and job satisfaction (Paillé and Dufour, 2015; Butts, Vandenberg, De Joy, Schaffer and Wilson, 2009; Rhoades and Eisenberger, 2002). On the other hand, Grebner, Semmer, Faso, Gut, Kälin and Elfering (2003) present evidence of reduced well-being in the absence of robust social support in the workplace.

Results highlighting the same positive conceptual link between social support and well-being are observed in a number of cross-sectional studies (Yeh, 2015; Jones et al., 2011; Sacky and Sanda, 2011; Hutchinson and Purcell, 2010; Wood, 2008; Bakker and Demerouti, 2007; Allen, 2001; Demerouti et al., 2001; Street, Sheeran, and Orbell, 2001; Janssen, De Jonge and Bakker, 1999; Karasek and Theorell, 1990), and longitudinal research (De Lange, Taris, Kompier, Houtman, and Bongers, 2003; Moyle, 1998). The support for the buffer effects of social support has been found in Sacky and Sanda (2011) and Yeh (2015). Specifically, Yeh (2015) highlighted that workplace relations (reflected by managerial and co-worker relations) are the most significant positive predictor of job satisfaction across the three countries sampled in the study. Overall, the empirical evidence suggests a negative relation between managerial support and individual stress outcomes, such that individuals with low levels of managerial support obtain higher stress outcomes and reduced well-being, and vice versa. This suggests that managerial support is a moderator of stress-related outcomes (Sawang, 2010). In the context of the high performance work environments, these notions suggest that employees can have different responses to demands at work depending on whether they regard their situational factors as enabling or disabling. If employees believe that they have good managerial support, their managers have high regard for their abilities and their intentions can be trusted, they will adjust to demands at work without compromising their well-being.

3.4.3 Perceived Family Support and Employee Well-being

Perceived family support (PFS) reflects the shared assumptions, beliefs, and values regarding the extent to which an organisation supports and values the integration of employees' work and family lives (Thomas, Beauvais and Lyness, 1999). In other words, PFS mirrors the flexibility and opportunity that organisations offer their employees to amicably fulfil their roles in both spheres of their lives. The tangible organisational supports - practices and policies - introduced in this respect are commonly referred to as 'family-friendly benefits' and include interventions such as flexible work schedules/arrangements, child-care benefits, and other options such as paid/unpaid leaves of absence for family or personal purposes (Estes and Michael, 2005; Allen, 2001).

Specifically, family work arrangements (FWA) are 'employer provided benefits that permit employees some level of control over when and where they work outside of the standard workday' (Lambert, Marler, and Gueutal, 2008, p. 107). According to Rau (2003) FWA are 'alternative work options that allow work to be accomplished outside of the traditional temporal and/or spatial boundaries of a standard work-day'. These practices include part-time work, flexitime, compressed

work week, working from home, job sharing and telecommuting (Masuda, Laurel and Hartford, 2012). On-site childcare, family leave options, financial and non-financial assistance with child and elderly care services are few other organisational supports offered as part of family supportive practices (Beauregard and Henry, 2009).

Balancing the work-family interface has evolved as a significant and complex issue in the contemporary work environment (Kossek and Michel, 2011; Baltes, Clark and Chakrabarti, 2009). Over the past half century, the demographic profile of the workforce has changed considerably due to an influx of women in to the workforce, a general upsurge in dual-earning families, single parent workers, working mothers with young children, student workers and employees with caring responsibilities (Masuda, Poelmans, Allen, Spector, Lapierre, Cooper, Abarca, Brough, Ferreiro, Fraile, and Lu, 2012; Beauregard and Henry, 2009; Clark, 2001). This changing trend in workforce composition highlights the likelihood that both male and female employees have substantial household responsibilities to fulfil, other than their work responsibilities. Specifically, working parents face significant tensions in trying to balance the two competing domains of their lives (Bagger and Li, 2014; De Janasz, Behson, Jonsen and Lankau, 2013). In a survey, almost half of men and women stated that they face interference between their jobs and their family life (Kalleberg, 2009). These issues indicate the need to overhaul traditional work environments to effectively accommodate the changing requirements of the contemporary workforce. Organisations need to recognise work and family as the two salient domains of their workforce, and provide measures to help them accommodate both of these effectively (Tang, Siu, and Cheung, 2014; Bagger and Li, 2014; Allen, 2001). This reasoning is equally applicable in the context of high performance workplaces, for there is, arguably, a wider scope of having higher job-related demands and consequently, a higher probability of having work-family conflict.

Perception of family support is considered to be a crucial driver of employee well-being. It is argued that the way employees manage to combine their work and family domains has significant implications for their health and well-being and organisational performance (Tuttle and Garr, 2012). The COR framework offers a theoretical rationale for family support measures to be a significant workplace resource. Under COR theory, perceptions of the availability of family supportive arrangements serve as a coping resource for individuals to balance work and non-work commitments. Employees are seen to perceive a rise in their ability to amicably deal with the potential cumulative demands of multiple roles, which may otherwise lead to role strain. The

availability of family-friendly resources are, thus, seen to prevent, or reduce role strain by enabling individuals to cope with their multiple demands in demanding work environments (Allen, 2001).

Social Exchange Theory and the perceived organisational support literature can also be applied to explain this context, in which employees and organisation serve as two exchange counterparts. In line with both of these theoretical perspectives, when employees feel that their organisation is giving them the opportunity of balancing their work and family roles, they feel that they will not have to compromise one role for the other. Employees feel their organisations to be more supportive and accommodating by rendering them the flexibility to be effective in multiple roles, and thus, feel obligated to reciprocate with positive attitudes towards the organisation, and feel less strained. Put differently, employees feel that they are better able to fulfil their family roles, because their organisation extends empathy, and provides family-friendly support opportunities. In return, they respond positively to the organisation – reflected by positive well-being (Allen and Schokley, 2009).

3.4.3.1 Perceived Family Support and Employee Well-being: Empirical Evidence

The existing literature on the perceived effects of family support measures on employee well-being argues that perceived flexibility supports are reflective of fulfilment of employer's obligation to reduce stress, increase satisfaction, commitment and morale, reduce absenteeism and tardiness (Amah, 2010; Rao, Apte and Subbakrishna, 2003). This reasoning implies that when employees perceive that family support measures are available to them, they may be more prepared to deal with demanding conditions at work. Consequently, they may be less anxious/depressed, more satisfied and committed to their organisations. This is because employees perceive that they are able to work more effectively due to having some level of control over when and where they work, and are better equipped to deal with the demands of work and home.

In line with this reasoning, the availability of 'work and family' friendly policies have been shown to serve as an instrumental support that help individuals to balance work and family roles, and thus, act as buffers to the conflicts arising from either the work or family domains (Amah, 2010). Signaling theory (ST; Spence, 1973) can be used to better understand these relations, which postulates that observable actions by the organisation may be construed as a signal of more unobservable characteristics such as care and concern for employees (McNall, Masuda and Nicklin, 2010). Applying this rationale to the perceived family-support/well-being association, observable organisational actions (e.g., offering flexible, family-friendly policies and family care options) may

signal that the organisation cares about the well-being of its employees (Grover and Crooker, 1995). Ryan and Kossek (2008) suggest that work-life policies promote perceptions of inclusion, and make individuals feel accepted and valued. Organisations support inclusion by fulfilling the personal needs of employees (i.e. need for a flexible schedule), and signalling to them that the organisation is a family-friendly workplace (Ryan and Kossek, 2008 cited in McNall et al., 2010).

Previous research has shown that flexible scheduling increases employee perceptions of control over work and family matters, and this, subsequently, lowers work-family conflict (Wayne, Randel and Stevens, 2006; Thomas and Ganster, 1995), and increases positive attitudes at work (Greenhaus and Powell, 2006). Less potential conflict leads to better well-being. As a testament to this, Rao et al. (2003) show that when workplace supports, such as flexible schedules are provided, stress tends to be low and job satisfaction high. Similarly, meta-analytic reviews have also supported the positive effects of perceived family support measures and employee job attitudes and well-being (Butts, Casper and Yang, 2012; Gajendran and Harrison, 2007; Baltes, Briggs, Huff, Wright and Newman, 1999). Similar notions have also been confirmed by other research (Fiksenbaum, 2014; Galea, Houkes and De Rijk, 2014; Awan, 2013; Masuda et al., 2012; Barney and Elias, 2010; McNall et al., 2010; Allen, 2001; Lobel, 1999). Specifically, Allen (2001) has argued that employees make perceptions regarding how family-supportive their organisations are. Their analysis showed that perceptions of the family supportive environment are positively related to employee perception of well-being. When employees perceive that their organisation is not family-supportive, they experience less job satisfaction and less organisational commitment than when they perceive that their organisation is more family-supportive. The results propose that the perceptions that employees hold regarding the extent to which workplace offers family-supportiveness is strongly related to employee job attitudes and experiences.

Roehling, Rhoeling and Moen (2001) report that offering flexible work practices and childcare assistance is positively related to organisational commitment, and marginally stronger for employees with family responsibilities. Further, the authors show that informal supports in the organisation (via family-supportive supervisors and co-workers) have a strong positive relationship with employees' loyalty to organisation. Studies based on the data from nationally representative samples of working adults have also confirmed the positive association between greater perceived availability of flexible work practices and less stress and higher organisational commitment in the USA (Halpern, 2005) and the UK (Dex and Smith, 2002).

Following from the above empirical evidence in support of improved job-related attitudes from perceived flexibility practices, it may be argued that, overall, research on the association between flexible work options and employee outcomes has been substantially positive, qualifying the notion that the perceived availability of family support is an important organisational support in contemporary work organisations. Perceived family support, commonly reflected by the availability of flexible work arrangements and family care benefits, may, thus, be seen as one of the key situational variables with profound benefits for employees and employers in the high performance workplace.

In sum, the importance of having psycho-social resources at work may be caused by the fact that human beings are interdependent, and require trust and association. Perceptions of meaningful job resources in the workplace deliver these attributes. Job resources relate to the manageability of difficulties at work which generate positive appraisals of the work environment and, thus, positive emotional states. Perceived job control, managerial and family support are precursors to a healthy work environment from which stem thriving workplaces. A manageable work environment accentuates feelings of well-being, quality of life and ultimately worker performance. The work environment should have enabling characteristics in order to have happier, committed and stress-free workers. Job resources help build that robust work environment, which underpins a social exchange process that enhances well-being – reducing anxiety, strain or other negative outcomes, and enhancing job satisfaction and organisational commitment.

3.5 Integration of Work Psychology principles in existing HRM Studies – Gaps and Contribution of the Present Study

The demand-control-support elements of Karasek's model (1979) and Karasek and Theorell (1990) have been applied sparsely in studies of the relationship between HPWP and employee well-being (Wood and de Menezes, 2011). Authors have used varied HR practices as measures of the discretion and support emphasised by the Karasek and Karasek and Theorell models. Their analysis is, therefore, based on management-side prerogatives, emphasising the use of new HR initiatives that incorporate Karasek's approach, i.e. the uses of quality circles, training, team work etc., to worker well-being. For example, the analysis by Appelbaum et al. (2000) shows the effects of self-directed teams, role autonomy and role of quality circles on job satisfaction. Barling et al. (2003) link job autonomy and training measures to positive well-being (i.e. job satisfaction). Macky and Boxall (2008) relate HR initiatives incorporating the job discretion to job satisfaction. Takeuchi

et al. (2009) associate perceived HPWS to a supportive organisational climate (management support and reward orientation concern for employees) and job satisfaction.

The accounts of employees have so far been confined to the subjective evaluation of the influence that HP-HR practices, operating on the principles of autonomy and support, have had on their work-related well-being. Employees' accounts regarding the influence that implemented HP-HR practices have on the psycho-social aspects of their work environments (i.e. perceived job demands, perceived job control, managerial and family support) have not been greatly used to assess and explain the mechanisms through which HP-HR practices impact upon employee well-being. Despite arguments emphasising the positive impact of workplace resources on work-related stressors and perceived psychological well-being, there is a dearth of empirical research testing these relationships in high performance work environments. In particular, the principles of the JD-R model have not been extensively applied to examine the mechanisms between HP-HR, job demands and employee well-being. Specifically, the buffering effects of perceived job control, managerial and family support have not been explored as a means to balancing the potential dysfunctional characteristic of the high performance workplaces. The notable exception in this case is Jensen et al. (2013), which shows that high perceived job control reduces the negative relationships between perceptions of HPWS on anxiety and work overload and, in turn, reduces their turnover intentions.

Moreover, it has been emphasised that HR practices depict managements' ideology and are a means to convey managerial messages to employees (Evans and Davis, 2005). The HP-HR practices send continuous messages, which individuals may interpret differently depending on their psychological evaluations of their work situation. This, in turn, determines the state of pleasure or displeasure of employees with organisational initiatives. The more similar and positive the individual level perceptions about work climate characteristics, the more desirable the consequent work attitudes, psychological well-being and behaviours may be (Li, Frenkel and Sanders, 2011; Gould-Williams and Mohamed, 2010; Bowen and Ostroff, 2004).

Summarising, workplace health and well-being may be dependent on employee perceptions of how the high performance work practices may have impacted upon work environment characteristics. If the HP-HR practices are implemented with relevant job resources, it will promote employee-centered outcomes by amicably curtailing any negative cognitive appraisal of the heightened job-related demands/pressures (Simmons and Nelson, 2007). Based on the empirical evidence, it can

be postulated that the JD-R model can be used as a tool for HRM studies (Bakker and Demerouti, 2012; 2007). It is argued that the more positive are perceptions about the psycho-social work environment characteristics, the better the consequent work attitudes, psychological well-being and behaviours may be in a high performance workplace.

The perceptions of individuals regarding the control they have in their jobs and the managerial and family support aspects of their workplace signifies the crucial link to their psychological well-being. Hence, perceptions of the level of job resources (e.g. job control, managerial and family support) may moderate the relationship between the HP-HR practices, perceived job demands and employee well-being. Today's HPW organisations may, thus, require the kind of set-up that nurtures care, and ensures that each individual experiencing that HPW environment feels fully empowered, supported and able to cope with their work and home life. The buffer hypothesis of the JD-R model proposes that appropriate job resources will buffer the negative impacts of extra work demands levied by HP-HR practices and promote employee well-being.

3.6 Towards developing a Theoretical Model in this research

Chapter 2 highlighted a number of factors that limit our understanding of the peculiarities of the association between HP-HR practices and employee well-being, the most significant being: 1) the question of which practices should be used to reflect HP-HR practices underpinning a robust theoretical logic, 2) highlighting the underlying mechanisms that illustrate how HP-HR practices are linked to employee well-being. To this end, a research framework has been devised that will address these issues and examine the relationships surrounding these core issues.

3.6.1 Conceptualising High Performance HR Practices

Chapter 2 reflected Boselie et al.'s (2005) view that, in general, 'HRM can consist of whatever researchers wish, or, perhaps, what their samples and data sets dictate' (p. 74). This, they argue, is because 'No accepted theory exits that might classify different practices into 'obligatory' and 'optional', 'hygiene' practices and 'motivators' (p. 73). To address this aspect, Guest and Conway's (2007) ability-motivation-opportunity-commitment (AMOC) framework has been incorporated in the theoretical model to identify the general themes/bundles that consolidate HP-HR practices. The AMOC approach, focuses on the importance of taking into account not only the HR practices which are linked to increased employees' skills and abilities, their motivation and their opportunity to participate but also their commitment to the organisation. This is considered more

encompassing and holistic than the commonly-used ability-motivation-opportunity (AMO) model (Bello-Pintado, 2015; Boxall and Purcell, 2003). In addition, the majority of existing research studies examining the association between HP-HR and well-being has not differentiated the effects of HP-HR practices on employees on the basis of HRM bundles. It is important to explore the effects of distinct bundles of HP-HR practices constituting HPWS, as it may be simplistic to assume that all bundles that constitute an HPWS impact on the outcomes uniformly (Wright and Kehoe, 2008).

The rationale for choosing the four categories/bundles of HP-HR practices based on the AMOC approach is theoretically justifiable. The skills and ability-enhancing bundle consists of HR practices that help improve the competence of employees. High performance working is believed by many to be a pivotal tool in achieving a more effective deployment of skills and securing competitive advantage. Practices relating to rigorous recruitment and training contribute to this aim. Selective staffing and rigorous recruitment strategies signify that the workplace is serious about the quality of people it employs (Huselid, 1995). Training indicates that the organisation is interested in the professional development of its employees (Wayne et al., 1997; Marchington, Wilkinson, Ackers, and Goodman, 1994). It is further asserted that training in technical, manual, cognitive and interpersonal skills relating to teamwork and relationships with colleagues and customers create a conducive and mutually-beneficial supportive working environment; enhance employee flexibility and increase loyalty and commitment with the organisation (Wood et al., 2012; Sun et al., 2007). Employee skills practices are thus seen to improve employees' knowledge skills and abilities (KSA). Human capital theory supports that when employees collectively use KSA's, it can turn into a win: win scenario for employees (i.e. positive attitudes and behaviours) and employers (in terms of organisational productivity) (Chi and Lin, 2011).

The motivation-enhancing bundle refers to the bundle that augments employee motivation to perform. Fair and open pay structures, performance-related pay, bonuses and objective management criteria, such as performance appraisal, signal to employees that their organisation is fair and impartial, which in turn, motivates them to work smarter for better remuneration and enhances their level of satisfaction and commitment to their organisation (Burke et al., 1992). It is widely accepted that the performance appraisal system is a significant source of providing timely and constructive feedback to superiors, peers and subordinates which help them improve their performance. Thus, if used constructively, it can be a useful source for improving employee attitudes (Cho and Poister, 2013). In the same vein, Wood and de Menezes (2011) assert that

motivational mechanisms (payment, promotion and financial benefits) may increase motivation to perform and obtain better satisfaction with the work role. Agency theory maintains that fair and open contracts and efficient work design enhance agent (employee) motivation and help align employee goals with those of the organisation (Chi and Lin, 2011).

The opportunity-enhancing bundle comprises of those HR practices that bolster employee autonomy, involvement and scope of participation in the work. Individual level role involvement, through work redesign initiatives (Wall, Wood and Leach, 2004), gives employees some degree of independence in determining their job schedules, prioritising accordingly and providing autonomy over their role (Wood et al., 2012; Wall, Michie, Patterson, Wood, Sheehan, Clegg and West, 2004). HR practices that aim to involve employees at the organisational level, comprise practices that increase employees' chances of direct or indirect participation in the work process, by exercising their voice in the workplace and by using influence over their work (Lawler, 1992). These practices aim to reduce communication gaps amongst peers and management by opening communication channels, canvassing pro-activity and reducing status differentials, allowing flexible working targeted at eliciting organisationally-desirable behaviours by stimulating employees psychologically (Macky and Boxall, 2007).

Finally, the commitment-enhancing bundle refers to those sets of HR practices that instil positive feelings in employees towards their employing organisation. This bundle includes fringe benefits, equal opportunities, grievance procedures, job security and flexible/family working arrangements. It is argued that such practices signify the compassion of employers towards their employees, which, in turn, instil compassion in employees for their employers (Vandenberg et al., 1999). On-site child care facilities may considerably influence employees' attitudes and membership behaviours by alleviating their childcare issues during work hours (Kossek and Nichol, 1992). Similarly, the options of flexitime, telecommuting and part-time working allow employers to show concern towards employees by allowing them to organise work around their dependents' schedules and to manage their work obligations in the most effective way. Other flexible work-time arrangements, such as job sharing, permit knowledge and skill dissemination, and hence help promote a comprehensive understanding of the overall organisation (Vandenberg et al., 1999).

3.6.2 Integrating Research Perspectives and Traditions

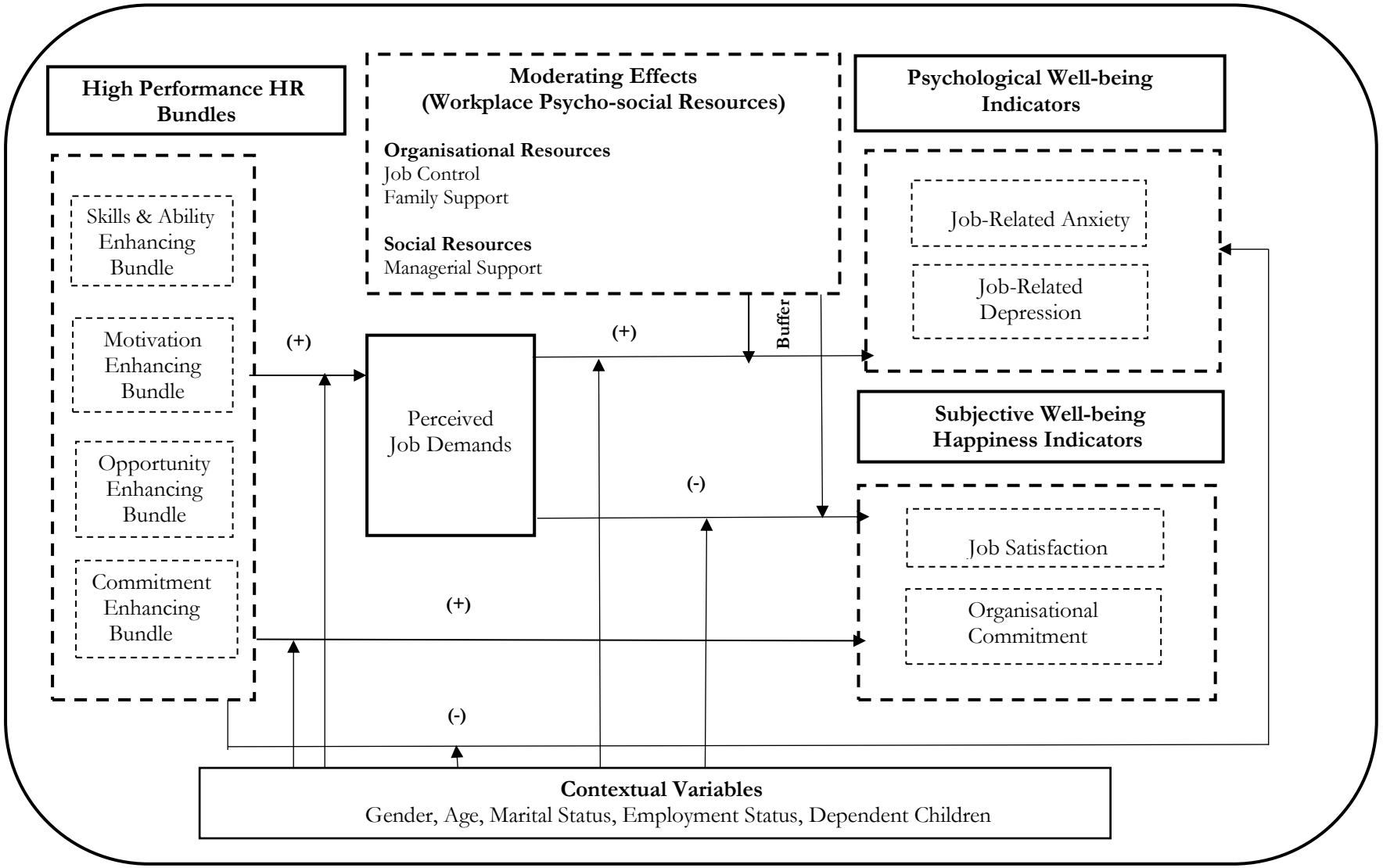
A conceptual framework delineating the relationship between HP-HR practices and employee well-being by integrating elements and arguments from the mutual gains theory, the labour process

theory and the JD-R model is shown in Figure 3.2. By drawing on theory and research from the work psychology, occupational stress and perceived organisational support literatures, the adopted framework accentuates the significance of incorporating employees' psychological assessment of their workplace characteristics as a means to study the salient issues concerning employee well-being in the high performance HR literature.

The conceptual framework integrates the above-mentioned theories because none of the theories on its own profoundly delineates the peculiarities of the linkages of the association between HP-HR and employee well-being. There is a divide in the HRM literature, manifested in the mutual gains and the labour process standpoints, on the perceived nature of job demands in the high performance work tradition, and their subsequent effects on employee outcomes. The mutual gains literature outlines the argument behind the positive association between HP-HR practices and employee well-being by suggesting that high performance working aligns both employees' and employers' interests. By assuming unified interests, increased job demands on employees are seen as discretionary work demands that employees take up happily to satisfy their higher order needs (Fan et al., 2014; Hughes, 2008; Macky and Boxall, 2008; Aryee, Srinivas and Tan, 2005; Berg et al., 2003; Appelbaum et al., 2000). Consequently, doing more work is not meant to compromise employee well-being. However, the mutual gains standpoint tends to overlook the likely difference of interests between employees and employers, and therefore, might not highlight the direction of the relationship in that context. The labour process standpoint fills that gap by suggesting that an inherent difference of interests exists between employees and employers. Resultantly, it favours a generally negative relationship between HP-HR and employee outcomes due to an increased level of workloads which are seen as obligatory in nature. The so-called positive employee gains, such as job enlargement, involvement, engagement in the work process and worker emancipation are considered to be a façade, inevitably leading to negative perceived workload and pressure (Keenoy 1997; Legge, 1995) and compromised well-being (Ramsey et al., 2000).

Both these standpoints put forward strong arguments for their line of reasoning to suggest enabling or disabling effects of HP-HR practices on employee outcomes, specifically their well-being. However, both remain unable to outline a profound framework that may establish a charter for managing employee well-being in high performance workplaces. There is no apparent disagreement to suggest that high performance workplaces do not enlarge employee job roles.

Figure 3.2: High Performance HR Bundles, Perceived Job Demands, Perceived Job Resources and Employee Well-being



Proposed Conceptual Model

Taken together, the mutual gains and labour process perspectives and their empirical analysis suggest two important conclusions. First, there is a strong need for a systematic and simultaneous empirical exploration of the mutual gains and labour process viewpoints, in order to reconcile differences in the existing literature, and know which of the perspectives is most accurate in explaining the underlying mechanisms in this relationship. In this respect, it will be insightful to explore the differential impacts of HP-HR practices on employee well-being/outcomes (Jiang et al., 2012; Takeuchi et al., 2009), and also investigate if varying dimensions of HP-HR practices impact different employee outcomes differently (Wood et al., 2012; Ramsay et al., 2000). Investigating the differential impacts of bundles of HP-HR practices have been encouraged, as the prevailing assumptions of the homogenous effects of the HR practices constituting an HPWS on employee outcomes have been challenged (Gardner et al., 2011; Shaw et al., 2009). Second, there is a strong need to look inside the 'black box' to examine the character of the posited link, and gain a comprehensive picture of the likely confounding variables that affect the HP-HR/well-being association.

The conceptual model (Figure 3.2) acknowledges that a useful way of taking the empirical enquiry on the association between HP-HR practices and well-being forward would be to attempt managing employee well-being in high performance workplaces on more psychological grounds. Another stream of literature, which links to work psychology and occupational stress, encourage us to go beyond the issue of 'causal link' of 'practices' and 'processes', and focus more on potential workplace factors that are known to have the ability to turn potentially negative impacts of workplaces stressors into more positive employee outcomes. The JD-R model is, thus, integrated into the HRM perspective, to evaluate the entire mechanism within a high performance workplace, including HR practices, processes and workplace support elements that all must be combined and evaluated together, to managing employee well-being. The JD-R model postulates that equilibrium between work demands and job resources predict employees' well-being. Lower well-being and health impairment occurs if perceived work demands exceed perceived resources at disposal (Bakker et al., 2007b). The buffer hypothesis of the JD-R model proposes that job resources can buffer the negative impact of job demands on employee outcomes (Bakker et al., 2005; Bakker, Demerouti, Taris, Schaufeli and Schreurs, 2003), thereby inferring that HRM models are lacking in their approach to considering a balance between effort and resources as the way of ensuring employee well-being in high performance work environments.

3.7 Outline of the Research Model

The research model adopted in this thesis (Figure 3.2) takes a bundling approach to HP-HR practices, which is consistent with the ideas advanced by Jiang et al. (2012) and Takeuchi et al. (2009). The conceptual model suggests that the four bundles of HP-HR practices will have distinct and significant effects on perceived job demands and important dimensions of employee well-being.

In a simple linear way, the high performance HR practice bundles influence dimensions of employee well-being in two contrasting ways, highlighted in the mutual gains and the labour process stand-points. The mutual gains view argues that adopting high performance HR practices helps align employees' interest to that of management's, thereby encouraging labour to put in more effort. It is argued that employees invest in the relationship with the employers with regards to their time, effort and knowledge (Taris and Schreurs, 2009). In return, employees are getting long-term benefit from the organisation in the form of skill enhancement, job security, enhanced involvement, rewards, status and prestige. Overall employees stay positive, less anxious and depressed and more satisfied and committed, without perceiving the extra effort required form them as threatening, harmful or negative (Figure 3.2 - a negative association between HP-HR bundles and anxiety and depression, and a positive association between HP-HR bundles and job satisfaction and organisational commitment).

However, the nature of extra effort required will be appraised positively only when employees regard the benefits that the organisations offer them, i.e. skill enhancement, job security, enhanced involvement, rewards, status and prestige, as favourable managerial initiatives. Many may perceive such managerial approaches as infringements on their inherent interests making undue demands on their time. In that scenario, the extra effort will be perceived as extra job demands, which will be regarded as stressful, and appraised as threatening and harmful. Therefore, the second route through which high performance HR practices could influence aspects of employee well-being is through a negative appraisal of extra work demands, induced by the inherent difference of interests between employees and employers. The ultimate outcome in this scenario is a debilitated sense of work-related well-being due to increased perceptions of work demands, as argued in the labour process perspective. Following this line of reasoning, perceived job demands are expected to intervene (i.e. serve as a mediator) to complete a chain of process that links the HP-HR practices bundles to a negative appraisal of different dimensions of employee well-being. (Figure 3.2 - a positive association between HP-HR bundles and perceived job demands, and a positive

association between perceived job demands and anxiety and depression and a negative association between perceived job demands and job satisfaction and organisational commitment).

One way to minimise the potential negative impact of the high pressure jobs on aspects of employees' well-being is by introducing work intensification-reducing mechanisms in the workplace. This will help reconcile the differing perspectives on the nature of extra work demands and ensure better work-related well-being. Therefore, it could be argued that another route through which employee well-being can be ensured in high performance workplaces is by implementing appropriate job resources. The strength of the relationship between perceived job demands and dimensions of employee well-being are likely to be buffered by workplace factors, i.e. job resources that have been identified as major motivators of employee well-being. The perceived availability of these job resources will either promote employee well-being or - when lacking – decrease employee well-being. It can be argued that in contemporary organisations, attaining well-being cannot be restricted to the commonly-considered aspects of job control and managerial support. There can be other variables, such as perceived family support, playing a strong role on perceptions of work-related well-being (Bakker and Demerouti, 2007). The impact of job demands may be argued to be less damaging when multiple sorts of job-supports exist in the workplace. Multiple coping mechanisms may help eliminate any potential negative effects more profoundly. Therefore, the perceived availability of the job resources would contribute towards balancing perceived job efforts/demands and reduce their consequent negative effects on different dimensions of employees' work-related well-being (Figure 3.2 - buffering/moderating effects of job resources on the relationship between perceived job demands and employee well-being). Resourceful work environments endorse a workplace model which is both employee and employer friendly, and establish a more persuasive business case of employee well-being in high performance work environments.

The conceptual framework can potentially make a significant contribution to the HPW, and HRM, literatures, as no empirical study has simultaneously examined the effects of all the variables employed in the present study. In addition, some aspects of this inquiry are unique. First, a more encompassing conceptualisation of the HPW is used in this study. Second, a bundling approach to studying the HP-HR-well-being association is adopted, instead of the usual systems and individual practice effects. Third, the impact of HR-HP practices is examined on employee perceived job demands. Fourth, the impact of employee perceived job demands on well-being is recognised and evaluated. Fifth, the mediating role of perceived job demands (unlike in most HRM

studies) in the relationship between HP-HR and employee well-being is examined. Sixth, four distinct measures of employee well-being are simultaneously examined. Seventh, the impact of perceived job resources on the paths linking perceived job demands and employee well-being is recognised and evaluated.

3.8 Chapter Summary

This chapter presents the theoretical underpinning that guides the current research project, and provides a general framework for developing and testing a large-scale workplace level model of employee well-being. The conceptual model developed in this thesis differs from previous models used to examine the association between HP-HR practices and employee well-being. The current model integrates competing perspectives from the HRM literature (mutual gains and labour process perspectives) and psychological perspectives (job-demands-resources model) instead of focusing on a particular standpoint to explore employee well-being in high performance workplaces. There are very few empirical studies that simultaneously examine the competing claims of the effects of HP-HR on employees, and suggest alternative explanations of the underlying mechanisms. A similar dearth is found in applying psychological approach to managing well-being, integrating the principles of work psychology and HRM literature, specifically within British workplaces. This model is, thus, an attempt, to fill these gaps. Using this research model, a number of research hypotheses have been tested in order to understand relationships between the variables of interest. The next chapter (Chapter 4) discusses the research methodology adopted to answer the research hypotheses.

Chapter 4

Research Methodology

4.1 Introduction

The broad aim of this research is to unveil the intermediate mechanism through which the HP-HR bundles influence employees' perceived work-related well-being in British workplaces. This chapter outlines the chosen research design and methodology to examine that link. The chapter includes discussion of the research paradigm, data set, measures and the data analytic techniques used in the research. Further, it presents the discussion on data screening and data aggregation procedures.

4.2 Research Paradigm

A research paradigm highlights the ontological, epistemological and methodological stances in a research (Prowse, 2010; Grix, 2004; 2002). Ontological assumptions are concerned with what the researcher believes constitutes reality. The ontological position for this research is based on the reality being an external entity (i.e. objectivism). The researcher believes that the reality is independent from the ones who inhabit it.

Epistemology highlights the researcher's opinion on 'how what is assumed to exist can be known' (Blaikie, 2000, p. 8). The epistemological position of the study is positivist[2]. Positivism supports the application of methods of natural sciences to the study of social reality (Grix, 2002). This approach is the most commonly used in management research and, in particular, HRM research. A positivist approach to study the HP-HR/well-being association facilitates the researcher to test the conceptual model of the study, embedded in a strong theoretical framework from two different disciplines, through statistical methods (Griesmaier, 2006; Bryman, 2004; Grix, 2004). It allows use of objective measures to support or falsify findings grounded in the literature (Wicks and Freeman, 1998). The process of quantification, hypotheses testing and empirical analysis minimises the scope of personal judgement to contaminate the findings of the study. Positivist approach facilitates external validity and generalisability of the study findings. Formal and structured research process

[2] See Appendix C, Table C – 1 for a summary of distinguishing features of positivism, critical realism and interpretivism.

allow for firm future recommendations. Overall, taking a positivist stance allows the researcher to offer robust alternative explanations of the intermediate relationships and boundary conditions underlying the HP-HR/well-being association.

Over-reliance on positivist research design in studies seeking to link HRM practices to organisational and employee outcomes (including well-being) is seen to limit sound theoretical explanations and explanatory power in this area of inquiry (Guest, 2011; Fleetwood and Hesketh, 2008; Wall and Wood, 2005; Legge, 2001). Resultantly, research based on interpretivism and critical realism is encouraged to examine these relationships for an enriched account (Fleetwood and Hesketh, 2008). However, the researcher believes that a positivist approach to examine the HP-HR/well-being relationship will be beneficial in terms of extending prior quantitative research. The use of sophisticated data analytic techniques are seen to facilitate explanation of relationships, capture key insights on the debates in this field and shed more nuanced light on this association for refinement of theory (Truss, Shantz, Soane, Alfes and Delbridge, 2013). Despite using a positivist framework, the research is envisaged to minimise the existing gap of sound theoretical explanations in the current HRM theory.

In terms of methodology, the choice is between quantitative or qualitative approach[3]. The methodological position of this study is rooted in the use of quantitative methods, which allow to quantify observations, duplicate procedures and highlight patterns or rules of the social life phenomenon (Saunders, Lewis and Thornhill, 2007; Bryman and Bell, 2003). The use of quantitative methods also complements the epistemological stance of the study, and facilitates generalisation of the findings to British workplaces. Hence, in relation to qualitative methodology the use of quantitative methodology allows the researcher to enjoy a wide range of advantages, such as testing and validating prevalent theories in relatively quicker timespan. Most importantly, it allows a wider scope and more generalised level of explanation of the phenomena at the British workplaces with relatively fewer details in hand.

4.3 Research Design

A research design provides essential guidelines for collection of data and its subsequent analysis (Churchill, 1979). The research objective and its befitting approach guides the research design. This research benefits from an abductive research approach, which suggests that the process of theory testing (i.e. deduction) or theory building (i.e. induction) may not be divided rigidly

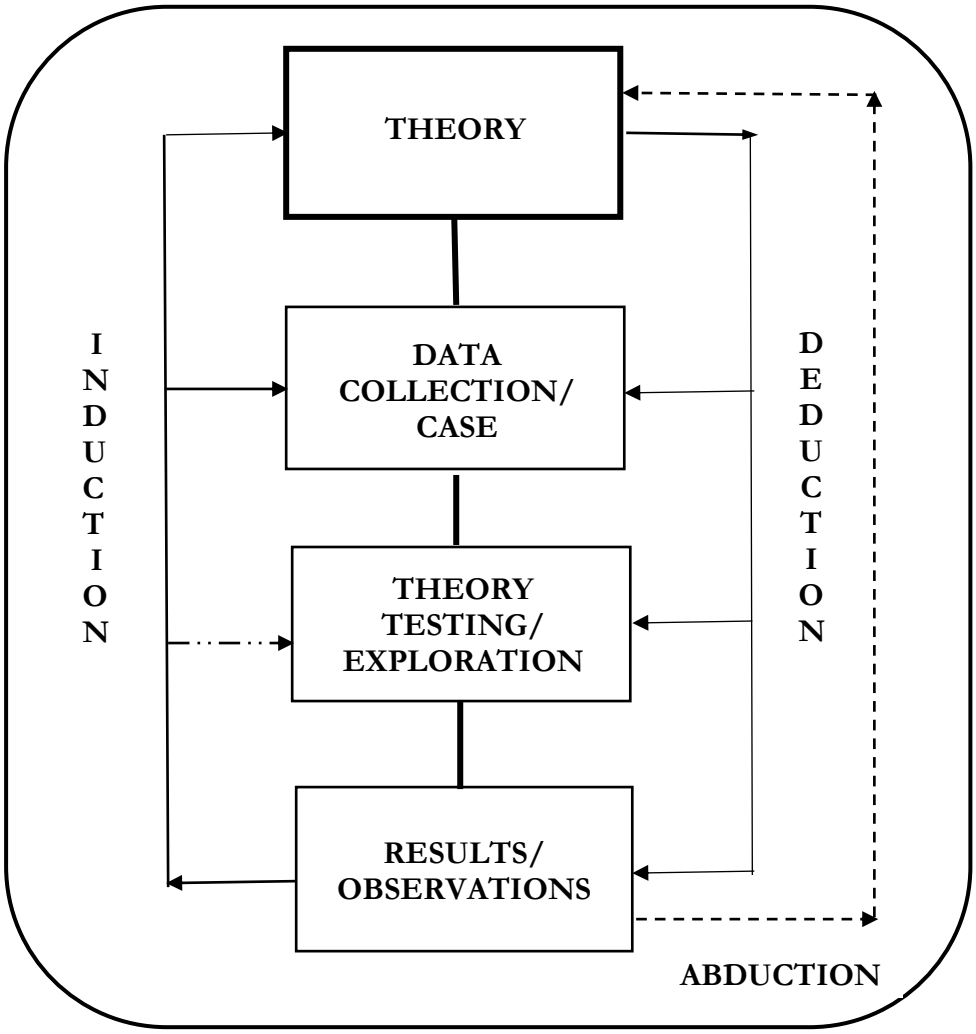
[3] See Appendix C, Table C – 2 for an overview of both methodological approaches.

(Saunders et al., 2007). The researcher believes that understanding the HP-HR/well-being association requires a coherent process based on deductive and inductive approach. New knowledge and insights on the HP-HR/well-being link may emerge only when prevalent laws, theories or causal relationships may be amended and improved upon in light of fresh research findings (Glaser, 1992). Figure 4.1 illustrates the process of deduction and induction and demonstrates 'abduction' as an iterative process of theory progression based on the research findings/observations. This research largely follows the deductive approach, as the researcher has a sound extant academic literature to hypothesise on, and theory generation is not a prime research aim. Rather, the researcher is interested in unfolding what is happening. However, the researcher acknowledges that the conceptual model of the research may render established relationships insignificant, suggest changes based on study's findings and propose models for further analysis, signifying an inductive approach.

Based on the nature of research questions, a study can be categorised as descriptive, explanatory or exploratory. The current study is classified as descriptive, because the aim of the study is to understand a specific research agenda (i.e. the HP-HR/well-being association); Robson, 2002; Ghauri and Grønhaug, 2002). The main focus of descriptive research is to identify relationships between variables or highlight the frequency with which situations or events occur (Saunders, Lewis and Thornhill, 2009). Here, the researcher has specific hypotheses between variables of the study which need to be studied in a rather structured way, thus signifying a descriptive study. Since the aim of the research is neither exploration of some less structured phenomena nor establishing a causal relationship between the variables of interest, the research is not categorised as exploratory or explanatory respectively (Robson, 2002; Ghauri and Grønhaug, 2002).

The research design can be cross-sectional or longitudinal. This research employs the cross-sectional design. A cross-sectional research studies a phenomenon (or phenomena) at a particular point in time, as opposed to studying it on repeated accounts as in a longitudinal design (Saunders et al., 2007; Robson, 2002). Cross-sectional design is so far the most commonly used type of descriptive design in management and HRM research, and describes the variations in the explored scenarios at the time of the data collection (i.e. 'snapshot' view of social reality; Robson, 2002). Using cross-sectional design allows a sizable volume of information expressed in numeric terms to be analysed for numerous relationships explored in this research. Additionally, cross-sectional research suits the researcher because of the restriction of time frame of three years for completion of the current study.

Figure 4.1: Process flow of Deductive, Inductive and Abductive Research Process



Source: Based on the discussion in Grix (2004) and Saunders et al. (2007)

4.4 Research Methods

Research method refers to 'the specific means of gathering data that are common to all sciences or to a significant part of them' (Miller and Salkind, 2002, p. 201). In order to ensure viability of the proposed model and generalisability of the findings across British workplaces, a survey style secondary data seemed a logical and economical option for the study. Continuous/regular surveys which gather information from across British workplaces and their employees are especially suited for the study for two reasons. First, such surveys offer a comprehensive and nationally representative portrait of employment relations across Britain. Second, these surveys provide the breadth required to generalise the results. With this in mind, British social survey namely the

Workplace Employment Relations Survey (WERS) 2011 is identified as the secondary data to base the research on. WERS series has mapped the British employment relations extensively for over three decades. The first WERS was conducted in 1980 and thereafter intermittently in 1984, 1990, 1998, 2004 and 2011. The WERS series have earned a reputation of maintaining continuity, evolving, transforming with the changing employment relations and management practices, while retaining quality and robustness in the data. Despite the evident aptness of WERS for the study, the researcher ensured it's suitability on the grounds elaborated below.

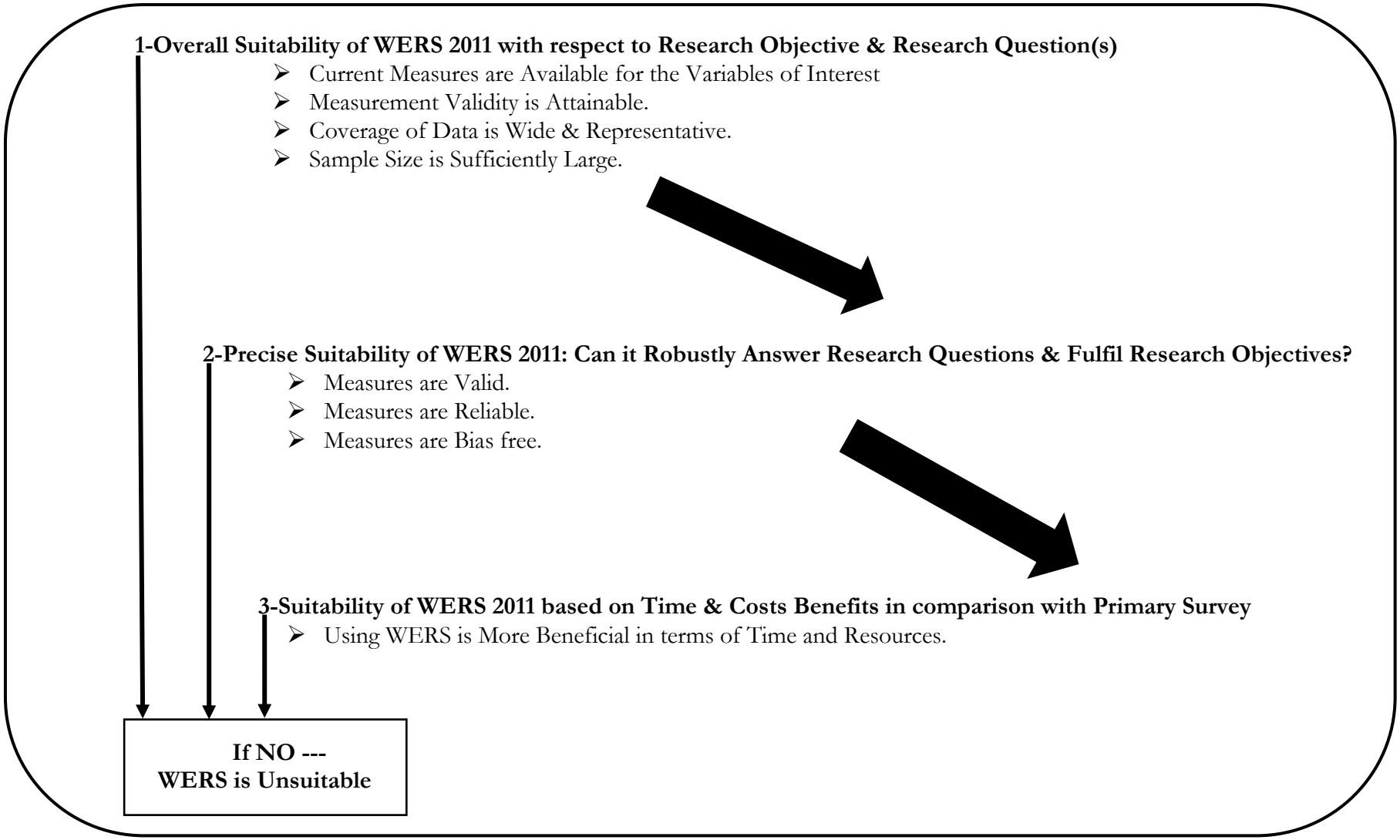
4.4.1 Suitability of WERS 2011

The suitability of WERS 2011 for the study is established on three grounds (see Figure 4.2 for an illustration). First, WERS 2011 seems to effectively fulfil the overall research objectives. WERS 2011 provides accurate measurement for the variables of interest. It covers the population about which the data was required. The available data is current. It is possible to exclude unwanted or superfluous information without compromising the quality of the remaining data. Most importantly, even after exclusion of unwarranted data, sufficient data still remains for further analysis. Hence, there is no issue of sample size being small for robust analysis.

Second, credibility of the data and scope of replication in WERS 2011 is high. WERS is a multi-sponsored project involving many esteemed organisations and is endorsed by a number of reputable organisations. Resultantly, authority and trustworthiness of WERS data is not questionable. Collection and dissemination of data in WERS is impartial and discrete. Open and detailed account of sampling techniques, response rate, data collection process along with full description of data gathering techniques and coding sheets are provided publically. Therefore, measurement and selectivity bias is not an issue with WERS 2011.

Third, WERS 2011 offers time and cost effectiveness. WERS data sets are more than often used for academic and commercial research purposes. Hence, the data is available in ready to use downloadable computer-readable formats. This saves a considerable time in terms of data entry.

Figure 4.2: Evaluating Suitability of WERS 2011 for the Research



Source: Adapted from Saunders et al. (2007)

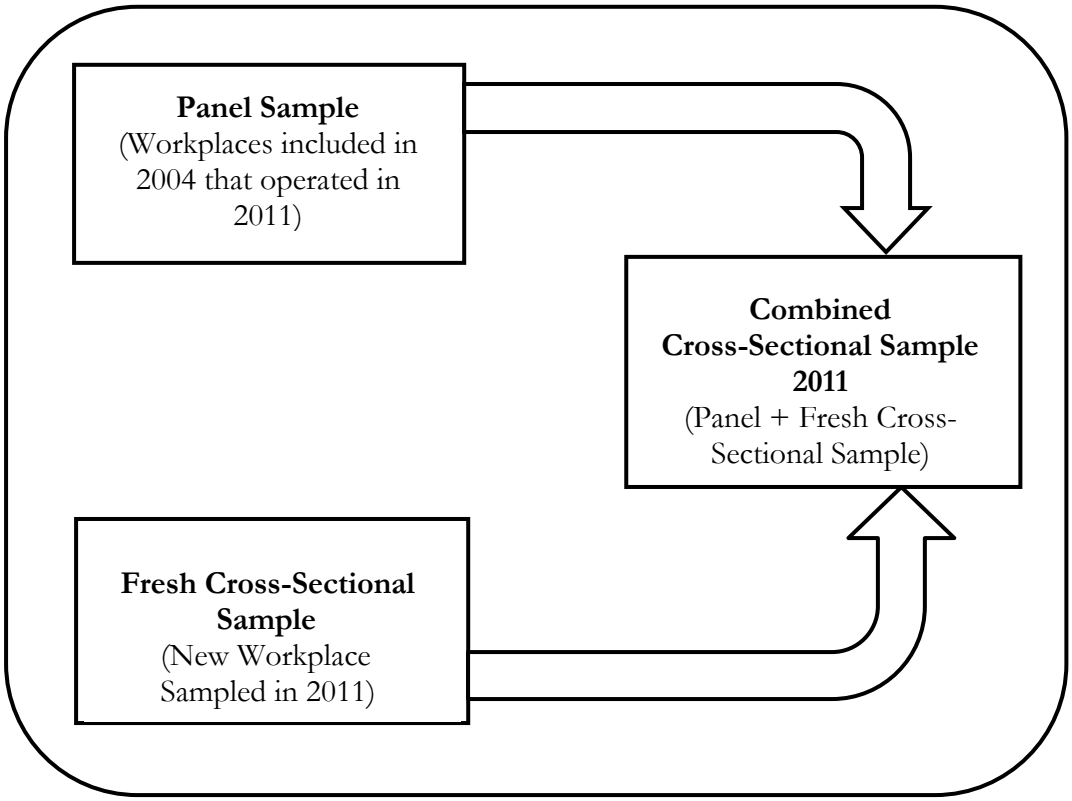
4.4.2 WERS 2011: Characteristics and Composition

The data in WERS 2011 is collected from a random sample of establishments i.e. more than one case. Within each workplace it captures information at both individual and workplace level. The three components of WERS gather information through survey of employees questionnaire (SEQ), survey of managers and worker representative questionnaire (WRQ). Survey of managers is based on three questionnaires, namely the employee profile questionnaire (EPQ), the financial performance questionnaire (FPQ) and the management questionnaire (MQ). Management questionnaire is the core of WERS, and is administered in a face to face interview with the senior most manager responsible for employment relations at a workplace.

WERS draws data on multiple perspectives and captures the viewpoints of management, worker representatives and employees. Having the viewpoints of both managers and employees from the same workplace in examining the HP-HR/well-being association is most valuable for this research for two reasons. First, having both perspectives fulfils the requirement of different unit of analysis i.e. workplace and individual level (online data from van Wanrooy, Bewley, Bryson, Forth, Freeth, Stokes and Wood, 2013). Second, the researcher can examine the relationship from the perspective of both stakeholders, and effectively interpret the impact of provisions of employment practices on experiences of the employees.

The overall sample in WERS 2011 is based on interviews of 900 of the 2295 workplaces that participated in the 2004 cross-section survey and another 1800 workplaces from the new independent sample (see Figure 4.3). Combined together and weighted accordingly, it creates a cross-sectionally representative sample of 2680 workplaces; a cross sectional sample larger than that of 2004 (van Wanrooy et al., 2013). Overall population represented by the WERS 2011 consist of 750,000 workplaces that employ approximately 23.3 million employees. This survey population accounts for 35% of workplaces and 90% of all employees in Britain. The overall sample is representative of all British workplaces with five or more employees except for the workplaces in agriculture, forestry, fishing, mining and quarrying sectors (van Wanrooy et al., 2013).

Figure 4.3: Sample Design in WERS 2011



Source: Based on Description of van Wanrooy et al. (2013)

WERS 2011 employs two methods of data collection i.e. self-completion questionnaire and interviews. Hence, the data gathered has both breadth and depth on variables of inquiry. Approximately 2,680 workplaces, 21,981 employees[4] and 1,002 employee representatives participated in the data collection phase. Data is available for 989 panel workplaces. This breadth and depth facilitate the research results to have a sound ground for generalisations. The response rate for the MQ, SEQ and WRQ is 46.5%, 54.3% and 63.9% respectively, which minimise the selectivity bias in WERS 2011 (online data from van Wanrooy et al., 2013).

The scope of WERS 2011 is also wide and captures information on key variables of the intended study. Management interviews highlight the variables on the management of HR, workplace

[4] Of the total respondents' majority are female. Generally, employees are married, lie between ages 30 to 59 years, have no dependent children and have worked in their workplaces for at least 2 years to less than 5 years or 5 years to less than 10 years. Employees have received some training in the workplace, are academically qualified, have permanent job contracts and have never been a member of trade union or staff association (see Appendix C, Table C - 3).

flexibility, arrangement of work and the worklife balance. Employee survey exhibits information on employment time, job impact, skills and job satisfaction, trust, work-life balance and employee well-being. Hence, WERS 2011 allows for an extensive research data, the results of which may be of significance to a majority of organisations across Britain (online data from NIESR, 2005). The current study utilises data from only two components of WERS 2011. The data on the HP-HR practices is taken from the management questionnaire, and is measured at the workplace level. The data on employee perceptions of their job demands, job control, managerial and organisational support, psychological well-being and demographics is taken from survey of employee questionnaire, and is measured at the individual level.

4.4.3 Validity, Reliability and Replicability of WERS Data

WERS 2011 is a cross-sectional design which neither allows time ordering to variables nor establishes causal relationship between them (Bryman, 2012). Hence, internal validity of WERS 2011 is low. Nevertheless, external validity of WERS is high as the data is collected from a randomly selected sample of establishments and respondents, making the sample representative of the entire population for generalisations. Ecological validity in a cross-sectional data is low, as the respondents answer the questions of the survey or interview in a setting different from the usual. Hence, the ecological validity of WERS 2011 is low. However, the content and construct validity is high due to rigorously generated measurement scales employed at data collection stage, and availability of various sets of variables to measure the explored concepts correctly (Bryman, 2012). See section 4.10.4.1 for details on validity.

Reliability of the data is also high due to rigorous data collection criteria and high response rate in WERS 2011. The rigorous and systematic data collection procedures of WERS reduce the stability, selectivity, participant and observer bias threats, which are commonly associated with quantitative research (Bryman, 2012). Replicability in cross-sectional data such as WERS 2011 is high, as there exits clarity on the sample selection procedures. The use of standardised measures of concepts and statistical research instruments boost the replicability prospects of WERS 2011 (Bryman, 2012).

4.5 Measurement of Key Variables

This research uses a wide array of measures in order to carry out the inquiry (see Table 4.1). Detailed description of the study variables is provided below for independent, intermediate and outcome variables respectively.

Table 4.1: List of Variables and their Operationalisations

Variables/Constructs	Definition	Measure
HP-HR Bundles		
1.Skills & Ability Bundle	Collection of, managerial, HR practices that improve the knowledge and skill levels of the workforce.	Composite variable, measuring recruitment and selection, and training practices.
2.Motivation Bundle	Collection of, managerial, HR practices that facilitate work, motivation and inducements.	Composite variable, measuring performance-based compensation and performance evaluation practices.
3.Opportunity Bundle	Collection of, managerial, HR practices that boost employee opportunity to participate, autonomy and responsibility levels.	Composite variable, measuring employee participation, feedback, attitude surveys, two-way communication, autonomous job design and information sharing practices.
4. Commitment Bundle	Collection of, managerial, HR practices that help nurture employee attachment with the organisation.	Composite variable, measuring flexible-work arrangements, family care and employee benefits practices.
Perceived Job Demands	Employees' perception of too much work to do in less time.	Measured as an aggregate variable reflecting the challenge related aspects of job, in terms of perceived overload and difficulty in fulfilling non-work commitments due to time spent on job.
Negative Well-being Indicators		
1.Work-related Anxiety	A psychological state that reflects employees' perceptions of the tensions or pressures they face due to their job requirement.	Measured as an aggregate variable, based on perceptions of employees' about how much time their job made them feel tense, worried and uneasy.
2.Work-related Depression	A psychological state that reflects employees' perceptions of the feelings of unworthiness and loss of interest that they face in relation to fulfilment of their job requirements.	Measured as an aggregate variable, based on perceptions of employees' about how much time their job made them feel depressed, gloomy and miserable.
Positive Well-being Indicators		
1.Job Satisfaction	An attitude that reflects employees' perception about how well they like or dislike their job.	Measured as an all-inclusive variable in aggregate form, which exhibits contentment with eight facets of job, such as, satisfaction

		with pay, training, autonomy, involvement in work decisions.
2.Organisational Commitment	An attitude that reflects employees' perceptions about their attachment to the organisation.	Measured as an aggregate variable, based on three measures of affective commitment.
Perceived Job Resources	In this study - job resources reflect only the external factors at work.	
1.Job Control	Degree to which employee's perceive that they have freedom and independence in their work in terms of scheduling, deciding procedures to follow and making work-related decisions.	Measured as an aggregate variable, reflecting control over task, pace of work, and order in which to carry out tasks.
2.Perceived Managerial Support	Employees' perceptions on how well management and supervisors understand their work and non-work commitments, and supports them at work.	Measured as an aggregate variable, reflecting trust – managers can be relied to keep their promises, are sincere and deal with employees honestly and fairly; two-way communication- information on changes on policies, staffing, the way to do job and financial matters; participation in decision making; and supervisor support – supervisor seek employees' views, respond to suggestions, allow making final decisions and understand their outside work responsibilities
3.Percived Family Support	Employees' shared assumptions, beliefs, and values regarding the extent to which an organisation supports and values the integration of employees' work and family lives.	Measured as an aggregate variable, reflecting availability of five family friendly practices (flexi-time, job sharing, change working hours, working fewer days and working from home) and two family care options (working only during school term times and paid parental leave).

4.5.1 Measures of Independent Variables

The usual approach in measuring HP-HR practices is either using a scale consisting of inter-correlated practices or using an index of HP-HR practices (Macky and Boxall, 2007). We used index of combined bundles of practices designed to attain employee skills and abilities, motivation, opportunity to participate and commitment (AMOC). A range of HP-HR practices are important to turn the AMOC model into action. In line with the extant literature and previous research (Guest and Conway, 2007; Michie, Zubanov and Sheehan, 2008) a total 20 HR practices reflecting the high performance ideology are used in the study, namely standard induction, recruitment and selection, formal training systems, performance appraisal, performance related pay (PRP), profit related pay (Prof-Pay), employee share owner schemes (ESOS), communication, consultation, team work, job design, information sharing, attitudes survey, quality circles, equal opportunities, grievance procedures, fringe benefits, job security, family friendly/flexible working and lastly family care options. Several measures covering different aspects of the highlighted practices are included in WERS 2011. Resultantly, 87 items are selected to measure the chosen 20 HP-HR practices. These 20 HR practices are further grouped into four bundles signifying practices based on the AMOC model, in line with Guest and Conway (2007)[5].

The HR practices in WERS 2011 reflect the actual practices implemented at the workplace. The majority of the chosen HR practices are measured as binary variables. Exceptions are the four measures of job design, designated teams, off-the-job training, functional flexibility, performance appraisal, performance-related pay (PRP), profit-related pay (Prof-Pay) and employee share owner schemes (ESOS)[6]. Among these, measures of job design are measured on a four point scale ranging from 'none' to 'a lot', while designated teams, off-the-job training, functional flexibility, performance appraisal, PRP, Prof-Pay and ESOS are measured in terms of the proportion of employees involved in the particular practice, coded on a six point scale ranging from 'none' (0 per cent) to 'all' (100 per cent). These items were redefined as dichotomous (mostly at median-split) in order to maintain consistency in the analysis, and avoid any biases arising from non-normality of their distributions.

[5] See Appendix C, Table C – 4 to Table C – 7 for a detailed description of each HP-HR bundle and its' associated practices.

[6] See Appendix C, Table C - 8 and Table C - 9 for the distribution of measures of these HP-HR practices when they are not binary.

4.5.2 Measures of Intermediate Variables

Perceived job demands, perceived job control, perceived managerial support and perceived family support comprise the intermediate variables of the study. Perceived job control and perceived family support reflect organisational job resources and perceived managerial support reflects social support at the workplace. In WERS 2011 the intermediate variables are measured at the individual level.

4.5.2.1 Perceived Job Demands

Perceived job demands measure the extent to which employees perceive their level of work obligations in a given time frame. It is a three item scale originally measured on a five point Likert scale ranging from 'strongly agree' (scored 1) to 'strongly disagree' (scored 5). The items include responses to the items: *'My job requires that I work very hard'; 'I never seem to have enough time to get my work done'; 'I Often find it difficult to fulfil non-work commitments because of the time spent on job'*. A high score on the original scale indicates low perceived job demands and a low score indicates high perceived job demands. The scale is, thus, reversed so that low score indicates low job demands and high score indicates high job demands. The total score on job demands is computed by adding the score on two items (one measure of job demands is removed from the scale; see Chapter 5, section 5.5.3). The establishment level scores on perceived job demands are computed by averaging the individual employee scores within establishments.

4.5.2.2 Perceived Job Control

Perceived job control relates to an individual's perception of the level of control over different aspects of their daily work tasks. These relate to the influence the employees have over the choice of task, method control and order of their jobs along with the flexibility in controlling the pace, start and finish time of the work. Perceived job control in WERS 2011 is measured by five items, each scored on a four point scale ranging from 'a lot' (scored 1) to 'none' (scored 4). The questions gauge employees' level of influence on the following items: *'The tasks you do in your job', 'The pace at which you work', 'How you do your work', 'The order in which you carry out tasks', 'The time you start or finish your working day'*. Originally, the scale indicates that a low score relates to high job control and vice versa. The scales are reversed in ascending order so that a low score shows low perceived job control and a high score indicates high perceived job control. The total score on job control is computed by adding scores on four items (one measure of job control is removed from the scale;

see Chapter 5 section 5.5.3 for details). The establishment level score on perceived job control is computed by averaging the individual employee scores within establishments.

4.5.2.3 Perceived Managerial Support

WERS 2011 measures perceived managerial support on four dimensions: trust in management, downward communication, employee consultation and general supervisory relations including the mangers' inclination towards employee up-skilling.

4.5.2.3.1 Trust in Management

Perceived trust in management is a four item scale measured on a five point Likert scale ranging from 'strongly agree' (scored 1) to 'strongly disagree' (scored 5). The items include if employees think that their managers *'Can be relied upon to keep their promises'; 'Are sincere in attempting to understand employees view'; 'Deal with employees honestly'; and 'Treat employees fairly'*. The original scale is reversed in ascending order so that a low score indicates low managerial trust and a high score indicates high trust in management. The total score of trust in management is calculated by adding the scores on all four items. Establishment level score for managerial trust is calculated by averaging the individual employee scores within each establishment.

4.5.2.3.2 Downward Communication

Downward communication measures the perception of employees about how good their management is on disclosing information about the workplace to the employees. The information relates to general organisational change and specific organisational matters. To measure downward communication, the items included in WERS 2011 relate to the effectiveness of management in keeping employees informed about the following four aspects: *'Changes to the way the organisation is being run; Changes in staffing; Changes in the way you do your job; 'Financial matters, including budgets or profits'*. The four items are measured on a five point scale ranging from 'very good' (scored 1) to 'very poor' (scored 5). The scale was reversed to ascending scores and then a total score on downward communication was calculated. The total score on downward communication is computed by adding the scores on all four items. Downward communication score for each establishment is calculated by averaging individual employee scores within establishment.

4.5.2.3.3 Employee Consultation

Employee consultation refers to the extent that employees feel that their management consults with them or their representatives on different aspects of the work. The measures of the consultative management are based on three item scale. The items ask: *'How good the managers at this workplace are at seeking the views of employees or employee representatives'; 'How good the managers at this workplace are at responding to suggestions from employees or employee representative'; 'How good the managers at this workplace are at allowing employees or employee representatives to influence final decisions'.* All three items are measured on a five point scale ranging from 'very good' (scored 1) to 'very poor' (scored 5). The scale is reversed so that a low score indicates low employee consultation and high score indicates high employee consultation. The total score on perceived level of consultation is calculated by aggregating the scores on three items, and the establishment level score is calculated by averaging the individual employee scores within the establishments.

4.5.2.3.4 Supervisor Relations

Supervisor relations are based on two items, relating to general level of concern of managers for their subordinates, and interest of managers towards up-skilling their employees. The items measure the extent that employees agree or disagree with the extent to which their managers: *'Understand about employees having to meet responsibilities outside work'; 'Encourage people to develop their skills'.* Both items are measured on five point Likert scale ranging from 'strongly agree' (scored 1) to 'strongly disagree' (scored 5). The scales are reversed so that low scores correspond to low agreement and high score to indicate high agreement with the statements. The total score on supervisor relations is calculated by adding the individual scores on both the items. The supervisor relations at each establishment are calculated by averaging the individual employee scores on the scales within the establishment.

4.5.2.4 Family Support

WERS 2011 measures family support using two dimensions: flexible work arrangements and family care options.

4.5.2.4.1 Flexible Work Arrangement

The flexible work arrangements are the options made available to the employees to balance their work and home life. WERS 2011 measures these options on a 3 point scale, scoring (1) I have used this arrangement; (2) available to me, but I do not use; and 3) not available to me. The

employees are asked if they would have the following options available to them: *'Flexi-time, 'Job sharing (sharing a full time job with someone else), 'The chance to reduce your working hours (e.g. full-time to part time), 'Working at or from home in normal working hours',* 'The scale was first reversed to ascending order and then recoded: scored 1 if the employees perceive that these arrangements were available to them, and 0 if they perceived otherwise (not available). The total score of flexible work time arrangement is calculated by adding the scores on four items (one measure of flexible work time arrangement is removed from the final scale; see Chapter 5 section 5.5.2.1). The score on flexible work time arrangements within each establishment is calculated by averaging the individual employee scores within establishments.

4.5.2.4.2 Family Care Options

The family care options are measured by perception of employees about the availability of two options. The employees are asked if they have the option of '*Working only during school term time', 'Paid parental leave'*. Both items are measured on three point scale scoring (1) I have used this arrangement; (2) available to me, but I do not use; and 3) not available to me. The scale is reversed and then recoded: (1) measuring that the option is available, and 0 measuring that the option is not available. Individual employee scores are averaged within the establishments to create an establishment level family care options score. (One measure of family care options is removed from the final scale; see Chapter 5 section 5.5.2.1).

4.5.3 Measures of Outcome Variables

Perceived work-related well-being is the outcome variable in the present study. Warr (1987) describes well-being at work as the overall quality of employees' experiences and functioning at work. In WERS 2011 employee well-being is measured at the individual level. Job-related anxiety and job-related depression represent perceived negative psychological well-being, and are measured by six emotional states based on Warr's scale (1990). Job satisfaction and organisational commitment represent subjective experiences and functioning at work, and are taken as positive state of employee well-being.

4.5.3.1 Job-Related Anxiety

These items are based on the perception of employees on the question 'thinking of the past few weeks how much of the time has your job made you feel each of the following states: '*tense; worried; and uneasy'*. The items are originally measured on a five point Likert scale ranging from 'all of the

time' (scored 1) to 'never' (scored 5). The scale was reversed so that low score on each of the three items indicate low anxiety and a high score indicate high anxiety. The total score on anxiety is calculated by adding individual score on each item. The anxiety level at establishment is calculated by averaging individual employee scores within establishments.

4.5.3.2 Job-Related Depression

The items relating to depression are also based on the same question which analyses perception of employees about their job-related depression based on the question 'thinking of the past few weeks how much of the time has your job made you feel each of the following states: *'depressed; gloomy; and miserable'*. The items are originally measured on a five point Likert scale ranging from 'all of the time' (scored 1) to 'never' (scored 5). The scale was reversed so that low score on each of the three items indicate low depression and a high score indicate high depression. The total score on depression is calculated by adding individual score on each item. The level of depression at establishment is calculated by averaging individual employee scores within establishments.

4.5.3.3 Job Satisfaction

Job satisfaction measures the satisfaction of employees with nine dimension of their work life. The items included are *'the sense of achievement you get from your work'; 'The scope for using your initiative; 'The amount of influence you have over your job; 'The training you receive; 'The opportunity to develop your skills in your job; The amount of pay you receive; 'Your job security, 'The work itself, 'The amount of involvement in decision making at this workplace.* Employees are asked to rate their level of satisfaction on a five point Likert scale originally ranging from 'very satisfied' (scored 1) to 'very dissatisfied' (scored 5). The scale is reversed so that low score indicate low job satisfaction and vice versa. The total score on job satisfaction is calculated by aggregating the scores on eight items (one measure of job satisfaction is removed from the final scale; see Chapter 5 section 5.5.3). The establishment level score of job satisfaction is calculated by averaging the individual employee scores within the establishments.

4.5.3.4 Organisational Commitment

WERS 2011 measures organisational commitment of the employees by noting whether they agreed or disagreed with the statements: *'I share many of the values of my organisation; 'I feel loyal to my organisation; 'I am proud to tell people who I work for.* The items are measured on a five point Likert scale ranging from 'strongly agree' (scored 1) to 'strongly disagree' (scored 5). After reversing the scales to ascending order the total score of organisational commitment was calculated. The establishment

level score of organisational commitment is calculated by averaging the individual employee scores on the scale within establishments.

4.5.4 Measures of Contextual Variables

We used five employee level contextual variables highlighted in the extant HRM literature. We argue that perception of job demands, job-related anxiety, job-related depression, job satisfaction and organisational commitment may depend upon employees' demographic features[7] (Karmerāde and McKay, 2015).

4.5.5 Levels of Measurement of Key Variables

The level of measurement relates to 'how the categories or values of the variable are arranged in relation to each other' (de Vaus, 2002, p. 40). In general, there are four levels of measurements: ratio, interval, ordinal and nominal. In this research, the individual items measuring the HP-HR practices are dichotomous in nature. However, the individual HR items are then grouped into bundles measured as a count across different HR practices. For example, selection and recruitment bundle is a count across internal recruitment, consideration of four important factors when recruiting, and use of personality/attitude and/or performance/competency test while recruiting. In such a case, the HR practice bundles are treated as continuous variables.

The items from the survey of employee questionnaire (SEQ) assessing perceptions of job demands, job control, managerial support, family support and well-being are all measured on a five point Likert scale, with the exception of job control and family support. Perceived job control is measured on a four point scale, and perceived family support is measured on a dichotomous scale. All items from the SEQ data are initially treated as categorical and binary scale. This is because the researcher can rank order the perception of employees on all items. Consequently, for the assessment of individual and overall measurement model, perceived job demands, job control, managerial support, job-related anxiety, job-related depression, job satisfaction and organisational

[7] **Gender:** Coded 1 for males and 0 for females.
Age: Coded 1 for 16-21years; 2 for 22-29 years; 3 for 30-39 years; 4 for 40-49 years; 5 for 50-59 years; 6 for 60-64 years; and 7 for 65 years and above.
Marital Status: Coded 1 for married and 0 for unmarried (single, separated & widowed).
Dependent Children: Coded 1 for pre-school age children (0-4 years); for school age (5-18 Years); for both pre-school and school age; 0 for no dependent children.
Job (Employment) Status: Coded 0 if employees have a permanent job and 1 if the job is temporary with no agreed end date and if the job is for a fixed period with an agreed end date.

commitment are treated as categorical variables, and family support is treated as binary variables. However, these variables are aggregated for workplace level analysis, for which the items in the individual latent constructs are summed together. Hence, at the aggregated level perceptions of job demands, job control, managerial support, family support and well-being are treated as continuous variables.

4.6 Data Aggregation

As described earlier, the independent variables (i.e. HP-HR practices) are measured at the workplace level, and intermediate and outcome variables are measured at the individual level. This means that the individual level data has to be modified to get workplace level measures in order to evaluate the conceptual model of the research at the workplace level. A mismatch between the level of proposed theory, level of data and level of analysis could compromise generalisation of theoretical findings across levels of analysis i.e. the research would suffer from ecological fallacy (Fischer, Redford, Ferreira, Harb and Assmar, 2005; Klein, Dansereau and Hall, 1994). Numerous multilevel studies discuss theoretical and methodological aspects of collecting and aggregating individual survey data to measure group level phenomena (Chan, 1998; Fischer et al., 2005; Klein et al., 1994; Klein and Kozlowski, 2000). These studies show that aggregation of individual level data to meaningful group level data needs justification at both theoretical and methodological grounds.

4.6.1 Theoretical Justification for Aggregating Study's Data

Klein and Kozlowski (2000, p. 15) argue that 'many phenomena in the organisations have their theoretical foundations in the cognition, affect, behavior and characteristics of individuals, which – through social interaction, exchange and amplification - have emergent properties that manifest at higher order'. Schneider (1990) argues that individuals belonging to the same group when exposed to similar work environment stimuli tend to have similar perception of their environment (perceived job demands, job control, managerial and family support, in our case). Shared perceptions evolve from interaction between group members. Social information processing theory (Salancik and Pfeffer, 1978) explains this phenomenon, by elaborating that employees in a group use information from other employees in the same group to make judgements about their working environment. The process of social interaction, thus, explains how individual perceptions (individual-level construct) turn into shared perceptions (group level construct) (Klein, Conn, Smith and Sorra, 2001). Similarly, it is argued that perceptions of employee well-being can be

identified at the group level (Klein and Kozlowski, 2000; Mason and Griffin, 2002). In theory, well-being is defined as characteristic of individuals. However, individual's affective attitudes may develop promising properties at higher level of analysis (Klein and Kozlowski, 2000). Therefore, we can argue that conceptual meanings and emergence process of both shared perceptions (i.e. higher level construct) of work environment characteristics and well-being emerge from homogenous perceptions and attitudes of individual group members.

This study adopts the direct consensus model (Chan, 1998) for aggregating the individual level data. According to Chan (1998, p. 237) a direct consensus model uses 'within-group consensus of the lower level units as the functional relationship to specify how a construct conceptualised and operationalised at the lower level is functionally isomorphic to another form of construct at the higher level'. Thus, establishes that the meaning of the higher level construct is based on the consensus (within-group agreement) amongst the individual level units. Resultantly, the responses of employees at the lower level (i.e. individual members in a workplace) are combined to represent the higher level construct (i.e. workplace level responses). After identification of the appropriate level of theory and constructs within the theory, the researcher tested the consensus and homogeneity assumptions (Klein et al., 1994) to ensure that the aggregated data correctly represented workplace level phenomena.

4.6.2 Methodological and Statistical Justification for Aggregating Study's Data

Two types of indices are commonly used in the multilevel literature to justify aggregation of individual level responses to higher level constructs (Van Mierlo, Vermunt and Rutte, 2009; Fischer et al., 2005; Castro, 2002; Bliese, 2000). The first set of indices is called 'group level reliabilities', also known as 'inter-rater reliabilities' (IRR) or 'between group reliabilities'. The second set of indices is referred to as 'inter-rater agreement' (IRA) or 'within group agreement'. Together these indices measure the magnitude of group level properties of the data. Group level reliability indices are based upon the consistency in responses of individuals from the same group compared to that of the individuals in different groups. On the contrary, the inter-rater agreement indices take into account the degree to which groups members of the same group provide similar ratings (Van Mierlo et al., 2009). The individual level constructs of the study are shared constructs. Within-group variability of shared constructs is expected to be low. Within-group consensus (James, Demaree and Wolf, 1984) and between-group variability (Yamamrino and Markham, 1992) is established for the data. The researcher computed both statistics using R software version 3.2.1 (results provided in Chapter 5, section 5.6).

4.6.2.1 Group Level Reliability

Between group reliability or inter-rater reliability (IRR) is a consistency based approach, and refers to the degree to which ratings of different judges are proportional when expressed as deviations from their means. This statistic checks that groups are expected to differ - is that true? IRR measures the relative consistency by computations of intra-class correlations (Bliese, 2000). Shrout and Fleiss (1979) have identified six types of intra-class correlations. Amongst these only two are commonly used, namely ICC1 and ICC2 (Bliese, 2000). ICC1 and ICC2 provide omnibus indices of homogeneity and congruence, and are used in the study.

ICC1: is based on one way random effects ANOVA. It can be defined as the amount of variance in individual level employee scores attributable by the group membership (in our case the workplace membership). It can be interpreted as the proportion of total variance that is explained by workplace membership. The value of ICC1 is independent of size of the workplace or the number of workplaces in the sample (Bliese, 2000; Castro, 2002). The range of ICC1 is between -1 to +1 with values between 0.05 and 0.03 being most typical. ICC1 is computed as (Bliese, 2000):

$$ICC1 = [MSB - MSW] / [MSB + \{(k-1)*MSW\}]$$

In this formula, MSB depicts the between-group mean square, MSW is the within-group mean square and k is the group size. In order to justify aggregation ICC1 values should yield significant results. One way ANOVA is performed to assess the significance of the ICC1. A significant F-statistics indicates that the between group variance exceeds the within group variance (Bliese, 2000). Although a high value of ICC1 is considered to be acceptable, Klein et al. (2000) note that low to modest values of ICC1 may also be fine when the number of cases (N) is large.

While computing ANOVA, as a rule, the higher level construct (group membership) is considered the independent variable and the lower level construct, which needs to be aggregated, is taken as the dependent variable. For example, in our case, a significant value of F-statistic, taking workplace membership as the independent variable and individual responses on variables (or constructs) of interest from the SEQ as dependent variable, indicates that responses differ more between workplaces than within workplaces.

ICC2: is an overall estimate of the reliability of the group means. This measure is the commonly used method in assessing reliability of the mean of the group level scores. ICC2 statistics is also based on ANOVA. It is calculated by the following formula:

$$ICC2 = [MSB – MSW] / MSB$$

As noted above, MSB depicts the between-group mean square, MSW is the within-group mean square. ICC2 values above 0.70 are considered acceptable, values between 0.50 and 0.70 are deemed marginal and values below 0.50 are considered poor indicators of mean score reliability (Klein et al., 2000).

4.6.2.2 Inter-rater Agreement

Inter-rater agreement (IRA) is a consensus based approach based on the index of agreement, and is assessed by measures of variability. It measures the degree to which individual responses within a group are substitutable, and reflects the extent to which raters provide essentially the same rating (Kozlowski and Hattrup, 1992). Succinctly, IRA refers to the absolute consensus in scores assigned by the raters which check that the construct is expected to be shared. Two statistical parameters are commonly used to assess the inter-rater agreement, namely Rwg and Rwg.j (LeBreton and Senter, 2008; Castro, 2002; Bliese, 2000; James et al., 1984). Rwg is computed for a single item while Rwg.j is computed in case of multiple item scales. Rwg.j values of 0.70 or greater provide evidence of an acceptable agreement among individual responses on a scale (Klein et al., 2000). However, LeBreton and Senter (2008) highlight five levels of agreement ranging from lack of agreement to very strong agreement. The respective bands are: lack of agreement (0.00 to 0.30), weak agreement (0.31 to 0.50), moderate agreement (0.51 to 0.70), strong agreement (0.71 to 0.90) and very strong agreement (0.91 to 1.00). LeBreton and Senter (2008) argue that in order to justify aggregation both the magnitude and pattern of the Rwg.j values should be considered. As common rule of thumb, Rwg.j scores are computed for each group separately.

Lindell, Brandt and Whitney (1999) suggested a modified inter-rater index (i.e. Rwg.j Lindell), which is similar to the James et al.'s (1984) Rwg and Rwg.j indices, but can also obtain negative values (even beyond -1, when the observed agreement is less than hypothesised). Additionally, unlike Rwg.j, the Rwg.j Lindell does not include a Spearman-Brown correction, and, thus, it does not depend on the number of items (Lindell and Brandt, 1999). This means that Rwg.j Lindell values do not increase as the number of items in the scale increases as does the Rwg.j.

The researcher calculated the index of Rwg.j and Rwg.j Lindell for each workplace separately. Within each workplace there are eight Rwg.j and Rwg.j Lindell values one for each variable (i.e. perceived job demands, job control, managerial support, family support, job-related anxiety, job-related depression, job satisfaction and organisational commitment). An overall measure based on mean Rwg.j and Rwg.j Lindell values is calculated and interpreted to justify aggregation.

4.7 Data Analytic Methods

The aim of this research is to evaluate complex inter-relationships between multiple predictors and response variables – the impact of the HP-HR bundles on employee well-being through the mediating effects of perceived job demands, and the moderated effects of job resources on the relationship between perceived job demands and employee well-being. For empirical analysis where multiple relationships involving mediation and moderation are involved, the use of SEM technique is highly recommended (Hair, Black, Babin and Anderson, 2010; Tabachnick and Fidell, 2001; Kaplan, 2000).

4.7.1 Structural Equation Modelling (SEM)

SEM is a methodology designed to test substantive theories, while providing consistency and comprehensive explanations of phenomena. This technique is most suited for examining inferential rather than causal relationships between variables (Schumacker and Lomax, 2004). It is a hybrid of two statistical traditions: factor analysis and simultaneous equation modelling, commonly known as path analysis (Kaplan, 2000). In SEM variables can be measured directly (as observed or manifest variables) or indirectly (as latent construct or unobservable variables). Sufficiently large sample is the pre-requisite for SEM analysis (Byrne, 2010; Schumacker and Lomax, 2004). In terms of adequate sample size there are no set guidelines (Iacobucci, 2009; Weston and Gore, 2006). However, according to Hair et al. (2010), a minimum N of 500 or more is deemed reasonable. Kline (2011) recommend using a minimum sample size to parameter ratio of 20:1 as the rough guideline, especially if the Maximum likelihood estimator (MLE) estimator is being used.

4.7.1.1. Path Analysis in Structural Equation Modelling

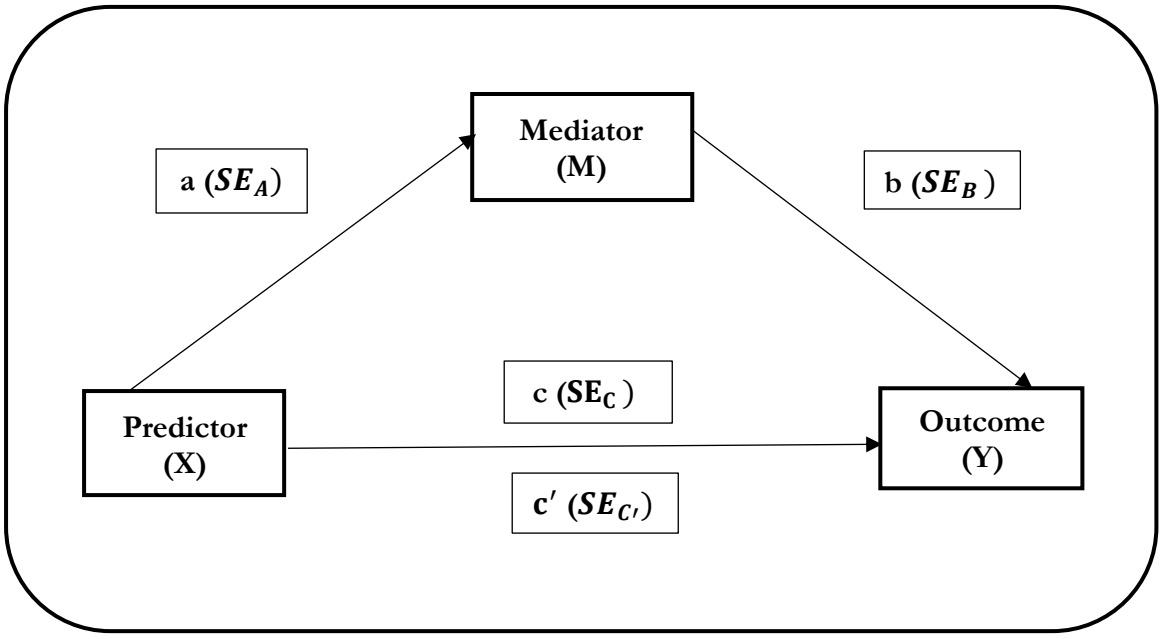
The hypothesised relationships in the study are examined using path analysis. Path analysis, is a special case in SEM technique that utilises only the observed variables in the analysis, instead of

latent constructs. The principles of SEM apply equally to the path analysis. Path analysis is used to deal with a system of interrelated variables (Wright, 1960). It examines a number of dependence relationships in such a manner that endogenous variables in one equation become exogenous variables in the subsequent equations for a number of dependent variables run simultaneously (Hair et al., 2010). The variables in the model are connected to each other with the help of uni-directional arrows, which signify a linear relationship between the variables. The exogenous variables are assumed to be correlated. The endogenous variables have measurement errors attached to them, which are also assumed to be correlated (Byrne, 2010; Muthen and Muthen, 2010).

4.7.1.2 Suitability of SEM Technique in this Research

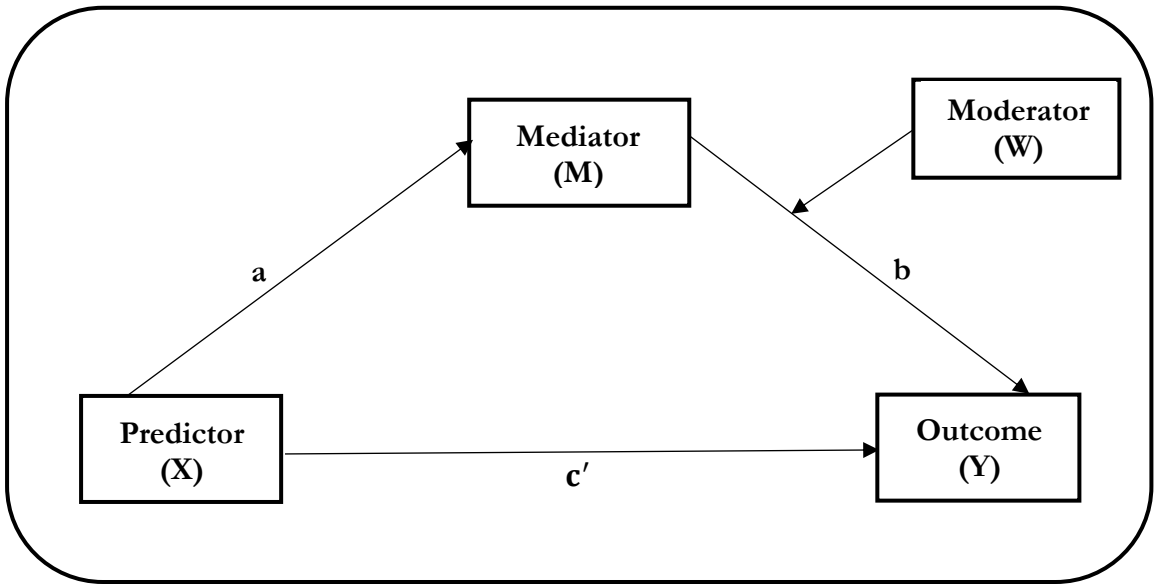
SEM technique is used in this research for the following reasons. First, the researcher was faced with a set of interrelated questions: How do the HP-HR bundles affect employee well-being? Do the HP-HR create perceived job demands? Do perceived job demands mediate the relationship between HP-HR and employee well-being? How do job resource affect the relationship between perceived job demands and well-being? SEM technique addresses the researcher's entire theory evaluating series of complex dependence relationships simultaneously, rather than via a set of separate regression analyses (Nusair and Hua, 2010; Hancock and Mueller, 2006; Kaplan, 2000; Hoyle, 1995). SEM is more flexible and robust technique than other statistical methods (e.g. multiple regression (MR), factor analysis, MANOVA, discriminant analysis and canonical analysis). The ability of SEM to use dependent variable in one relationship as independent variable in the subsequent relationships, benefited the analysis of mediating relationships in the study. Traditionally, Baron and Kenny (1986) approach has been the most commonly used method to test mediation. Their method proposes four inter-linked steps which are tested in turn via a series of multiple regression analyses. With the development and sophistication of SEM techniques over time, Preacher and Hayes's (2004) new method to estimate the indirect effect, standard errors (SEs) and corresponding significance levels with Bootstrapping methodology is incorporated into SEM, especially in the Mplus software. From the Bootstrapped estimates confidence intervals are derived and used to test significance of the indirect effect (Preacher and Hayes, 2004). This method refines and incorporates the Sobel's test for testing the indirect effects into one simple analysis, and, thus, was the most suitable choice for examining the indirect effects in the study (see Figure 4.4).

Figure 4.4: Simple Mediation (Indirect Effects) Model – Sobel (1982)



Measurement and path modelling analyses allowed for comparison between competing models, by imposing constraints and adding or deleting conceptualised direct or indirect paths, to test the theory of the study. Standard statistical methods utilise a limited number of variables, which was limiting in order to understand the complex phenomena examined in the study (Schumacker and Lomax, 2004). SEM provides a mean for testing more complex and distinctive hypotheses than standard techniques. With SEM the interaction terms can also be included in the model so that the main, indirect and interaction effects can be tested simultaneously (Schumacker and Lomax, 2004). This benefited examining the moderated mediation hypotheses in the study i.e. the impact of job resources on the relationship between perceived job demands and well-being. Using path analysis based on Preacher, Rucker and Hayes (2007) Model – 3 (see Figure 4.5), the researcher can determine the manner in which exogenous variables directly and/or indirectly cause changes in the endogenous variables in the study, and the way conditional indirect effects modify the indirect relationships (Byrne, 2010; Muthen and Muthen, 2010)

Figure 4.5: Moderated Mediation (Model 3) – Preacher, Rucker and Hayes (2007)



As discussed earlier, this study examines a workplace level model based on composite (aggregated) observed variables. Path analysis variant of the SEM technique improves upon and supersedes other statistical techniques with its ability to examine variables that can be measured directly (i.e. observed variables) and indirectly (i.e. latent constructs) (Hancock and Mueller, 2006; Kline, 2011). Therefore, the inter-relationships between the composite variables in the study are examined effectively using simultaneous path models.

There was a need to conduct a series of confirmatory factor analyses (CFA) for the individual-level data. SEM is deeply rooted in 'a priori' theory for choice of measures and hypothesised relationships (Ghauri and Grønhaug, 2002). SEM allows the researcher to assess the validity and reliability of the theoretical arguments at each step of the analysis (Anderson and Gerbing, 1998). With the individual level data, we tested a four factor model for the intermediate variables (job demands and job resources), and a four factor model for the outcome variables (well-being). SEM facilitated assessing the validity and reliability of these measurement scales in order to ensure accurate inferences (Anderson and Gerbing, 1988). Further, SEM technique deal with multicolinearity more effectively (Allison, 1999).

SEM accounts for and separates measurement error (residual variables/errors) in the variables (Hair et al., 2010; Hoyle, 1995), and is robust to model misspecifications (Hoyle, 1995; Miller and Salkind, 2002; Nusair and Hua, 2010). Other multivariate techniques including multiple regression

assumes perfect measurement of variables, which understates the true relationship between variables. The relationships in SEM technique are based on true structural coefficients rather than on observed regression coefficients. Hence, SEM can correct and accommodate for the biasing effect of measurement error within the model (Kline, 2011; Hair et al., 2010; Allison, 1999). Thus, the researcher was able to estimate the relationship in the study with the distinction of structural (i.e. path) element and measurement error element separately. This facilitated identifying significant paths from insignificant paths, while accommodating for the measurement errors.

4.7.1.3 Analysis Procedure

In order to ensure that the results of the study are robust and defendable, the researcher followed the guidelines highlighted in Table 4.2. The objective was to guarantee that a) measures are identified correctly (i.e. accurately portraying the constructs, in case of latent constructs, or accurately explaining the constructs, in case of an index), b) the measurement model is valid and reliable, c) structural model (path model in our case) is correctly specified and valid. In so doing, emphasis was on theoretical robustness of the process at each stage, for SEM technique assesses 'how well the theory *fits* reality as represented by the data' (Hair et al., 2010, p. 654).

The model was specified embedded in strong theory of HP-HR, employee well-being and job-demands-resources model. Measures and their scales were pre-determined in WERS based on established theory and previous studies. Measures of the HP-HR were constructed using indexing approach. The intermediate and outcome variables were, initially grouped, as latent constructs using the two step approach (Anderson and Gerbing, 1998). Consistent with the process of the two step approach, the researcher first specified the measurement model for the intermediate and outcome variables of the study. The confirmatory factor analysis was used to assess the adequacy of the measurement model, at the individual level.

Table 4.2: Five-Step Procedure for Structural Equation Modelling Technique

	What to do?	How to do it?
STEP 1	**MODEL SPECIFICATION**	Develop a theoretical model. Determine and specify every inferential relationship and parameter in the model**.** Develop a model that most closely fits the variable covariance structure in light of prior theory and extant literature. Define individual constructs. a) Identify what items to use as measured variables. b) Decide if items should be combined to portray an index or used as indicator variable(s) of factors/latent constructs. Define endogenous and exogenous variables/constructs and link their relationships in a path diagram. Avoid model misspecifications (i.e. specification error). Avoid error of inclusion or exclusion of important theoretical parameters.
STEP 2	**MODEL IDENTIFICATION**	Determine a unique solution for the model being tested. Avoid indeterminacy of the solution by freeing, fixing or constraining parameters. Determine degree of freedom of the model: df < 0 (under-identification & no solution); df = 0 (just- identified & perfect fit); df > 0 (over-identified & no perfect solution). Establish the 'order condition' of the model by determining model saturation i.e. ensure number of free parameters estimated are less than or equal to the number of distinct values of the S matrix. Check 'rank condition' of the model through algebraic determination seeking if each parameter in the model can be estimated from the sample covariance matrix S of the observed or indicator variables. Diagnose and remedy identification problems by assigning marker variables, choosing correct estimator, developing parsimonious models or using statistical tools such as Wald's (1950) rank test or using inverse of the information matrix etc.
STEP 3	**MODEL ESTIMATION**	Check assumptions of SEM. Choose the correct and appropriate fitting function i.e. unweighted or ordinary least squares (ULS/OLS), generalised least squares (GLS), ML, WLSMV etc. Choose input matrix type: Correlation vs. (default) co-variance. Run the test to obtain parameter estimates.
STEP 4	**MODEL TESTING**	Determine how well the data fit the model. Examine the global fit of the model (measurement and structural) by three goodness of fit categories: absolute fit indices; incremental fit indices; parsimonious fit indices (see Appendix C, Table C - 10 for details).

		Examine the individual parameter(s) for three things. **First,** whether the free parameter is significantly different from zero by assessing the p-value (the critical value should exceed expected value at a specified α). **Second**, whether the sign of the parameter is in the expected direction highlighted in theory. **Third**, whether the parameter makes practical sense (i.e. lies within the expected range of values). Highlight correct/offending parameters. Interpret the model results. Identify potential model changes through 'specification search'. a) Fix non-significant parameters=0 in subsequent model and compare the results of competing as described in Step5. b) Examine standardised residuals for larger values of a particular observed variable and/or considering modification indices.
STEP 5	**MODEL MODIFICATION**	Justify the potential model changes on theoretical grounds. If theoretical justification is untenable, do not proceed with the modification and refine the model theoretically. In case of probable theoretical modifications repeat cycle from **Step 2** to ensure viability of the modified model and its' statistical evaluation. Compare competing models through either taking difference between likelihood ratio (chi-squared) statistics between free and restrictive model, Lagrange Multiplier (LM) also known as modification index or Wald test.

Source: Based on Schumacker and Lomax (2004, pp. 61-74); Hair et al. (2010, pp. 653-677); Kaplan (2000)

Subsequently, construct reliability and validity is established for the identified measurement model at the individual level (see section 4.10.4 for details on construct reliability and validity). Validity is assessed using both convergent and discriminant validity. After validating the measurement model at the individual level, the items measuring each constructs are aggregated, separately, at the workplace level. Resultantly, at the workplace level the entire model consists of observed variables expressed as indexes.

After assessing the appropriateness of composite variables for multivariate analysis, path model is estimated as a special case of SEM technique. Maximum likelihood estimator (MLE) has been used for model estimation. MLE is one of the most commonly used estimators in SEM. MLE is preferred because it is proven to be robust against violation of normality assumptions (Hair et al., 2010; Iacobucci, 2009). As the measurement model is concerned with the convergent and discriminant validity of the constructs in a model, the structural/path model evaluates the predictive validity of the model (Anderson and Gerbing, 1988; Kaplan, 2000). The fit of both the measurement and path/structural models is assessed using goodness of fit criteria suggested by Hu and Bentler (1999)[8]. Chi-square and RMSEA are used as the absolute fit indices, and CFI, TLI are used as incremental fit indices (Byrne, 2010; Hair et al., 2010; Iacobucci, 2009; Schreiber et al., 2006).

4.8 Software for Data Analysis

Mplus version 7.1.1 and R version 3.2.1 are used in the present study. Mplus is used for SEM procedures (i.e. assessing individual and measurement models and path models) and missing data patterns. R is used in data aggregation process, missing data visualisation and substantiating missing data patterns.

4.8.1 Mplus Package

Unlike other SEM softwares, Mplus accommodates binary, categorical, nominal, censored and continuous scales simultaneously. It handles non-normal statistics in multivariate analysis. For categorical and/or non-normal data, Mplus uses weighted least squares estimators such as WLSMV (Muthen and Muthen, 2010). Mplus was most suited for analysing the factor structure and the measurement model of the study. The intermediate and outcome variables consist of a

[8] See Appendix C, Table C – 10 for the description of alternative goodness of fit indices and their cut-off criteria.

mix of categorical and dichotomous measures. Therefore, it was mandatory to have a software that can handle variables having more than one scale. In terms of missing data handling, Mplus offers optimal Full Information Maximum Likelihood (FIML) and Multiple Imputation (MI) approaches. FIML is deemed much superior to listwise deletion, pairwise deletion or mean substitution (Schafer and Graham, 2002). This is because FIML remedy the missing data directly in the estimation process, and, generally, develops the least bias in estimation than by other methods (Hair et al., 2010). Using FIML approach prevented loss of useful data and ensured robust analysis.

In addition to the conventional global fit criteria, Mplus offers Bayesian model estimation and descriptive indexes of model fit such as the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). The research benefited from an array of goodness of fit measures given in Mplus to support the hypothesised model. Most importantly, Mplus calculates indirect effects using Preacher and Hayes (2004) method, which effectively overcomes the potential flaw of testing mediation using Sobel's test, by using bootstrapping. This facilitated attaining robust mediated results for the study.

4.8.2 R software

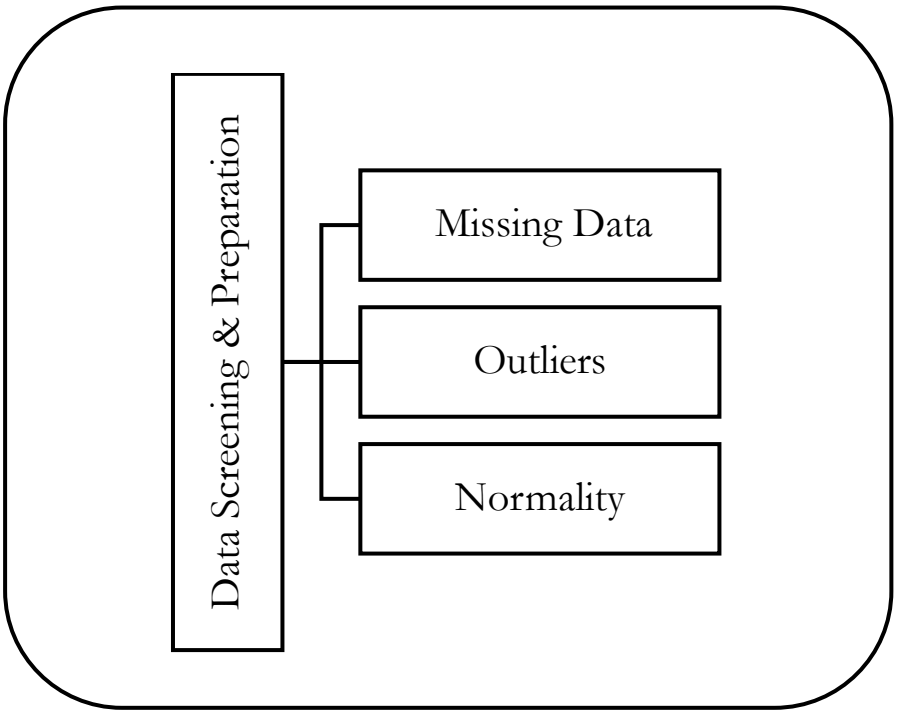
R software can handle both statistical computing and graphics. The static graphics ability of R helps to produce publication-quality graphs. This study benefited from using the VIM package in R to visualise missing values and assess missing value patterns. These dynamic and interactive graphics allowed to explore the raw data explicitly before rendering it to multivariate analyses. R offers a wide variety of statistical techniques such as linear and nonlinear modeling, classical statistical tests, time series analysis, classification, cluster analysis etc. The research used the sophisticated and yet simple macros in R to substantiate aggregation of the study's individual level data.

4.9 Data Screening and Preparation for Analysis

The importance of data preparation and screening is paramount in SEM technique for two reasons. First, SEM works on certain assumptions regarding the distributional characteristics of the data. Second, data errors may cause fatal model errors and glitches (Kline, 2011). This warrants that proper screening and preparation of data is in fact an 'investment in multivariate insurance' that warrants that the multivariate analysis is valid and generalisable (Hair et al., 2010, p. 37; Kline,

2011). Accordingly the data was examined and screened for missing data, outliers and normality before proceeding to the analysis (Figure 4.6).

Figure 4.6: Data Preparation and Screening Process



4.9.1 Missing Data Analysis

Data often contains missing values due to measurement failure, non-responses, edits or loss of important data. Missing data reduces the sample size available for analysis, if appropriate remedies are not applied. It decreases the statistical power of the analysis, biases estimates of the parameters, and significantly affects generalisability of the results (Hair et al., 2010). It is, therefore, pertinent to analyse the proportion of missing data and decide on handling techniques for the lost/omitted data before proceeding to the analysis. Hair et al. (2010) argue that missing data should be probed from two angles: the patterns of missingness and the extent of missing data. In order to comprehend the pattern of missingness, Allison (2002) argues that reasons of missingness may be deciphered. Data may be missing for three reasons (Templ and Filzmoser, 2008). First, **'***missing completely at random'* (MCAR); signifying that missingness is neither due to observed part X_{obs} nor due to the missing part $X_{miss.}$ Hence, missingness does not depend on either the variable of interest or on any other variable which is observed in the data. Mathematically, in a matrix of set of variables X, the probability of missingness in MCAR is:

$$P\ (X_{miss} \mid X) = P\ (Xmiss)$$

The distribution of missingness is said to be *'missing at random'* (MAR), when the missingness does not depend upon missing part i.e. X_{miss}. Instead, missing values depends on the observed part i.e. X_{obs}. Hence, in MAR the probability of missingness is:

$$P\ (X_{miss} \mid X) = P\ (X_{miss} \mid X_{obs})$$

In the third scenario, the data are said to be *'missing not at random'* (MNAR). In this case, missingness cannot be fully explained by the observed part of the data as the condition of X_{obs} is violated and pattern of missingness is attributed to the outcome variable (Templ and Filzmoser, 2008). In MNAR the probability of missingness is:

$$P\ (X_{miss} \mid X) = P\ (X_{miss} \mid X_{obs}, X_{miss}))$$

There are no clear cut answers and firm guidelines as to what warrants an acceptable amount of missing data. However, a general consensus among statisticians is that 5 to 10% missing data on a case is not large, in a substantially large data set, except when the pattern of missingness is MNAR (Kline, 2011; Hair et al., 2010; Tsikriktsis, 2005; Cohen and Cohen, 1983). Moreover, the number of cases with no missing data is recommended to be sufficiently large (Hair et al., 2010).

4.9.1.1 Missing Data Handling

There are many approaches for handling missing data such as listwise deletion, pairwise deletion, data imputation (i.e. single imputation using mean/regression based substitution or model-based/multiple imputation) and FIML (Kline, 2011; Hair et al., 2010; Tabachnick and Fidell, 2001). In the present study, FIML is used to treat the missing values. FIML neither deletes incomplete cases nor imputes missing observation (Kline, 2011). Instead, it compartmentalises missing observation with the same pattern of missingness in the raw data file. Subsequently, it computes means and variances from each subset (compartments) retaining all cases within the analysis. FIML was preferred over the use of classical methods because parameters estimates and their standard errors are calculated directly from the unaltered available data (without deletion or imputation). FIML uses all data available to estimate the model, due to which the potential problems associated with sample reduction are circumvented (Kline, 2011).

In the current study, the choice of missing data handling approach is of no major consequence. This is because the number of missing values on all variables of interest are within the acceptable

range in the original variables. Few composite variables had a slightly higher number of missing values (e.g. perceived managerial support). The percentage of missingness remained within the suggested 5-10% acceptable level of missing data for the rest of the variables. More importantly, missing data did not highlight a systematic pattern (i.e. there is no evidence to suggest that the data loss pattern is MNAR) (see Chapter 5, section 5.2.1). Hence, any procedure of handling missing data may yield similar results (Tabachnick and Fidell, 2001).

4.9.2 Checking for Outliers

Outliers are, simply, the unusually high or low values that clearly stand out from the rest of the observation in the data set. Outliers may results from many reasons. For example procedural errors (i.e. data entry errors or failure to specify a correct missing data code), erroneous sampling frame or from extraordinary events/observations. In the case of extraordinary events/observations, outliers represent a legitimate but extreme cases of values that indicate an important range within the data (Kline, 2011; Tabachnick and Fidell, 2001). Whatever may be the source of outliers, a common rule of thumb is that any value more than three standard deviation beyond the mean may be considered an 'extreme/outlier'. In terms of Z scores, a value outside $|z| > 3.00$ is an outlier in a large sample (Kline, 2011, p. 54). Nevertheless, 'for small samples (80 or fewer observations), outliers typically are defined as cases with standard scores of 2.50 or greater' (Hair et al., 2010, p. 67).

There is a considerable debate amongst the statisticians on whether outliers should be deleted or retained in the analysis (Tabachnick and Fidell, 2000). Many argue that presence of small number of outliers in large data set is of no major concern. In fact, the highlighted extremes could be genuine and important range of data which must be retained in the analysis (Kline, 2011). Hair et al. (2010) suggest that deletion of outliers represents a cheap trade-off between improving multivariate analysis at the cost of generalisability of the result. For others, deleting the outliers is the best way to deal with outliers (Osborne and Overbay, 2004). Deletion makes most sense if the outliers may be generated from procedural or sampling errors.

Outliers can be identified from a univariate, bivariate or multivariate distribution depending upon the number of variables considered (Hair et al., 2010). Tabachnick and Fidell (2001) suggest that when regression, canonical correlation, factor analysis, structural equation modelling or some form of time-series analysis is to be conducted on ungrouped data, univariate or multivariate outliers should be sought among all cases at once. In this study, individual items were initially screened

graphically (probability plots) and using the above statistical guidelines to explore the presence of potential outliers. However, since a number of variables of interest used in the study are measured on a five-point Likert scale, an in-depth analysis of multivariate outliers was carried out to overcome the potential of mistakenly interpreting extreme points on the Likert scale as outliers, and only multivariate outliers are reported in the study. Multivariate outliers are detected using the Mahalanobis D^2 distance. The Mahalanobis D^2 distance 'is the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables' (Tabachnick and Fidell, 2001, p. 74). A large Mahalanobis D^2 distance value indicates that the case has extreme values on one or more of the independent variables. Observations are usually considered as multivariate outliers if the probabilities associated with the D^2 are 0.001 or less (Hair et al., 2010; Tabachnick and Fidell, 2001). Kline (2011) suggests using a more conservative level of statistical significance for D^2 probabilities of less than 0.001. In the current study, the more conservative level of statistical significance of less than 0.001 is applied. Mahalanobis D^2 distance values are calculated and then compared with the critical X value with degrees of freedom equal to the number of variables and $p < 0.001$. Mahalanobis distance is measured using SPSS 20. Several outliers were identified in the management questionnaire, survey of employee questionnaire and the merged data (i.e. matched management questionnaire and survey of employees questionnaire data) used in the study (see Appendix F, Tables F-1 to F-3). However, observations designated as outliers were retained in the study. The meticulous sampling procedures and well scrutinised data entry methods in WERS, overrule the chances of outliers occurring due to errors. Suggesting alone that the outliers are an important range of the data that should be retained in the analysis.

4.9.3 Assessing Normality

Normality refers to the 'degree to which the distribution of the sample data corresponds to a normal distribution' (Hair et al., 2010, p. 36). The data needs to follow a normal distribution in order for most statistical analyses to work properly, SEM being no exception (Tabachnick and Fidell, 2001). The notion of normality applies to continuous scale/interval level data (de Vaus, 2002). The data in the current study is composed of variables that are originally either dichotomous or ordinal. For dichotomous variables assessment of normality is based on a different procedure. As such, among dichotomous variables an extremely uneven split (e.g. 90 – 10 split, 90% say yes and 10% say no) is considered asymmetrical (Tabachnick and Fidell, 2001).

Most of the HP-HR variables in the data exhibit an even split, the exception being two aspects of grievance handling procedure and financial help with elderly (see Chapter 5, Table 5.1). These exceptions are, however, retained in the analysis for three reasons. First, the negative impact of non-normality decreases as sample size increase. As the number of observations exceed 200, the potential impact of non-normality losses its impact substantially (De Vaus, 2002; Hair et al., 2010). The current study has a sufficiently large sample size due to which non-normality of few variables will not affect the robustness of the analysis. Second, it is argued that Maximum likelihood estimation (MLE), which is the estimator used in the path analysis, is robust against non-normality (Klein, 2011; Hair et al., 2010; Muthen and Muthen, 2010). MLE is an alternative to ordinary least squares method which is commonly used in regression analysis. MLE improves parameter estimates in such a way that differences between the observed and estimated covariance matrices are minimised. Therefore, transformations of the highlighted non-normal individual variables were also not considered. Thirdly, as noted before, composite variables are formed using individual items for independent, intermediate and outcome variables. The composite variables depict a continuous range of values as these are created by adding the individual scores on the respective items of a constructs. In the study, composites exhibit a continuous range of number of the HR practices or a continuous scale of employee perceptions on job demands, job resources and well-being. The magnitude of asymmetry in individual variables exhibiting uneven split is of no serious consequence when the overall variable is based on count of items across the respective item(s).

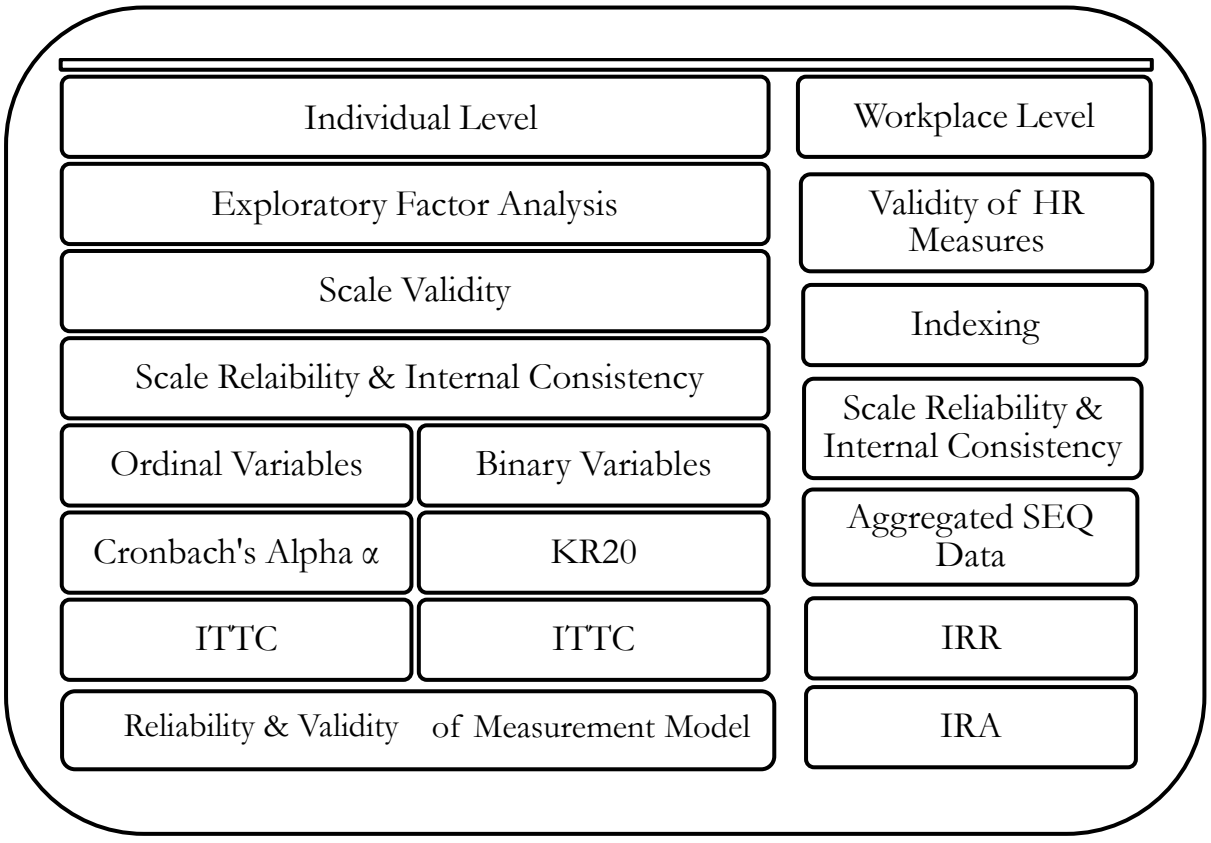
Composite items used in the analyses are assessed for normality. Screening data for univariate normality is common approach amongst researchers. This is because assessment of multivariate normality is both cumbersome and in most situation un-necessary. There are two statistical facets which depict univariate normality of a distribution i.e. Skewness and Kurtosis. (de Vaus, 2002; Hair et al., 2010; Tabachnick and Fidell, 2001). Skewness describes the symmetry of the distribution about its mean. A non-symmetrical distribution highlights positive or negative skew in the data. Kurtosis describes how 'peaked (Leptokurtic)' or 'flat (Platykurtic)' a distribution is compared to the normal distribution (Hair et al., 2010). Tabachnick and Fidell (2001) suggest that skewness and kurtosis should fall between -2 and 2 in a normal distribution. Curran, West and Finch (1996) identify that skewness value below 2 and kurtosis value below 7 highlights a normal distribution. Others suggest to obtain a standardised measures of skew and kurtosis, i.e. skew index and kurtosis index respectively (Kline, 2011; Tabachnick and Fidell, 2001). In a large data set, a z score for skewness or kurtosis greater than 3 is seen to represents non-normality (Tabachnick and Fidell, 2001). According to Kline (2011) an absolute value of skew index larger

than 3 and absolute value of kurtosis index larger than 8 are problematic. A less conservative rule of thumb on index of kurtosis, however, suggest that a kurtosis of greater than 10 is problematic, and greater than 20 indicates serious issues of non-normality. The results of skewness and kurtosis for the independent, intermediate and dependent composite variables used in the study are within their recommended acceptable thresholds of ±2.0 range, and are presented in Chapter 5, sections 5.2.3 and 5.6. The results exhibit that the variables used in the analyses follow normality.

4.10 Data Preparation for Model Testing

This section elaborates the steps involved in organising data for workplace level analysis. As stated in section 4.4.2, the data is taken from survey of employees questionnaire (SEQ) and management questionnaire (MQ). Preparation of SEQ data for workplace level analysis involves conducting an exploratory factor analysis of the intermediate and outcome variables, item and scale purification and measurement model assessment at the individual level. At the workplace level, preparation of MQ data involves assessment of validity and indexing of HP-HR measures. Scale reliability is assessed to validate aggregation assumptions of the SEQ data (Figure 4.7). The results are presented in the Chapter 5.

Figure 4.7: Steps in Data Preparation for Model Testing



4.10.1 Exploratory Factor Analysis

Exploratory factor analysis (EFA) is a multivariate technique used for summarising and reducing data to parsimonious set of items signifying one underlying concept (Preacher and MacCallum, 2003). From a statistical standpoint, some useful empirical measures are suggested to justify the factorability of the data. As a first step, substantial numbers of correlation must exceed 0.30. Subsequently, using Bartlett's test of Sphericity and Measures of Sampling Adequacy (MSA) (also known as Kaiser-Mayer-Olkin measure of sampling adequacy KMO is suggested. A statistically significant Bartlett's test of Sphericity (sig. < 0.05) suggests that sufficient correlations amongst variables exist to proceed with EFA. KMO value should exceed 0.50, for both overall test and individual items, in order to justify factorability. In most instances the suggested minimum KMO is 0.6 and notably, any individual item having KMO value below 0.50 should be deleted to bring the overall KMO above 0.50 (Hair et al., 2010; Tabachnick and Fidell, 2001; Kaiser, 1974).

A critical requirement for factor analysis is to have a sufficient sample size. This is because EFA is based on correlation matrix and correlations require large sample size before they stabilize. According to Hatcher (1994) and Hair et al. (2010), sample size (N) should be at least 100 or larger, or 5 times the number of variables to be included in the principle component analysis. Nunnally (1978) suggested 10 cases per item, inferring that a more acceptable sample size would have a 10:1 ratio. Comrey and Lee (1992) advise some general guidelines according to which sample size of 50 is very poor, 100 is poor, 200 is fair 300 is good and 500 is very good. An overall consensus is that sample must have more observations than variables with the desired ratio of at least 5 observations per variable (Hair et al., 2010).

This study employs the procedure highlighted by Preacher and MacCallum (2003) to conduct the EFA (see Chapter 5, section 5.3 for results). According to the authors there are three important decisions to be taken in the process of conducting EFA: a) whether to use common factor analysis (FA) or principal component analysis (PCA); b) number of factors to be retained and c) rotation method to be employed. PCA is the most commonly used extraction method in social science research, because this is computationally sound, easier to interpret and seeks to explain total variance in items (Fields, 2005; 2000; Tabachnick and Fidell, 2001; Rietveld and van Hout, 1993). In order to attain interpretable, theoretically sound and meaningful factors 'a priori criterion' based on theory or previous research is strongly advised, and, therefore, employed in the study. In addition, two statistical techniques are employed to determine the appropriate number of factors: Cattell's scree plot and Kaiser's Criterion on Eigenvalue. The Eigenvalue represents the amount

of variance explained by the factor. Under the Kaiser criterion only the factors that have Eigenvalues > 1.0 should be retained. Scree plot visualises the potentially plausible number of factors that may add value in the analysis. It is advised to retain factors up to (and may be including) the elbow in the scree plot (Hair et al., 2010; Fields, 2005; 2000; Rietveld and van Hout, 1993).

The choice of rotation method in EFA is between oblique and orthogonal rotation. Orthogonal rotation, such as varimax and equimax, impose that factors cannot be correlated. On the contrary, oblique rotation, such as promax, allows factors to be correlated with one another (Preacher and MacCallum, 2003; de Vaus, 2002). Varimax rotation is the most commonly used rotation method, and is employed in the study. It aims at producing parsimonious factors by maximising the variance of the loadings across items within factors (de Vaus, 2002). The practical significance of the attained factor loadings is an important criterion used for meaningful factor structure. Hair et al. (2010) recommend to consider factor loadings of $\pm$0.30 to $\pm$0.40 as the minimal level for interpretation of meaningful factor structure. The authors advise to aim for loadings above $\pm$ 0.50 for practical significance and avoid cross-loading of items where ever possible.

4.10.2 Composite Indexing

There are many methods of creating unidimensional scales, the simplest of which is the indexing approach (de Vaus, 2002). Indexing (also referred to as summated scale or additive model) combines several variables that measure the same concept into a single variable, representing a concept. This type of scale is, normally, based on a set of measures with simple yes/no answers. Nonetheless, Likert type responses may also be combined to create a composite value for a set of variables. The objective is not to place total reliance on a single measure. Instead, an average or typical response to a set of related responses is calculated, which enables a more precise specification of responses by introducing multivariate measurements (Hair et al., 2010).

To form summated scale, several variables of the study, representing differing facets of a concept, are selected to obtain a well-rounded perspective. The indicators are selected according to their face validity (i.e. the extent to which the item is conceptually consistent with the construct definition). Subsequently, a count of number of items on which the respondent scores is calculated. In so doing, each item is weighted equally (de Vaus, 2002).

4.10.3 Scale Reliability and Internal Consistency

Reliability refers to the 'degree of consistency between multiple measures of a variable' (Hair et al., 2010, p. 125). There are various methods of assessing reliability such as test-retest and split-half reliability. The most popular measure of reliability is internal consistency, which relates to consistency amongst variables in a summated scale. The internal consistency checks are commonly expressed in the form of Cronbach's coefficient alpha (α) and Kuder Richardson coefficient of reliability (KR20) (Hair et al., 2010). In this research reliability of the constructs is assessed both at the individual level and at the workplace level. At the individual level, Cronbach's alpha, Kuder Richardson reliability coefficient (KR20), item-to-total correlation and mean-inter-item correlation are assessed. Cronbach's alpha is computed for polytomous scored items, and KR20 is used for binary scale items in both management and survey of employee questionnaire. The values of Cronbach's alpha, KR20, item-to-total correlation and mean-inter-item correlation are reported in Chapter 5, section 5.4. At the workplace level, the reliability of the constructs is assessed by the group mean reliability and sufficient within-group agreement. These are the recommended statistics to assess if the individual level data can be aggregated to depict workplace level responses (see section 4.6.2). The results of workplace level reliability are reported in Chapter 5, section 5.6.

4.10.3.1 Cronbach's Alpha

Cronbach's alpha is a widely used statistic in social science, business and other disciplines as a measure of internal consistency and reliability of test scores. Cronbach's alpha (i.e. alpha coefficient) indicates the degree to which a set of items measure a single unidimensional latent construct. Mathematically, Cronbach's alpha is defined as:

$$\alpha = \frac{K\bar{c}}{\bar{v} + (K-1)\bar{c}}$$

where K is the number of items, $\bar{v}$ is the average variance and $\bar{c}$ the average of all covariances between the items across the sample. There is no absolute guideline on acceptable level of Cronbach's alpha. However, a commonly accepted rule of thumb concerning Cronbach's alpha values is as follows:

Table 4.3: Rule of Thumb Values of Cronbach's Alpha

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Very Good
$0.8 > \alpha \geq 0.7$	Adequate
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: Based on Nunnally (1978); Anderson and Gerbing (1988); Hair et al. (2010); Klein (2011); Pallant (2007)

Generally speaking, the higher the value of coefficient alpha (> 0.7), the more reliable the test is considered to be (Nunnally and Bernstein, 1994). The items that lower the overall alpha value may be identified and dropped to raise the overall consistency. It is generally assumed that a high Cronbach alpha value indicates high internal consistency and unidimensionality of the construct. However, this assumption may be fallacious in many instances. For unidimensionality is a subset of consistency and must be explored separately, irrespective of the high or low value of Cronbach co-efficient (Miller, 1995).

The main weakness of Cronbach's alpha is that it assumes tau-equivalence. As perfect tau-equivalence is seldom achieved, Cronbach's alpha is generally considered a lower bound estimate of reliability (Feldt and Qualls, 1996; Cortina, 1993). Similarly, Cronbach's alpha generally increases as the inter-correlations amongst the items in a construct increases. Similarly, Cronbach's alpha is known to increase as the number of items in a scale increase, even if the degree of inter-correlations amongst the items stays the same. This suggests that under-estimation and over-estimation of alpha co-efficient often arises (Klein, 2011; Field, 2005; Raykov, 1997). To overcome such weaknesses the study includes extra measures of reliability such as the item-to-total-correlations, mean-inter-item-correlations and reliability estimates derived from measurement model assessment i.e. CFA (Hair et al., 2010; Pallant, 2007). The reliability estimates derived from CFA are believed to provide robust and rigorous results. Most importantly, these statistics provide an alternative method for removal of low performing items from the scale that lower constructs' composite reliability and validity (Nunnally and Bernstein, 1994), see section 4.10.4.

4.10.3.2 Item-to-Total-Correlation

Item-to-total correlation performs two functions. It assess the reliability and unidimensionality of the scale. It is argued that if certain items comprise a unidimensional construct, then these should

be reasonably correlated. Item-to-total-correlation (ITTC) provides an indication of the extent to which each item on the construct/scale correlates with the total score of the scale (Churchill, 1979; Field, 2005; 2000; Pallant, 2007). Pallant (2007) suggests considering the corrected-item-to-total correlation (CITTC) values as the appropriate statistic. Steenkamp and van Trijp (1991) suggest an optimal range of 0.3 to 0.6 for item-to-total correlation. Briggs and Cheek (1986) propose a range of 0.2 to 0.4. Generally, values below 0.3 indicate that the corresponding item measures something different from the scale as a whole. It is suggested that, particularly in situations when the Cronbach's alpha of the overall scale is too low (i.e. less than 0.7), the items whose corrected-item-to-total-correlations is below 0.3, may be removed to improve the overall alpha of the construct (Pallant, 2007). CITTC also insures whether the items on the scale are correctly reversed coded. Incorrectly reverse coded items are depicted by negative values for the CITTC (Pallant, 2007).

4.10.3.3 Kuder Richardson Reliability Coefficient (KR20)

The KR20 is a special case of Cronbach's Alpha for binary variables (de Vaus, 2002; White and Bryson, 2011). Generally speaking, KR20 and alpha coefficient are the same coefficients (Tan, 2009. The statistic is referred to as KR20 when it is applied to dichotomous items, and called alpha when it is used with polytomous items (Cortina, 1993).

4.10.4 Reliability and Validity of Measurement Model (CFA) of the Individual Level Data

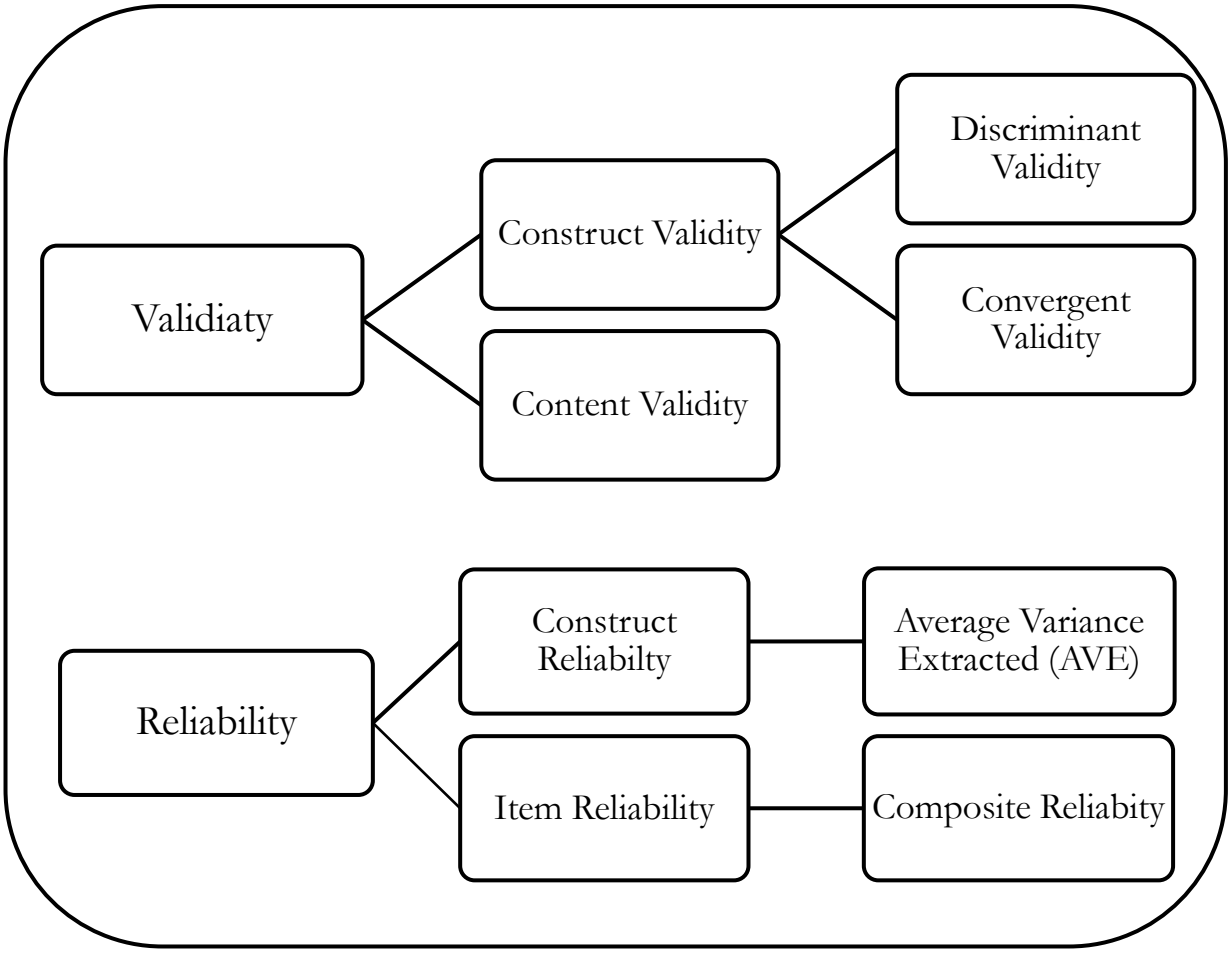
According to Gaffney (1997, p. 1) 'reliability, along with validity, is central issues in all scientific measurement'. A responsible researcher should evaluate the instruments' reliability and validity separately and make any modifications necessary. One of the biggest strengths of SEM approach is that it facilitates quantitative assessment of reliability and validity of constructs in the proposed theory. Confirmatory factor analysis (CFA) is used to confirm previously defined hypotheses about plausible relationships between variables. When conducting a CFA one should not consider the fit indices of the model alone. Instead, other aspects such as factor loadings for each observed variable along with the convergent and discriminant validity should be considered (Farrell and Rudd, 2009). This section extends the last section and outlines the procedures used to assess the validity and reliability of individual level constructs following the CFA procedure before aggregating data. Reliability estimates derived from the CFA approach tests composite reliability and average variance extracted (AVE). On the other hand, validity is assessed from the perspectives of content, convergent and discriminant validity.

4.10.4.1 Validity of Measurement Model

Validity refers to the extent to which a scale or set of measures accurately characterise the concept of interest (Hair et al., 2010). It is the extent to which a set of measured items actually reflect the theoretical latent construct they are designed to measure. There are various forms of validity: content validity (i.e. face validity), convergent validity, discriminant/divergent validity and nomological validity (Bryman, 2012; 2008). Kline (2011, p. 71) argues that 'all forms of score validity are subsumed under the concept of construct validity' which according to Kline (2011, p. 71) specifies 'whether constructs measure the hypothetical constructs the researcher believes they do'. Thus, construct validity encompass four components: face validity, convergent validity, discriminant validity and nomological validity.

Before running the CFA model, face validity is ensured through selection of measures on published scales. Afterwards, nomological validity is examined to check whether the correlations between the constructs in the measurement model makes sense (Hair et al., 2010). In CFA, the main objective is to empirically estimate validity using a rigorous approach of construct validity i.e. test convergent and discriminant validity. This study tests the convergent validity, discriminant validity as sub-dimensions of construct validity, and content validity as separate form of validity (see Figure 4.8). The results of the validity estimates (discriminant and convergent) are presented in chapter 5, section 5.5.2.

Figure 4.8: Forms of Validity and Reliability in a CFA Approach



4.10.4.1.1 Content Validity

Content validity (i.e. face validity) is the first step towards establishing correspondence between items designed to measure a latent construct. Face validity (FV) describes observational meaningfulness of a construct. In other words, FV identifies the extent to which items in a construct are consistent with construct definition. Content validity assessment is based solely on researcher's judgement (Hair et al., 2010). Although content validity is a qualitative assessment of the robustness of the measures in a scale, it is rightfully the most important criterion. For if content validity is poor, the measures will not exhibit construct validity and reliability. The current study used measures from WERS 2011, which are chosen by expert academic and general researchers based on sound empirical and theoretical literature. To further substantiate the scale validity based on content validity the selected measures are evaluated empirically on the following two sub-dimension of construct validity and unidimensionality.

4.10.4.1.2 Discriminant Validity

Discriminant validity (also referred to as divergent validity - DV) is the degree to which a construct is truly distinct from other constructs. Put differently, DV establishes unidimensionality. According to Netemeyer, Boles and McMurrian (2003, p. 77), DV requires that 'a measure does not correlate too highly with measures from which it is supposed to differ'. This implies that indicators of theoretically distinct constructs should have low correlations with each other. Therefore, a low cross-construct correlation signifies good discriminant validity.

There are number of ways to assess DV between constructs. Jorsekog (1971) suggest conducting a paired construct test. Other options pertain to applying the Fornell and Larcker (1981) technique or conducting multi-trait-multi-method evaluation of constructs. Nevertheless, Fornell and Larcker (1981) technique is the most commonly used technique applied to establish divergent validity. This approach requires comparing the average variance extracted (AVE) of each construct with the shared variance between the constructs and all other constructs. Shared variance (R^2) is the amount of variance that a variable (construct) can explain in another variable (construct). It is represented by square of multiple correlations/factor loadings between any two variables (constructs), and is akin to the concept of communality. Typically, AVE values greater than 0.50 exhibits divergent validity. Establishing DV using Fornell and Larcker (1981) technique requires that AVE estimates for any two constructs are greater than the corresponding shared variance estimates between the two constructs (Hair et al., 2010). In the present study DV is assessed by two methods. First, by comparing AVE with squared correlations (R^2) for the latent constructs. If the AVE estimates for all constructs are larger than their corresponding squared inter-construct correlations, then it means that the measured variables have more in common with their posited construct than they do with the other constructs. Second, by comparing the square root of AVE with the inter-constructs correlations (Fornell and Larcker, 1981). Hence, if the square root of AVE for a construct is greater than the correlation estimate between its corresponding construct and all other constructs, then discriminant validity is attained.

4.10.4.1.3 Convergent Validity

Convergent validity (CV) indicates the extent to which items dimensional measures of the same concept are correlated. This statistic explains the degree to which two or more measures of the same theoretical construct 'converge' or share a high proportion of variance in common (Netemeyer et al., 2003). CV operates on the principle that items of scale should load highly on

their common underlying construct (Byrne, 1994). High correlations indicate that the scale instrument is effectively measuring its intended concept.

In the present study, CV is assessed by examining construct loadings and AVE. Rules of thumb on convergent validity relates that standardised factor loadings estimate should be at least 0.5 or higher (ideally ≥ 0.7), and statistically significant (Anderson and Gerbing, 1988). Further, AVE should be 0.5 or more to highlight convergent validity. An AVE below 0.5 indicates that, on an average, there is more error remaining in the items than the variance explained by the latent construct structure. In addition, AVE statistics should be higher than the squared correlations (R^2) between that latent construct and other factors, to establish sufficient divergent validity (Fornell and Larcker, 1981). Finally, reliability estimates should be at least 0.7 or higher to indicate internal consistency and convergence.

4.10.4.2 Reliability of Measurement Model

In CFA two types of reliability are assessed. These are, namely item (composite) reliability and construct reliability (i.e. AVE) (Fornell and Larcker, 1981; Farrell and Rudd, 2009; Nusair and Hua, 2010). The results of both composite reliability and AVE are presented in Chapter 5, sections 5.5.2 and 5.5.3.

4.10.4.2.1 Item Reliability

Item reliability (also known as composite reliability) relates to 'the amount of variance in an item due to underlying construct rather than to error and can be obtained by squaring the factor loadings' (Chau, 1997, p. 324). According to Chin (1998) and Hair et al. (2010) standardised loading for each item should ideally be 0.7 or more to demonstrate good composite reliability (Nunnally and Bernstein, 1994). However, according to Bagozzi and Yi (1988) a value between 0.6 and 0.7 may be acceptable provided that other indicators depicting construct validity are good. Chin (1998) suggests that a value of 0.50 may also be acceptable. A high composite reliability indicates that internal consistency exists and measures are all consistently representing something.

The composite reliability of a construct is calculated as:

$$CR = \frac{(\sum Standardised\ Loadings)^2}{(\sum Standardised\ Loadings)^2 + \sum e_j}$$

In this equation e_j refers to the measurement error for each indicator. Measurement error variance is also referred to as standardised error variance or delta and is computed by (1-$\text{standardised loadings}^2$). In the above formula standardised loadings are first summed and then squared.

4.10.4.2.2 Construct Reliability

Construct reliability (commonly exhibited by AVE estimate) refers to 'the degree to which an observed instrument reflects an underlying factor' (Nusair and Hua, 2010, p. 315). Put differently, AVE is the average amount of variation that any latent construct is able to explain in the observed variables, to which it is theoretically related' (Farrell and Rudd, 2009). Mathematically AVE is calculated as:

$$AVE = \frac{\sum Standardised\ Loadings^2}{\sum Standardised\ Loadings^2 + \sum e_j}$$

It is suggested that an AVE should be computed for each latent construct in a measurement model. The rule of thumb state that an AVE value of at least 0.7 is usually required. Nevertheless, Bagozzi and Yi (1988) suggest minimum acceptable value for AVE is 0.5. An AVE of less than 0.5 is indicative of low reliability and questionable validity of individual items as well as the construct. Higher value of AVE suggests adequate convergence.

4.10.4.3 Unidimensionality

Unidimensionality means that set of indicators can be associated to only one underlying construct. In mathematical terms unidimensionality indicates that cross-loadings between constructs are hypothesised to be zero (Hair et al., 2010). On the contrary, existence of significant cross loadings is evidence of lack of unidimensionality, and lack of construct validity in terms of discriminant validity. Traditionally, statistical techniques such as Cronbach's alpha, item-to-total correlation and exploratory factor analysis were employed to assess unidimensionality. However, many argue that these traditional measures are good for assessing reliability of a scale, and may not be apt at assessing unidimensionality (Kline, 2011, Anderson and Gerbing, 1988, Koufteros, 1999). Subsequently, using the CFA approach is suggested a better way for establishing unidimensionality in a multiple indicator measurement model. Using the CFA approach, unidimensionality may be

established by using goodness of fit measures along with other diagnostic tools such as standardised residuals and modification indices (Koufteros, 1999). Employing multiple fit indices to assess the goodness of fit of the measurement model is advised. Generally speaking, chi-square statistic (χ^2), at least one goodness of fit index (GFI, CFI, TLI, and NFI) and one badness of fit index (RMSEA, RMSR) may be used successively (Iacobucci, 2009).

The current study utilises a variety of fit indices such as χ^2, CFI, TLI and RMSEA. However, a commonly recognised weakness of χ^2 statistic is that it is overly sensitive to sample size (Anderson and Gerbing, 1988). This study uses a large data set which implies that the chances of model rejection increases manifold based on the stated weakness of χ^2. Using more than one fit indices overcomes this obstacle significantly. Results of unidimensionality are presented in chapter 5, section 5.5.3.1.

4.11 Chapter Summary

This chapter elaborated the steps taken in designing research methods of the study. The research adopts a positivist approach and consequently discusses the quantitative methodology akin to the relevant paradigm and research approach. Secondary data (WERS 2011) has been selected to test the hypotheses of the research and issues around the validity, reliability and replicability of the data set and measures are discussed. The next two chapters present the findings of the multivariate statistical analysis of the study.

Chapter 5

Preliminary Data Analysis

5.1 Introduction

This chapter presents the preliminary analysis of the multivariate data of the study. The chapter serves as building block for the subsequent chapter (Chapter 6), in which results of tests of hypotheses of the study are presented. Mplus version 7.1.1, R version 3.2.1, STATA 20 and Statistical Package for Social Sciences (SPSS) 20 is used for the analyses presented in this chapter.

The chapter is arranged into three sections. The first section deals with data screening procedures and data preparation techniques. Specifically, this part includes missing data analysis, detection of outliers and assessment of normality. In the second section, data is further developed for use in structural equation modeling. For this purpose, an exploratory factor analysis (EFA) is conducted on individual level data, in order to group underlying constructs of the study. Reliability of selected constructs is evaluated through Cronbach's alpha/KR20, item-total-correlation (ITTC) along with intra-class correlation. Confirmatory factor analysis (CFA) is conducted to validate the measurement model for employee level data. CFA is conducted for both individual constructs and overall measurement model for employee level data. The final section of the chapter presents data aggregation process, and statistical justification of aggregating employee level constructs for workplace level analysis.

SECTION 1: Data Preparation and Screening Process

5.2 Ensuring Data Suitability for Path Analysis in SEM

Data preparation and screening is foundation of any robust multivariate analysis (Kline, 2011). This section elaborates the process undertaken to screen and clean data for multivariate analysis. The sub-sections cover issues of amount and patterns of missing values, outliers and normality of the study's data.

5.2.1 Missing Data Analysis

A comprehensive literature is available on estimation and handling of missing data (Little and Rubin, 1987; Schafer, 1997). Nevertheless, visualisation of missing values is rarely done (Cook and Swayne, 2007; Eaton, Plaisant and Drizd, 2005). In this study, magnitude, patterns and mechanism of missing data are studied, and two graphical presentations are used to visualise missing values. SPSS is used to discern the missing value mechanism. The missing value patterns (structural vs. non-structural) are explored using two softwares i.e. Mplus and R. All visualisation tools are implemented in the R-software's Visualisation and Imputation of Missing Values (VIM) package. VIM explores, analyses and comprehends structure of missing and imputed values using visualisation and diagnostic techniques. Only the visualisation technique is used in this study.

A three-step process is adopted for analysing missing data in the study. First, type of missing data is determined. The missing data in our sample is classified as 'not ignorable', and the source of this non-ignorable missing data is 'unknown', because it is generated due to nonresponse, no opinion or insufficient knowledge in relation to the question posed. The missing values are not designated 'ignorable' because these are not part of the research design i.e. structural missing values due to the design of the questionnaire. Second, the extent of missing data for individual variables, cases or overall data is determined. The main objective is to ensure that the extent or amount of missing data is low, and within permissible threshold for missing data (Hair et al., 2010). Resultantly, number and percentage of missing data is tabulated for each variable and displayed graphically. To compliment, patterns of missing data are analysed to highlight non-random patterns. Specifically, the number of cases with no missing data, or concentration of missing data in any specific set of questions is explored. The graphical presentation of missing values supplemented identification of missing data patterns. Thirdly, randomness of missing data is established, by exploring missing values mechanism i.e. generating processes of missing values.

The univariate description highlighting the number and proportion of missingness for dichotomous HP-HR practices is given in Table 5.1. It can be seen that missing data for independent variables of the study range from 0% to 2.4%, with majority of variables having below 1% missing data. Highest percentage of missing data is noted for FUNCFLEX with 2.4% missing values.

Table 5.1: Descriptive Statistics of HP-HR Practices when they are binary

High Performance HR Practices	Responses		Valid Responses	Missing Values (%)
	Yes	No		
STDINDCT - Standard induction provided at the workplace.	2456	223	2679	1(0.0)
INTRECRT - Internal recruitment carried out at the workplace.	833	1834	2667	13 (0.5)
RECTMTVT - Motivation as targeted selection criteria used at the workplace.	2186	490	2676	4 (0.1)
RECTSKLL - Skills as targeted selection criteria used at the workplace.	2429	247	2676	4 (0.1)
RECTQUAL - Qualification as targeted selection criteria used at the workplace	1896	780	2676	4 (0.1)
RECTEXP - Experience as targeted selection Criteria Used at the workplace.	2388	288	2676	4 (0.1)
PABTEST- Personality/attitude test conducted at the workplace.	1038	1638	2674	6 (0.2)
PRCTEST- Performance/competency test conducted at the workplace.	1773	902	2675	5 (0.2)
INTPERS1 - Soft skills training in team working skills is provided at the workplace	1094	1570	2664	16 (0.6)
INTPERS2 - Soft skills training in communication skills is provided at the workplace.	1177	1487	2664	16 (0.6)
INTPERS3 - Soft skills training in problem solving skills is provided at the workplace.	603	2061	2664	16 (0.6)
INTPERS4 - Soft skills training in customer services/liaison is provided at the workplace	1021	1643	2664	16 (0.6)
FRMTRAIN - 80% or more of the employees in the *LOG receive off the job training.	1342	1298	2640	40 (1.5)
FUNCFLEX - 40% or more of the employees in the *LOG are formally trained to be able to do jobs other than their own.	820	1795	2615	65 (2.4)
PATRAIN - Performance appraisal results in training need evaluation of employees.	2175	505	2680	0 (0)
PAALL - Managerial/non-managerial employees have their performance formally appraised.	2349	330	2679	1 (0)
PACONDCT - 80% or more of the employees in the *LOG have their performance formally appraised.	2044	635	2679	1 (0)
PAPAY - Individual employees' pay is linked to performance appraisal.	767	1907	2674	6 (0.2)
FPREF - Any employee(s) in the workplace get paid by results or merit pay.	1142	1534	2676	4 (0.1)
PYINDPRF - Payments by results are determined by individual performance.	497	2182	2679	1 (0)
PYGRPPRF - Payments by results are determined by team, workplace, or organisation based measures of performance.	531	2148	2679	1 (0)
MRTPAYB - 40% or more of the employees in the *LOG receive payment by results/merit pay.	721	1953	2674	6 (0.2)
FPROF - Any employee(s) receive profit-related payments or profit related bonuses.	708	1967	2675	5 (0.2)
PROFALL - Managerial or non-managerial employees participate in profit related pay schemes.	702	1978	2680	0 (0)
PFTPAYB - 40% or more of employees in the *LOG received profit related pay.	293	2385	2678	2 (0.1)
ESOSOPRT - Workplace operates either SIP, SAYE, EMI, CSOP or any other ESOS.	381	2282	2663	17 (0.6)
ESOSALL - Managerial/non-managerial employees are eligible for ESOS.	379	2300	2679	1 (0)

ESOSB - 40% or more of the employees in the *LOG are eligible for ESOS.	296	2382	2678	2 (0.1)
METALL - Meetings between senior managers and the whole workforce are held at the workplace.	2207	471	2678	2 (0.1)
BRGROUPS - Briefing groups are present at the workplace	2268	406	2674	6 (0.2)
FREQMTAL - Senior managers' and all workforces meetings are conducted less than every 3 months.	528	2149	2677	3 (0.1)
FREQBRGP - Briefing groups are conducted more than fortnightly.	1138	1521	2659	21 (0.8)
CNSLTCMT- Consultation committee are present at the workplace.	970	1706	2676	4 (0.1)
SUGSCHMS - Suggestion schemes are present at the workplace.	1012	1668	2680	0
METCNSLT - 25% or more of the time at the meetings between senior managers and the whole workforce are usually available for questions from employees, or for employees to offer their views.	1025	1647	2672	8 (0.3)
BRGCNSLT - 25% or more of the time at the briefing groups are usually available for questions from employees, or for employees to offer their views.	1262	1395	2657	23 (0.9)
QLTYCIRC - Quality circles are present at the workplace.	835	1839	2674	6 (0.2)
ATTSRVEY - Attitude surveys are present at the workplace.	1657	1019	2676	4 (0.1)
TEAMDPND - Team members are inter-dependent on each other for their job.	1972	702	2674	6 (0.2)
TEAMDECD - Team members jointly decide how their work is to be done.	1472	1189	2661	19 (0.7)
TEAMRSP - Team members are given responsibility for specific products or services.	2090	586	2676	4 (0.1)
TMWRKB - 80% or more of the employees in the *LOG work in formally designated teams.	1816	859	2675	5 (0.2)
INFSHAR1 - Internal investment plans are disclosed at the workplace.	1416	1253	2669	11 (0.4)
INFSHAR2 - Financial position of establishment is disclosed at the workplace.	1924	754	2678	2 (0.1)
INFSHAR3 - Staffing plans disclosed at the workplace.	1879	800	2679	1 (0.0)
JBVARTYB - Employees have a lot of variety in their job.	1273	1401	2674	6 (0.2)
JBDSCRTB - Employees have a lot of discretion in their job.	685	1992	2677	3 (0.1)
JCNTROLB- Employees have a lot of control over the pace at which they work.	525	2152	2673	3 (0.1)
JINVOLVB - Employees have a lot of involvement in decision over how their work is organised.	678	1998	2676	4 (0.1)
EOCPOLCY- Workplace has a formal written policy on equal opportunities or managing diversity.	2402	259	2661	19 (0.7)
MONRSG - Workplace monitors R&S on gender.	1152	1503	2655	25 (0.9)
MONRSE - Workplace monitors R&S on ethnic diversity.	1147	1508	2655	25 (0.9)
MONRSD - Workplace monitors R&S on disability.	1098	1557	2655	25 (0.9)
MONRSA - Workplace monitors R&S on age.	943	1712	2655	25 (0.9)
REVRSG - Workplace reviews R&S on gender.	931	1697	2688	52 (1.9)
REVRSE - Workplace reviews R&S on ethnic diversity.	921	1707	2688	52 (1.9)

REVRSD - Workplace reviews R&S on disability.	907	1721	2688	52 (1.9)
REVRSA - Workplace reviews R&S on age.	834	1794	2688	52 (1.9)
MONPROMG - Workplace monitors promotion procedures on gender.	570	2064	2634	46 (1.7)
MONPROME - Workplace monitors promotion procedures on ethnic diversity.	539	2095	2634	46 (1.7)
MONPROMD - Workplace monitors promotion procedures on disability.	498	2136	2634	46 (1.7)
MONPROMA - Workplace monitors promotion procedures on age.	455	2179	2634	46 (1.7)
REVPROMG - Workplace reviews promotion procedures on gender.	578	2047	2625	55 (2.1)
REVPROME - Workplace reviews promotion procedures on ethnic diversity.	559	2066	2625	55 (2.1)
REVPROMD - Workplace reviews promotion procedures on disability.	529	2096	2625	55 (2.1)
REVPROMA - Workplace reviews promotion procedures on age.	504	2121	2625	55 (2.1)
GHANDLE - Workplace has a formal grievance handling procedure.	2571	108	2679	1 (0)
GWRITE - Employees are required to set out in writing the nature of grievances.	2447	229	2676	4 (0.1)
GMEETING - Employees are asked to attend a formal meeting with a manager to discuss the nature of their grievances.	2603	73	2676	4 (0.1)
GAPPEAL - Employees have a right to appeal against a decision made under the procedures.	2603	63	2666	14 (0.5)
LOGPENSN - Employees in the *LOG are entitled to pension schemes.	1950	725	2675	5 (0.2)
LOGCAR - Employees in the *LOG are entitled to company vehicle or allowance.	418	2257	2675	5 (0.2)
LOGHELTH - Employees in the *LOG are entitled to private health insurance.	432	2243	2675	5 (0.2)
LOGLEAVE - Employees in the *LOG are entitled to more than 28 days of paid annual leave (including public holidays).	1817	858	2675	5 (0.2)
LOGSICK - Employees in the *LOG are entitled to sick pay in excess of statutory requirements.	1885	790	2675	5 (0.2)
WRKHOME - Workplace practices working at or from home.	1260	1420	2680	0 (0)
FLEXI - Workplace practices flexitime.	1285	1395	2680	0 (0)
JSHARE - Workplace practices job share.	1141	1539	2680	0 (0)
REDUCEHRS - Workplace practices reducing working hours.	2045	635	2680	0 (0)
COMPHRS - Workplace practices working standard hours across fewer days.	1103	1577	2680	0 (0)
SHIFTPAT- Workplace practices changing set working hours.	1642	1038	2680	0 (0)
TERMTIME - Workplace practices working only during term time.	964	1716	2680	0 (0)
NURSERY- Employees in the *LOG are allowed workplace nursery.	240	2416	2656	24 (0.9)
CHILDCARE - Employees in the *LOG are allowed to financial help with child care.	1380	1276	2656	24 (0.9)

FINOLDER - Employees in the *LOG are allowed financial help for care of older adults.	26	2630	2656	24 (0.9)
LEAVCARE - Employees in the *LOG are allowed a specific period of leave for carers of older adults	456	2200	2656	24 (0.9)
JSEC1 - Job security and no compulsory redundancies are present for either managerial or non-managerial employees at the workplace	282	2373	2655	25 (0.9)

***LOG:** Largest Occupational Group

Matrix plot and aggregation plot, in R-package VIM, are used to visualise missing values. For better illustration, the intermediate variables are analysed separately from the outcome variables.

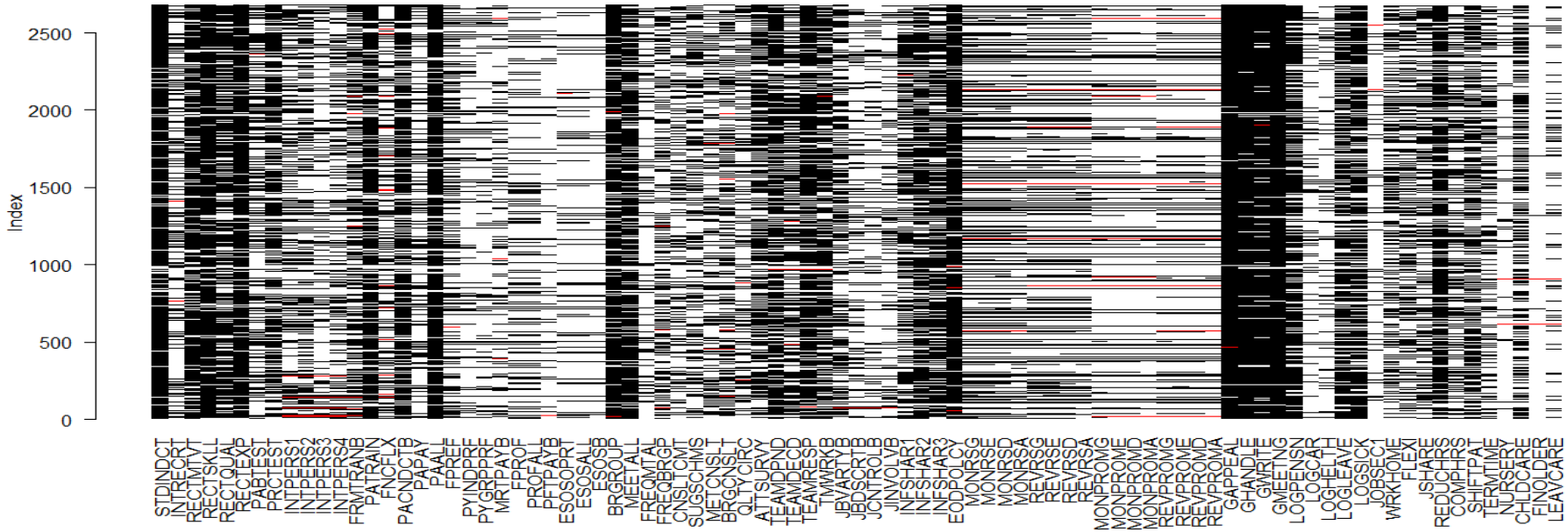
5.2.1.1 Matrix Plot

Matrix plot is one of the most useful multivariate plots that helps to detect multivariate dependencies and missing value patterns. Matrix plot visualises each cells of the data matrix by a rectangle in horizontal lines (Prantner, 2011). By default, red and orange lines are drawn to highlight missing or imputed values respectively. Observed values, on the other hand, are depicted by a grey scale. The observed variables are further scaled to the interval [0,1] where values equal to 0 are coloured in white, small values are coloured in light grey and high observed values (close to 1) are coloured with dark grey (see Figures 5.1, 5.3 and 5.4). Matrix plots are, generally, sorted by the magnitude of a selected variable to analyse corresponding patterns of variations in other variables. In this study, the HP-HR variables are sorted on the practices that have the most cases of missing data, in order to highlight corresponding changes in the other HP-HR practices. Data pertaining to perceived job demands, job control, job resources and well-being is sorted on employees' contextual attributes of gender, age, marital status, job status and dependent children, which have been known to affect the perceptions of work-related stressors, work-related resources and well-being.

5.2.1.2 Aggregation Plot

Aggregation plot offers an overview of the number of missing values, and is particularly helpful in highlighting combinations of variables with a high number of missing values. Aggregation plot produces two graphical outputs: left plot region and right plot region (see Figures 5.2, 5.5 and 5.6). Left plot region comprises of a simple barplot highlighting proportion of missing or imputed values per variable in the data. There is a separate bar for each included variable in the data, and the height of the bar corresponds to the number or proportion (as opted) of missing/imputed values in each variable. Default colour for missing values is red and that of imputed values is orange. Right plot region contains a plot of the possible combinations of missing, imputed and non-missing values. Missingness is depicted by the colour red, imputed by orange and the observed/available data is highlighted in the colour blue. Barplot/numbers (as opted) to the right of this combination plot show number of times each combination of missingness occurs (Templ and Filzmoser, 2008).

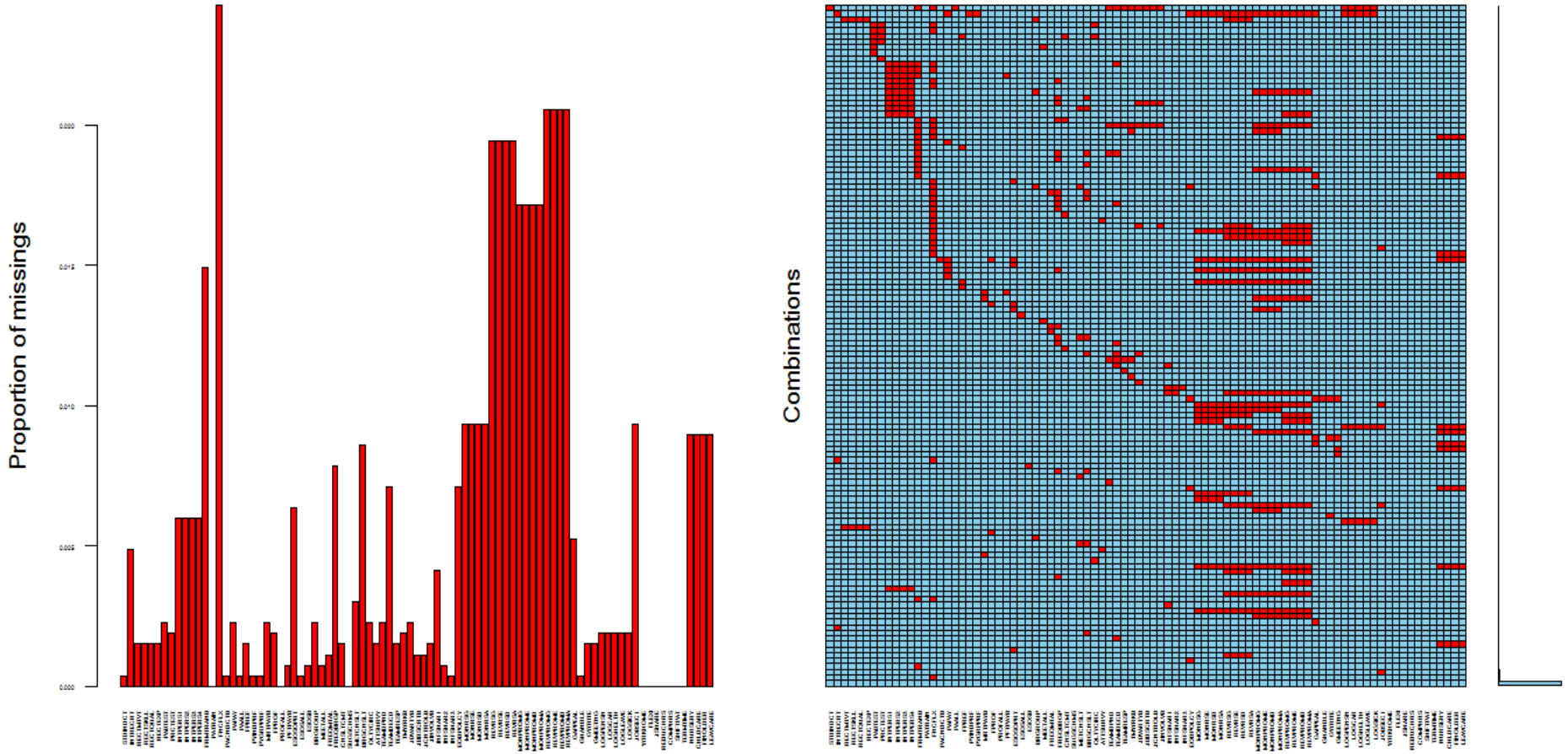
Figure 5.1: Matrix Plot for the HP-HR Variables



Matrix Plot without Sorting

Prominence of white validates the results of Table 5.1 and indicates that a majority of workplaces do not offer internal recruitment, soft-skills training (e.g. training in team working and problem solving), functional flexibility, performance-related pay structures (e.g. merit-pay, performance pay and ESOS), communication and consultation opportunities (e.g. consult committees, suggestion schemes and quality circles), job variety, job discretion, control and involvement over the pace of work or work organisation, job security, entitlements to company car and health care, workplace nurseries, and financial help for care of children and adults. Similarly, the majority of workplaces do not monitor and review recruitment and selection or promotion on the basis of gender, ethnic diversity, disability or age. Black indicates that standard induction, recruitment and selection - based on motivation, skills, qualification and experience, briefing groups, performance appraisal linked to training-needs, team-working, information sharing (other than on internal investment plans), equal opportunity policy, grievance procedures, pension schemes, sick pay in excess of statutory requirements, and options of reducing working hours seem to be present in majority of the workplaces, in somewhat similar structure, and with very few missing values. Notably, majority of workplaces employ performance/competency test than personality/attitude test at the time of recruitment.

Figure 5.2: Aggregation Plot - Number of missing values in the HP-HR Practices



Left Plot: Bar plots for the proportions of missing values in each variable. **Right plot:** Aggregation plot showing all combinations of missing (red) and observed (blue) shade in the data and their corresponding bar plots.

Figure 5.1 represents missing value structure of the HP-HR data, independent of any other variable. White indicates 0 = No, black indicates 1 = Yes, and red lines show missing responses, if any. It can be seen that practices pertaining to monitoring and reviewing recruitment and selection or promotion (MONRSG – REVPROMA) show a considerably higher and scattered structure of missingness across workplaces. The values are missing because majority of respondents 'Don't Know' whether their workplace monitors and reviews recruitment and selection or promotion on the basis on gender, ethnic diversity, disability or age. Functional flexibility reveals a more consistent structure and highest level of missingness across workplaces, because respondents 'Don't Know' whether their workplaces formally train employees to do jobs other than their own. Soft skills training (INTPERS1 - INTEPERS4) shows another prominent, but inconsistent, band of missingness. This shows that only in a handful of workplaces respondents 'Don't Know' whether training in team-working, communication, problem-solving and customer services is provided. The rest of the HP-HR variables do not exhibit high levels of missingness.

Figure 5.2 exhibits aggregation plot of the HP-HR variables. The left plot region reiterates that the amount of missing values is rather small in majority of the HP-HR practices, with the exception of functional flexibility and monitoring and reviewing recruitment and selection or promotion procedures. The right plot region reveals that, in most cases, missing data does not follow any consistent pattern, and is missing randomly. Prominent blocks of missing values can be seen, only, for monitoring and reviewing recruitment and selection or promotion procedures and interpersonal training, and only these variables have the highest number of combinations of missing values. This implies that in workplaces where individuals don't reply or 'Don't Know' about any one of these practices, they are most likely not to reply or know about the others (see Appendix D, Figure (D-1a – 1c).

Analysis of missing data patterns for the HP-HR variables confirms combinations of missing value patterns highlighted by the aggregation plot. The results of this analysis show that there are 125 patterns of missingness in the HP-HR data. Of these, only 17 occur more than 5 times, while the remaining 110 patterns, mostly, occur between 1-2 times, and few up to 5 times. Since the number of missing values for these cases is low (1-5 times), it may not impact the analysis in a substantial manner, thus are not reported. Appendix D, Table D - 1 contains patterns of HP-HR variables which occur more than 5 times. The most frequent pattern occurs 2330 times, in which there is no missing data for any HP-HR variable. Second most frequent pattern occurs 31 times in which only PATRAIN is missing, followed by a pattern repeated 20 times highlighting missing values for

JOBSEC1. Prominent patterns of missing values are evident in variables measuring monitoring and reviewing recruitment and selection, monitoring and reviewing promotion procedures and interpersonal training in combination, and occur between 8-13 times. Overall, missing data process in the HP-HR practice data can be classified as non-structural, thus, not ignorable. As the source of this non-ignorable missing data process is unknown (respondents don't know, or refuse to respond), and the missing data occur in a random pattern, it is deemed not to affect the multivariate analyses negatively.

Descriptives of categorical and dichotomous intermediate variables illustrated in Table 5.2 and Table 5.3 respectively, show that missing values in each variable are well within the recommended threshold of 5-10% (0.6% to 4.1%). DCOM4 and CONSULT3 contain 6.4% and 7.7% missing values respectively. Figure 5.3 contains matrix plot for the intermediate variables, independent of any other variable. It can be seen that missing values are present on all of the intermediate variables, but in different magnitude. In each instance, missing data seem to be non-ignorable, because the respondents seem to have either no opinion, insufficient knowledge (i.e. 'Don't Know') or simply refuse to answer the related questions (see Appendix D, Table D-5). Appendix D, Figures (D-2a – 2e) presents matrix plots of intermediate variables sorted by gender, age, marital status, job status and number of dependent children respectively. Overall, there is little evidence to support that gender, marital status and having dependent children modify the structure of missing values or induce patterns of variations in any of the intermediate variables. Type of contract is seen to marginally affect structure or patterns of missing data. In terms of age, younger employees are seen to have very few missing responses as compared to employees in middle or higher age groups (see Figures (D-2a – 2e).

Table 5.2: Descriptive Statistics of Ordinal Intermediate Variables

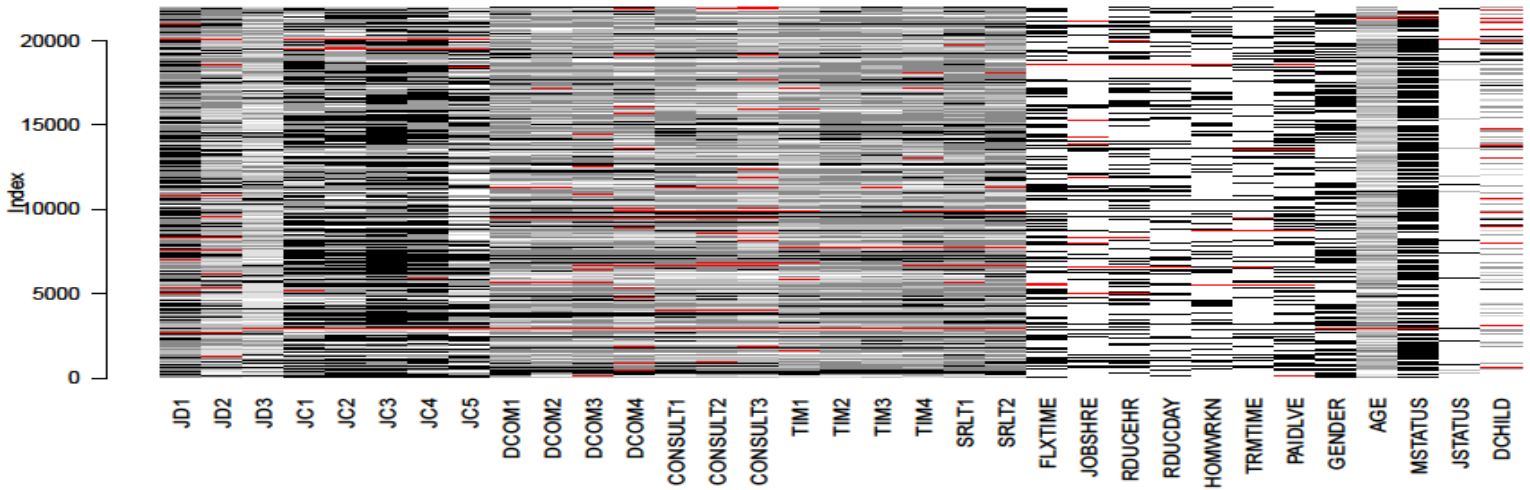
Intermediate Measures	Valid Responses	Missing Values (%)	Valid Response Limits		Median	Mode
			Lower	Upper		
JD1	21660	321 (1.5)	1	5	4	4
JD2	21441	540 (2.5)	1	5	3	3
JD3	21854	127 (0.6)	1	5	3	2
JC1	21694	287 (1.3)	1	4	3	4
JC2	21566	415 (1.9)	1	4	3	4
JC3	21621	360 (1.6)	1	4	4	4
JC4	21610	371 (1.7)	1	4	4	4
JC5	21579	402 (1.8)	1	4	3	4
TIM1	21423	558 (2.5)	1	5	3	4
TIM2	21517	464 (2.1)	1	5	4	4
TIM3	21433	548 (2.5)	1	5	4	4
TIM4	21586	395 (1.8)	1	5	4	4
DCOM1	21619	362 (1.6)	1	5	4	4
DCOM2	21453	528 (2.4)	1	5	3	4
DCOM3	21357	624 (2.8)	1	5	4	4
DCOM4	20576	1405 (6.4)	1	5	3	4
CONSULT1	21417	564 (2.6)	1	5	3	4
CONSULT2	21085	896 (4.1)	1	5	3	4
CONSULT3	20299	1682 (7.7)	1	5	3	3
SRLT1	21327	654 (3.0)	1	5	4	4
SRLT2	21536	445 (2.0)	1	5	4	4

See Appendix E, Figure E-1 for an illustration of the distribution of responses in each categorical variable.

Table 5.3: Descriptive Statistics of Dichotomous Intermediate Variables

Intermediate Measures	Valid Responses	Missing Values (%)	Response Split (%)	
			Yes	No
FLEXTIME	21536	342 (1.59)	37.71	62.22
JOBSHARE	21639	677 (3.17)	16.38	83.61
REDUCEHRS	21304	549 (2.56)	33.58	66.41
REDUCEDAY	21432	322 (1.48)	23.02	76.97
HOMEWRKN	21649	326 (1.50)	20.64	79.35
TERMTIME	21655	430 (1.99)	17.86	82.13
PAIDLEV	21551	363 (1.67)	36.95	63.04

Figure 5.3: Matrix Plot for the Intermediate Variables



Matrix Plot without Sorting

The figure shows that most of the missing values (red lines/rectangles) are present in perceived managerial support measures (DCOM1 – SRLT2), and relatively fewer missing values exist in measures of perceived job demands (JD1 – JD3) and perceived job control (JC1 –JC5). Medium grey scale of the gradient in managerial support measures highlight that the majority of respondents do not have a strong agreement on perceived managerial support. Perceived job demands and perceived job control measures (JD1, JC1 – JC5) have considerably more blocks of black squares, indicating a strong agreement of respondents with the notion of perceived job demands (e.g. my job requires that I work very hard), and aspects of job control. Generally, respondents seem to have a lack of perception of availability of family support, indicated by the white gradient on FLXTIME – PAIDLVE.

Table 5.4 provides the descriptives of the outcome variables. It can be seen that missing values in each variable are well within the recommended threshold of 5-10%. The percentage of missing values range between 0.5% (JS9) to a maximum of 3.4% (JS7). Only ORGCMIT1 (2.8%) and JS7 (3.4%) have missing values above 2%. Figure 5.4 presents matrix plot for outcome variables (i.e. well-being measures), independent of any other variable. The figure illustrates that missing values are present on all measures well-being, and in all instances, data is missing because respondents seem have either no opinion, insufficient knowledge (i.e. 'Don't Know') or simply refuse to answer the related questions (see Appendix D, Table D-5). Matrix plots for outcome variables sorted by gender, age, marital status, job status and number of dependent children are presented in Appendix D, Figures D3a – 3e, respectively. Overall, notable differences in terms of missing values and patterns of non-response exist on all aspects of employee well-being on the basis of gender, age, marital status, job status and number of dependent children (see Figures D3a – 3e).

Aggregation plots of intermediate and outcome variables are presented in Figure 5.5 and Figure 5.6 respectively. Left plot regions in these figures highlight the highest proportion of missing data on managers disclosing financial matters (DCOM4), employee influence on final decision (CONSULT3), satisfaction with job security (JS7) and sharing values with organisation (ORGCMIT1). The right plot regions reveal a number of combinations of missing value patterns (red colour). The continuous blue lines, on right of the right plot regions, depict the number of cases with no missing data in intermediate and outcome variables respectively. Assessment of missing data patterns confirm results of missing value patterns highlighted in the aggregation plots, and show that, in all, 1913 patterns exist in SEQ data. Of these only 111 patterns occur more than 5 times (Appendix D, Table D-2). Rest of the combinations occur under 5 times, with most occurring only once, and, hence, are not reported.

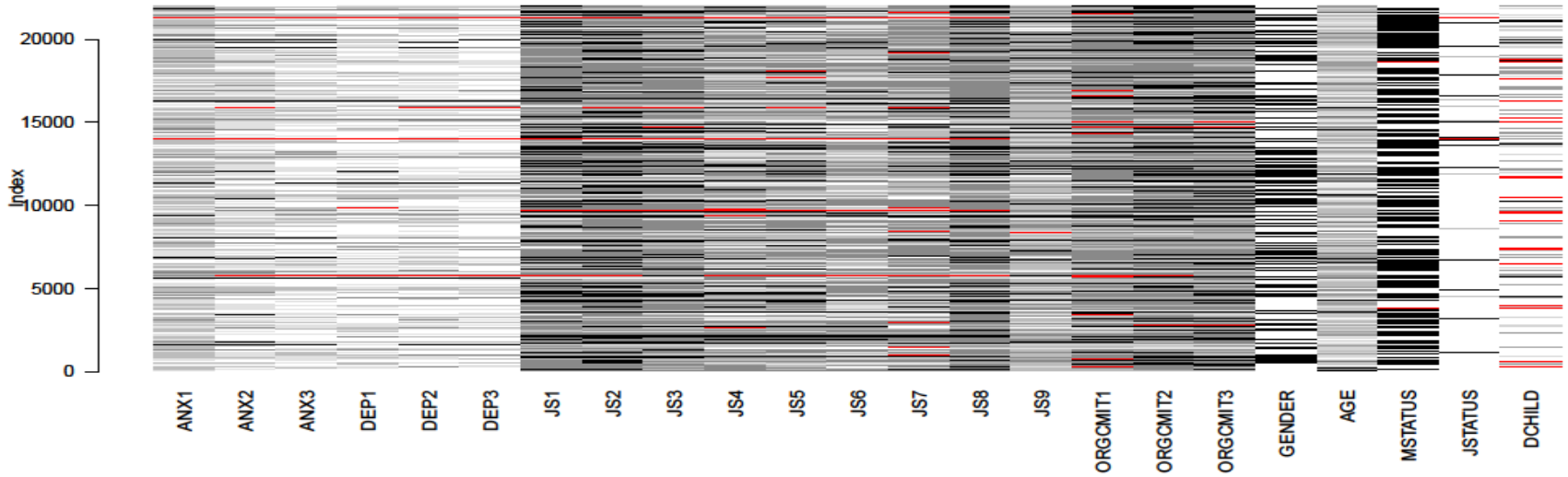
The first pattern (first column) in Table D-2 shows no missing data for 15129 cases. Column two shows that in 529 case data is missing on DCHILD. Other prominent patterns of missing values occur in DCOM4 (391 cases), CONSULT3 (380 cases), JS7 (210 cases), JOBSHARE (248 cases), REDUCEHR (170 cases), CONSULT2 and CONSULT3 (113 cases), ORGCMIT1 (112 cases), JD2 (112 cases), DCOM3 (101 cases) and TERMTIME (71 cases). The most repeated combination of variables with missing values are apparent for job control (JC1-5), downward communication (DCOM1-4), employee consultation (CONSULT 1-3) and trust in management (TIM1-4). Since proportion of missing data on individual measures in SEQ data is not high, and majority of patterns do not repeat frequently, none of the variables are deleted or imputed.

Table 5.4: Descriptives of Outcome Variables

Well-being Measures	Valid Responses	Missing Values (%)	Valid Response Limits		Median	Mode
			Lower	Upper		
ANX1	21742	239 (1.1)	1	5	3	3
ANX2	21669	312 (1.4)	1	5	2	2
ANX3	21689	292 (1.3)	1	5	2	1
DEP1	21681	300 (1.4)	1	5	1	1
DEP2	21613	368 (1.7)	1	5	2	1
DEP3	21705	276 (1.3)	1	5	1	1
JS1	21759	222 (1.0)	1	5	4	4
JS2	21721	260 (1.2)	1	5	4	4
JS3	21596	385 (1.8)	1	5	4	4
JS4	21591	390 (1.8)	1	5	4	4
JS5	21636	345 (1.6)	1	5	4	4
JS6	21698	283 (1.3)	1	5	3	4
JS7	21233	748 (3.4)	1	5	4	4
JS8	21710	271 (1.2)	1	5	4	4
JS9	21878	103 (0.5)	1	5	3	3
ORGCMIT1	21373	608 (2.8)	1	5	4	4
ORGCMIT2	21712	269 (1.2)	1	5	4	4
ORGCMIT3	21735	246 (1.1)	1	5	4	4

See Appendix E, Figure E-1 for an illustration of the distribution of responses in the outcome variables.

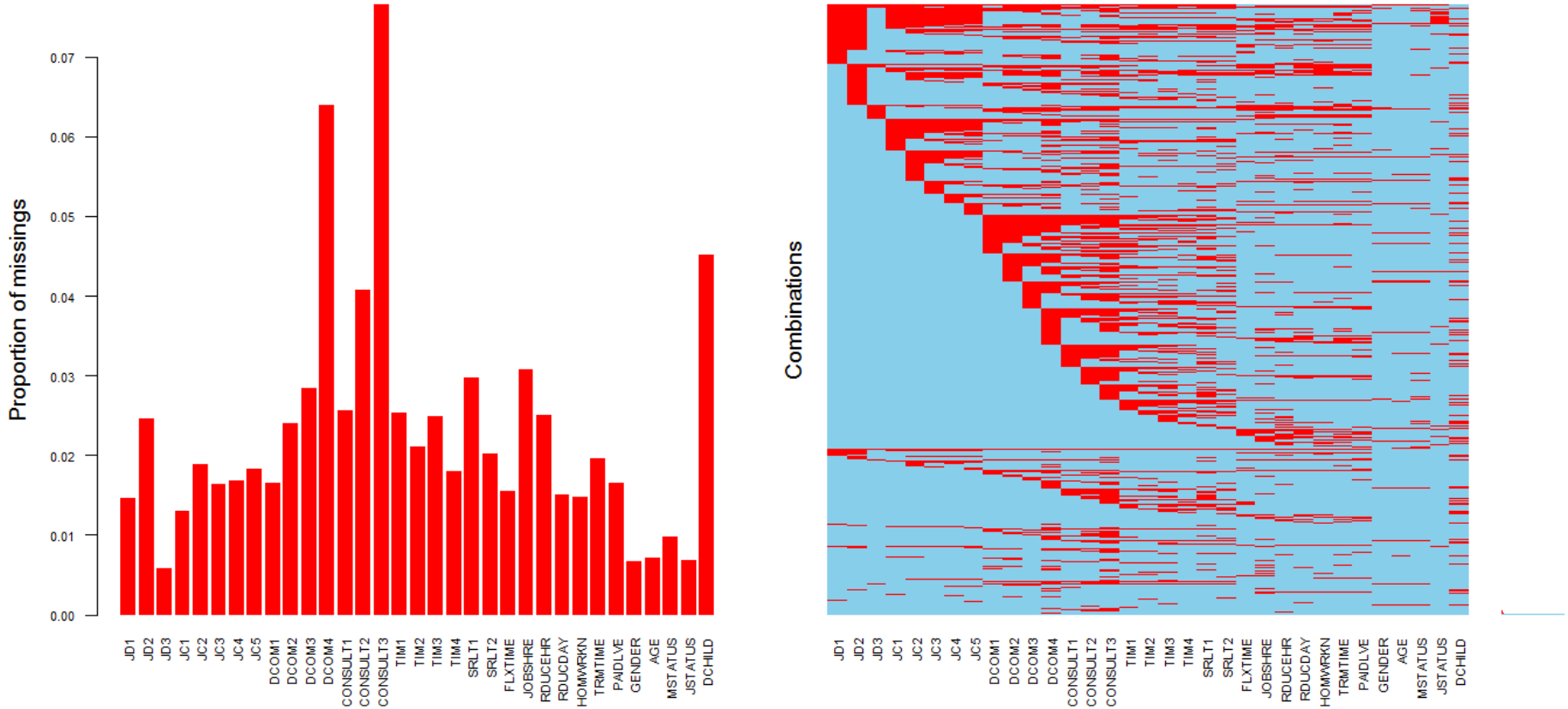
Figure 5.4: Matrix Plot for the Outcome Variables



Matrix Plot without Sorting

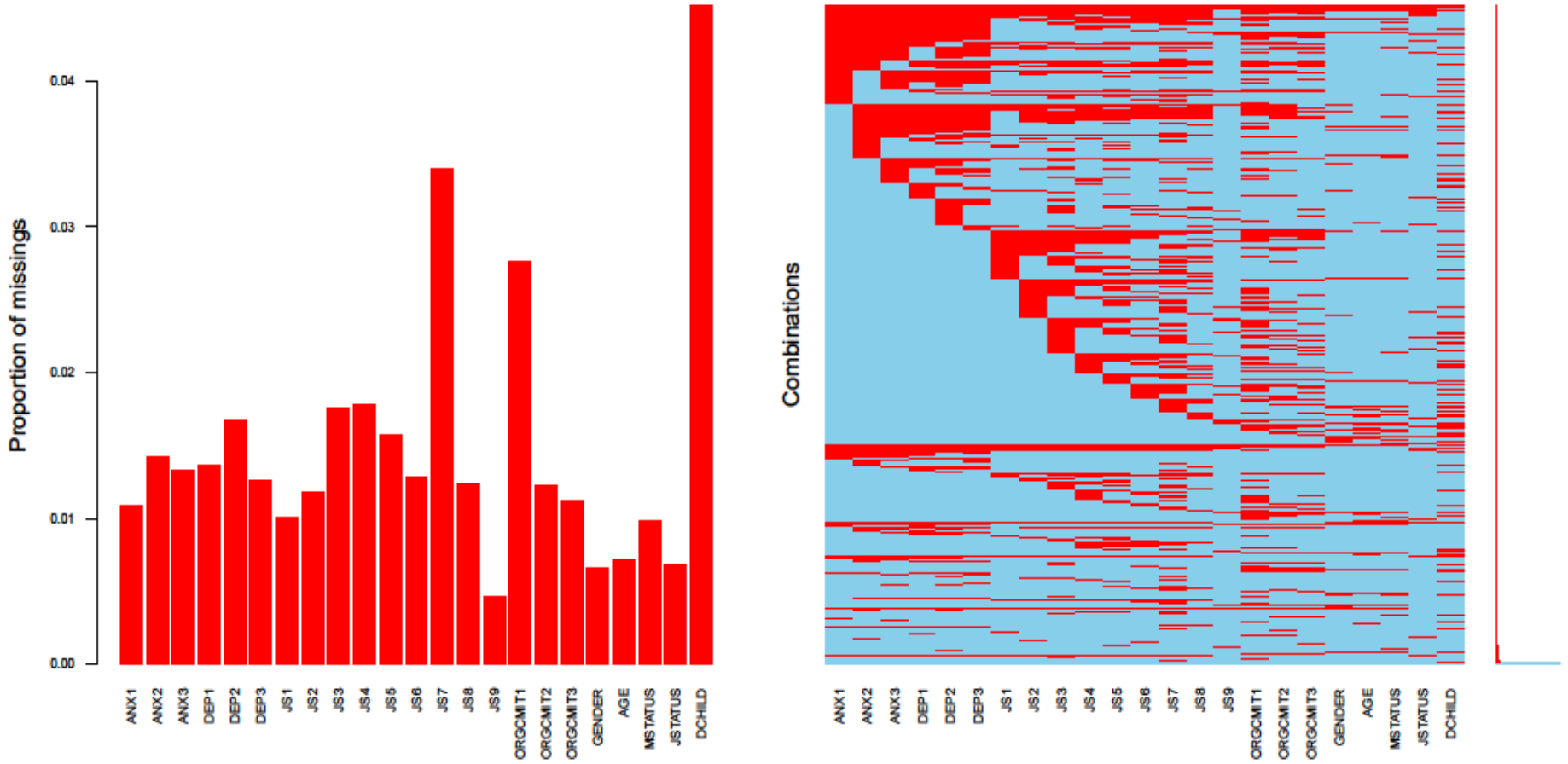
The figure illustrates that the majority of respondents have not shown high agreement with job-related anxiety and depression, depicted by low colour gradient of these measures. Contrarily, there is largely a medium grey with considerable number of black rectangles in measures of job satisfaction and organisational commitment. This implies that our respondents are, generally, less anxious/depressed, and, relatively, more satisfied and committed. Missing values are apparent on all aspects of well-being, but considerably more in measures of job satisfaction.

Figure 5.5: Aggregation Plot - Number of missing values in the Intermediate Variables



Left Plot: Bar plots for the proportions of missing values in each variable. **Right plot:** Aggregation plot showing all combinations of missing (red) and observed (blue) shade in the data and their corresponding bar plots.

Figure 5.6: Aggregation Plot - Number of missing values in the Outcome Variables



Left Plot: Bar plots for the proportions of missing values in each variable. **Right plot:** Aggregation plot showing all combinations of missing (red) and observed (blue) shade in the data and their corresponding bar plots.

In order to assess the missing value mechanisms, we tested the hypothesis as to whether the data are missing in a random way or in a non-random way. Little's MCAR test is conducted in SPSS to test this hypothesis. Little's MCAR 'test makes a comparison of the actual pattern of missing data with what would be expected if the missing data were totally randomly distributed (Hair et al., 2010, p. 60). MCAR pattern is established if the overall test of missing data comes out to be non-significant ($p > 0.05$). A non-significant result establishes that observed pattern of missingness does not differ from a random pattern of missingness. Little's MCAR test is conducted separately for data from the management questionnaire (MQ) and survey of employee questionnaire (SEQ). Table 5.5 shows the results of the analyses.

Table 5.5: Reason of Missingness for the Study Variables

	Little's MCAR Test		
	Chi-Square Value	**DF**	**Significance**
MQ	10068.681	9879	0.089
SEQ	73456.761	68863	0.000

The value for Little's MCAR test for MQ data has a significance level of 0.089. This indicates that for MQ data a non-significant difference between observed missing data pattern in the reduced sample and a random pattern exists. This allows missing data pattern for MQ to be considered MCAR. On the other hand, the value for Little's MCAR test is significant for the SEQ data. Hence, we reject the null hypothesis, and conclude that missing values in SEQ data is not missing completely at random. Resultantly, further assessment of randomness in the SEQ data is carried out, and a comparison of observation with and without missing data for each variables on other variables is conducted. Appendix D, Table D-3 contains results for this analysis for indicator variables with more than 5% missing data. Results of indicator variable with less than 5% missing data (range 0.5% to 4.1%) are not substantial, and, thus, are not given in the study. In addition, Appendix D, Table D-4 summarises noticeable patterns of significant t-values between an indicator variable and a total of 46 comparisons made. It can be seen from Table D-4 that noticeable pattern of significant t-values occur for DCOM4 and CONSULT3, for which 37 out of 46 comparisons found significant differences between the two groups. Together, Table D-3 and Table D-4 highlight that although significant differences are found due to missing data on DCOM4 and CONSULT3, their effects are not seen to substantially impact missing value structure in other variables, and may be of marginal concern (see Appendix D, Figures D-4a & D-4b). Thus, no further treatment is carried out on missing data.

5.2.2 Outliers

As described in section 4.9.2, multivariate outliers using Mahalanobis D^2 distance are detected and reported in the study. A case is considered to be a multivariate outlier if the probabilities associated with the Mahalanobis D^2 distance are less than 0.001. Multivariate outliers are identified for the management questionnaire (i.e. individual HP-HR practices), the survey of employees questionnaire (i.e. individual items comprising intermediate and outcome variables) and the merged data using both composite bundles of HP-HR practices and aggregated constructs of variables from the survey of employees questionnaire (see Appendix F, Tables F-1, F-2 and F-3, respectively). A number of extreme observations were found in each of the three data sets. The noted outliers are deemed important data points and retained in the analysis. This is because there is insufficient proof to attribute extreme values in the data to errors in data entry, missing value specification or inappropriate sampling procedure in WERS 2011 due to careful sampling system and scrutiny maintained at the data collection and data entry stages in WERS.

5.2.3 Normality

For continuous scales, normality is assessed using statistical estimates of skewness and kurtosis, (see Chapter 4, section 4.9.3). Each dichotomous variable is evaluated by the magnitude of split of the responses (Curran et al., 1996; Tabachnick and Fidell, 2001; Kline, 2011). It can be seen from Table 5.6 that composite variables representing the HP-HR bundles are within the acceptable ranges of skewness and kurtosis of $\pm$2.00. Similarly, Table 5.3 shows that none of the variables measured on dichotomous scales depict an extremely uneven split. All the items measured on a continuous, dichotomous and categorical scale are retained for further analysis.

Table 5.6: Descriptive Statistics for HP-HR Bundles (Composite Measures)

HP-HR Bundle	Mean	SD	Skew	Kurtosis
Skills & Ability-Enhancing Bundle	**8.67**	**2.68**	**-0.276**	**-0.272**
*Standard Induction	-	-	-	-
Sophisticated Recruitment & Selection	4.69	1.421	-0.468	-0.114
Formal Training Systems	3.09	1.852	0.218	-0.866
Motivation-Enhancing Bundle	**4.03**	**2.87**	**0.915**	**0.295**
Performance Appraisal Measures	1.93	0.917	-0.778	-0.074
Performance-Related Pay (PRP)	1.08	1.406	0.869	-0.725
Profit-Related Pay (PROF-PAY)	0.64	1.092	1.260	-0.14
Use of ESOS	0.40	0.984	2.145	2.718
Opportunity-Enhancing Bundle	**10.68**	**3.67**	**-0.437**	**-0.138**
Communication	2.30	0.97	-0.389	-0.345
Consultation	1.60	1.129	0.312	-0.648
*Quality Circles	-	-	-	-
*Attitude Surveys	-	-	-	-
Formal Team Working	2.75	1.332	-0.962	-0.219
Information Sharing	1.95	1.059	-0.574	-0.954
Job Design	1.18	1.20	0.828	-0.294
Commitment-Enhancing Bundle	**16.228**	**8.487**	**0.482**	**-0.809**
Equal Opportunities	5.50	5.811	0.909	-0.604
Grievance Handling Procedures	3.83	0.587	-4.233	19.665
Fringe Benefits Entitlements	2.43	1.377	-0.369	-0.626
Flexible Working Arrangements (Family Friendly)	3.52	2.156	0.050	-1.036
Family Care Arrangements	0.79	0.815	0.830	0.240
*Job Security	-	-	-	-

*Binary scale single measure

SECTION 2: Preparation of Individual Level Data for Multivariate Analysis SEM

5.3 Exploratory Factor Analysis (EFA)

Factor analysis is a multivariate procedure used to identify elements that are responsible for the co-variation amongst groups of independent variables (Preacher and MacCallum, 2003; Field, 2000). Table 5.7 provides summary of differences between the two approaches to factor analysis: exploratory (EFA) and confirmatory factor analysis (CFA). This study uses both in the order specified. The following section presents results of EFA analysis. Results of CFA are presented in section 5.5.

Table 5.7: Summary of Salient Characteristics of EFA and CFA Approaches

EFA Vs. CFA		
Similarities: Both EFA and CFA are based on common factor model. Both EFA and CFA are used to identify latent factors that explain the variance/covariance among a set of observed/indicator variables.		
	EFA	**CFA**
Classification	Descriptive analysis following an exploratory procedure.	Confirmatory analysis based on strong empirical or conceptual foundation.
Input Data	Correlation matrix. (All variables standardised).	Variance-covariance matrix. (Standardised and unstandardised solution).
Factor Selection	Eigenvalue and model fit statistics determine number of factor.	Number and pattern of factors are pre-specified.
Factor Structure	Factor rotation is used to obtain simple structure.	Simple structure is achieved by fixing (most) indicators' cross loadings to zero.
	Unique variances/measurement error uncorrelated.	Unique variances/measurement error can be modelled.
Overall Conclusion: CFA offers more parsimonious solutions and greater modelling flexibility than EFA.		

Source: Adapted from Online Lecture Notes, Cambridge University.

5.3.1 Conducting EFA

Intermediate and outcome variables of the study are measured using multidimensional scales. In order to ascertain whether the individual items reflect a limited number of underlying latent dimensions, EFA is conducted. As a preliminary step, principal component factors using Varimax rotation is conducted using STATA, version 12, to have a general idea of the optimum factors for the variables of interest. Results of the preliminary analyses are then confirmed by conducting EFA, using Mplus. The factors extracted in Mplus are used in the analysis.

5.3.1.1 EFA of Intermediate Variables

Variables pertaining to the JD-R model are referred to as intermediate variables in the study. Items include perceived job demands, job control, managerial trust, downward communication, employee consultation, managerial relations, family-friendly and family-care options. As stated earlier, the intermediate variables are measured on an ordered categorical (Likert) and dichotomous scales. Pearson's correlation matrix is not considered appropriate when factor analysing ordered-categorical or dichotomous variables. Instead, polychoric correlation matrix is recommended for categorical variables. Polychoric correlations are computed when the latent trait that forms basis of factor solution is considered continuous underlying observed ordered categorical variables (Olsson, 1979). Hence, factor analysis based on polychoric correlations assumes that there are latent continuous variables underlying observed ordered-categorical variables. For factor analysing binary items, tetrachoric correlation matrix is recommended. Tetrachoric correlations are hypothetical correlations which assume that observed responses describe a truncation of an underlying continuous normally distributed response process, that divides the continuum into scores that lead to either of the observed response 'yes' or 'no' (Cohen and Cohen, 1983). However, when the data has both polytomous and dichotomous items, ploychoric correlations may be used. Resultantly, preliminary factor analysis was conducted, using polychoric correlations, to identify optimal factor indicators in the intermediate variables. The correlation matrix reveals that a majority of correlations are above 0.30. The communalities for variables are also well above 0.5 and range up to 0.85, with the exception of paid leave (PAIDLEV), which is 0.4116.

Anti-image correlation matrix has off diagonal values close to zero and diagonal values (i.e. individual KMO statistic) well above recommended 0.50 (Table 5.8). The overall Kaiser-Meyer-Olkin statistic of sampling adequacy (KMO) is 0.9391, and Bartlett's test of Sphericity is significant ($p \leq 0.05$; Table 5.9), indicating that we may progress with factor analysis. The principal component factor solution, for Eigenvalue > 1, extracted a six factor solution and explained 72.16% of the variance in the model. The first factor accounted for 37.27 % of the variance with a corresponding Eigenvalue of 10.80. The second, third and fourth factor explained another 11.11%, 9.36% and 7.08% of the variance respectively. The fifth and sixth factors explained 3.90% and 3.45% of the remaining variance (Table 5.10).

Table 5.8: Individual and Overall Kaiser-Meyer-Olkin measure of sampling adequacy - Intermediate Variables

VARIABLES	INDIVIDUAL KMO
JD 1	0.6733
JD 2	0.7366
JD 3	0.8681
JC 1	0.9327
JC 2	0.9205
JC 3	0.8864
JC 4	0.9162
JC 5	0.8976
FLEXTIME	0.8013
JOBSHARE	0.8497
REDUCEHRS	0.8057
REDUCDAY	0.8601
HOMEWRKN	0.8968
TERMTIME	0.8593
PAIDLEV	0.8995
DCOM1	0.9452
DCOM2	0.9496
DCOM3	0.9721
DCOM4	0.9756
CONSULT1	0.9650
CONSULT2	0.9387
CONSULT3	0.9537
TIM1	0.9711
TIM2	0.9558
TIM3	0.9515
TIM4	0.9702
SRLT1	0.9760
SRLT2	0.9805
OVERALL KMO	**0.9391**

Table 5.9: Overall Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test - Intermediate Variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.9391
Bartlett's Test of Sphericity	Approx. Chi-Square	
	df	406
	Sig.	0.000

Table 5.10: Kaiser's Criterion on Factor Selection and Total Variance Explained - Intermediate Variables

Components	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total (Eigenvalue)	Proportion of Variance	Cumulative Proportion	Total (Eigenvalue)	Proportion of Variance	Cumulative Proportion
1	10.80857	0.3727	0.3727	9.53591	0.3288	0.3288
2	3.21787	0.1110	0.4837	3.52202	0.1214	0.4503
3	2.71455	0.0936	0.5773	2.65740	0.0916	0.5419
4	2.05315	0.0708	0.6481	2.11139	0.0728	0.6147
5	1.13068	0.0390	0.6871	2.08967	0.0721	0.6868
6	1.00025	0.0345	0.7216	1.00868	0.0348	0.7216
7	0.82383	0.0284	0.7500			
8	0.79281	0.0273	0.7773			
9	0.69169	0.0239	0.8012			
10	0.56299	0.0194	0.8206			
11	0.53173	0.0183	0.8389			
12	0.50878	0.0175	0.8564			
13	0.46209	0.0159	0.8724			
14	0.42387	0.0146	0.8870			
15	0.35374	0.0122	0.8992			
16	0.34854	0.0120	0.9112			
17	0.32922	0.0114	0.9226			
18	0.30814	0.0106	0.9332			
19	0.29047	0.0100	0.9432			
20	0.26808	0.0092	0.9524			
21	0.26652	0.0092	0.9616			
22	0.19287	0.0067	0.9683			
23	0.18374	0.0063	0.9746			
24	0.16854	0.0058	0.9804			
25	0.14940	0.0052	0.9856			
26	0.12803	0.0044	0.9900			
27	0.11023	0.0038	0.9938			
28	0.09533	0.0033	0.9971			
29	0.08432	0.0029	1.0000			

Extraction Method: Principal Component Analysis.

The examination of rotated solution using Varimax rotation highlights that first four factors together explained 61.47% of the variance explained (Table 5.10). The fifth and sixth factors collectively explained the remaining 10.69% of the variance explained. However, individually the fifth and sixth factors do not account for a substantial increase in the proportion of variance explained i.e. contributing only 7.21% and 3.48% respectively (Table 5.10). The pattern matrix of rotated factor loadings also revealed cross loadings between variables measuring downward communication, supervisor relations, perceived job control and family friendly practices in a five and six factor solution.

Inspection of the Scree plot highlights that up to six factors solution may be possible. The first two factors are on a steep slope. The slope becomes less steep from factor two to four onwards. This means that the first two components explain more variance than the other components. The Eigenvalues seem to level off from factor five onwards, suggesting that up to four factor solutions may be optimal (Figure 5.8). The results of the preliminary EFA conducted above are confirmed using Mplus, comparing the results of three to six factor solutions (Table 5.11).

Figure 5.7: Scree Plot for Intermediate Variables

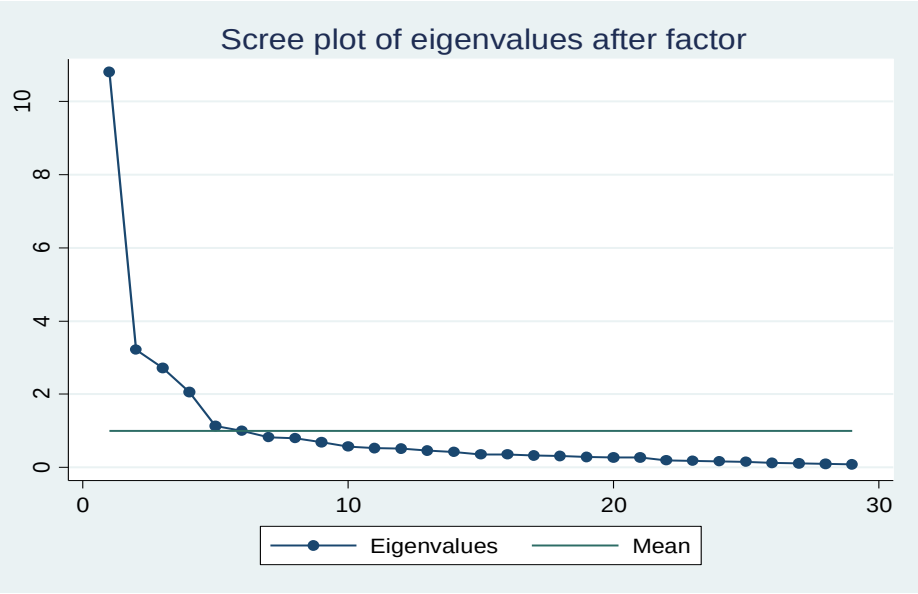


Table 5.11: Comparison of 3 Factor and 6 Factor Solutions – Intermediate Variables

Factor Solution	Mode Fit Information				
	Chi-Square (df)	**RMSEA**	**CFI**	**TLI**	**SRMR**
3 Factor Solution	43569.818* (322)	0.118	0.947	0.933	0.074
4 Factor Solution	29126.822* (296)	0.100	0.965	0.952	0.061
5 Factor Solution	18432.222* (271)	0.083	0.978	0.967	0.031
6 Factor Solution	17211.818* (247)	0.084	0.979	0.966	0.021

*Significant at 0.001 level

The above comparison shows that three factor model has RMSEA (0.118) above its recommended cut-off (< 0.50) and CFI (0.947) slightly below the recommended value of (> 0.95). TLI is within the recommended cut-off value of > 0.90 (Schreiber et al., 2006). Nevertheless, results of a four factor model fit the data better than three factor solution. Only chi-squared statistic is significant due to its sensitivity to sample size (χ^2 = 29126.822 (296), $p < 0.001$), and RMSEA is 0.100, higher than its recommended value. Otherwise all factor loadings are significant at $p < 0.05$, and all the remaining fit indices are above their recommended cut-off values: CFI = 0.965 and TLI = 0.952 (Table 5.11). Five and six factor model result in multiple cross-loadings, which makes interpreting theoretically and mathematically sound factors difficult. This shows that variables of the JD-R model adequately load on to four distinct factors (see Table 5.12), with perceived job demands, job control, managerial and family support representing distinct workplace characteristics (Javed, 2010).

5.3.1.2 EFA of Outcome Variables (Well-being Measures)

Initial factor solution of the outcome variables of job-related anxiety, job-related depression, job satisfaction and organisational commitment is conducted in STATA 20. Examination of the correlation matrix reveals an equal mix of correlations ≥ 0.3 and ≤ 0.3. This suggests using varimax rotation for extracting factors with comparatively less multi-loadings. Majority of the variables have communalities greater than or equal to 0.6. The initial solution fulfils the basic requirements regarding appropriate overall and individual KMO values, and a significant Bartlett's test of Sphericity (see Tables 5.13 and 5.14). Thus, all the variables are retained for factor analysis.

Table 5.12: Rotated Factor Solution of Intermediate Variables (EFA)

Measures	Component Loadings			
	1	2	3	4
Perceived Job Demands				
JD1- My Job Requires that I work very hard.	0.593			
JD2- I never seem to have enough time to get my work done.	0.645			
JD3- I often find it difficult to fulfil my commitments outside of work because of the amount of time I spend on my job.	0.475			
Perceived Job Control				
JC1- Influence over the tasks in your job		0.800		
JC2- Influence over the pace at which you work		0.791		
JC3- Influence over how you work		0.905		
JC4- Influence over the order of tasks		0.847		
JC5- Influence over the time to start or finish the working day		0.581		
Perceived Managerial Support				
Downward Communication				
DCOM1- Managers keep employees informed about changes to the way the organisation is being run			0.866	
DCOM2- Managers keep employees informed about changes in staffing			0.859	
DCOM3- Managers keep employees informed about changes in the way they do the job			0.836	
DCOM4- Managers keep employees informed about changes in the financial matters, including budgets or profits			0.747	
Employee Consultation				
CONSULT1- Managers seek the views of employees or employee representatives			0.902	
CONSULT2- Managers respond to the views of employees or employee representatives			0.940	
CONSULT3- Managers allow employees or employee representatives to influence final decisions			0.887	
Managerial Trust				
TIM1- Managers keep their promises			0.853	
TIM2- Managers are sincere in attempting to understand employee's views			0.882	
TIM3- Managers deal with employees honestly			0.871	
TIM4- Managers treat employees fairly			0.813	
Managerial Relations				
SRLT1- Managers understand about employees having to meet responsibilities outside work			0.687	
SRLT2- Managers encourage to develop skills			0.738	
Perceived Family Support				
Flexible Work Options				
FLEXTIME- Used or available - flexi-time				0.576
JOBSHARE-Used or available - job sharing				0.677

REDUCEHRS- Used or available - chance to reduce your working hours	0.701
REDUCEDAY- Used or available - working the same number of hours per week across fewer days	0.645
HOMEWRKN- Used of or available - work from home in normal working hours	0.368
Family Care Options	
TERMTIME- Use or available - working only during school term times	0.418
PAIDLEV- Used or available - paid leave to care for dependents	0.393

Estimator: WLSMV Geomin rotated loadings of the JD-R variables (All loadings are * significant at 0.05 level)

Table 5.13: Individual and Overall Kaiser-Meyer-Olkin measure of sampling adequacy - Outcome Variables

VARIABLES	INDIVIDUAL KMO
ANX1	0.9340
DEP1	0.9357
ANX2	0.8962
DEP2	0.9430
ANX3	0.9267
DEP3	0.9209
JS1	0.9321
JS2	0.9138
JS3	0.9242
JS4	0.8835
JS5	0.9007
JS6	0.9618
JS7	0.9582
JS8	0.9455
JS9	0.9676
ORGCMIT1	0.9345
ORGCMIT2	0.8902
ORGCMIT3	0.9145
Overall KMO	**0.9252**

Table 5.14: Overall measure of Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's Test - Outcome Variables

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.9252
Bartlett's Test of Sphericity	Approx. Chi-Square	
	df	171
	Sig.	0.000

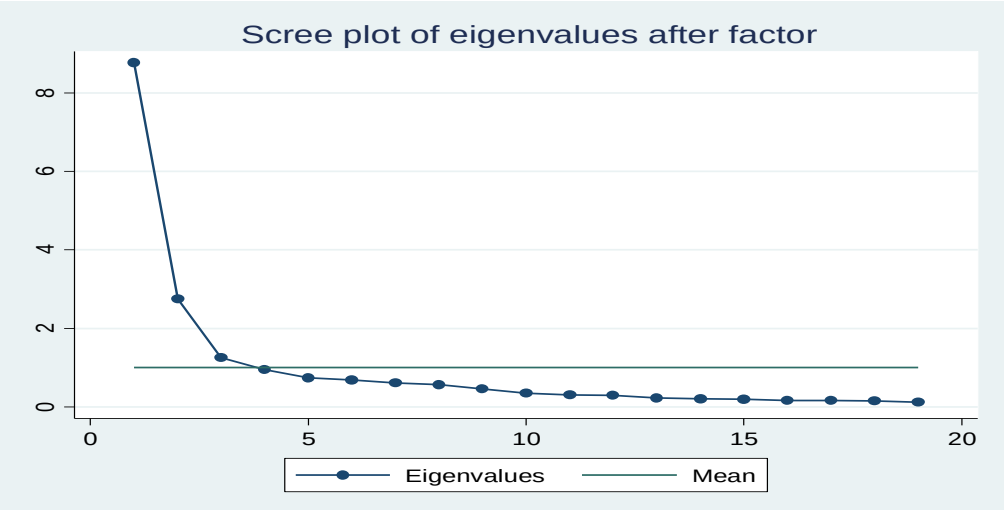
Principal component factor solution, for Eigenvalue > 1, extracted a three factor solution and explained 67.25% of the variance in the model. First factor explained 46.16% of the variance explained. Second and third factors explained 14.48% and 6.61% of the variance explained respectively. The Varimax rotated solution highlighted that overall three factors explained 67.25% of the variance explained, with each of the three factors individually explaining 24.85%, 24.71% and 17.69% of the variances respectively (Table 5.15). Inspection of the Scree plot highlighted between one and four factor solutions (Figure 5.9).

Table 5.15: Kaiser's Criterion on Factor Selection and Total Variance Explained - Outcome Variables

Components	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total (Eigenvalue)	Proportion of Variance	Cumulative Proportion of Variance	Total (Eigenvalue)	Proportion of Variance	Cumulative Proportion of Variance
1	8.76971	0.4616	0.4616	4.72173	0.2485	0.2485
2	2.75093	0.1448	0.6063	4.69471	0.2471	0.4956
3	1.25618	0.0661	0.6725	3.36038	0.1769	0.6725
4	0.95014	0.0500	0.7225			
5	0.74199	0.0391	0.7615			
6	0.68761	0.0362	0.7977			
7	0.61353	0.0323	0.8300			
8	0.56498	0.0297	0.8597			
9	0.45769	0.0241	0.8838			
10	0.34891	0.0184	0.9022			
11	0.30708	0.0162	0.9184			
12	0.29746	0.0157	0.9340			
13	0.23612	0.0124	0.9464			
14	0.20839	0.0110	0.9574			
15	0.19523	0.0103	0.9677			
16	0.16936	0.0089	0.9766			
17	0.16171	0.0085	0.9851			
18	0.15745	0.0083	0.9934			
19	0.12553	0.0066	1.0000			

Extraction Method: Principal Component Analysis.

Figure 5.8: Scree Plot for Outcome Variables



Comparison of two to four factor solutions, obtained in Mplus, is presented in Table 5.16. The two factor model produces poor overall model fit indices. The four factor model loads job satisfaction, job-related anxiety and job-related depression on more than one factor, and does not reflect anything meaningful. Thus, a three factor solution is considered optimal for the data (χ^2 = 34507.235 (117), $p < 0.001$); RMSEA of 0.122 is higher than its recommended value, otherwise all factor loadings are significant at $p < 0.05$, and the remaining fit indices are within the acceptable recommended cut-off values CFI = 0.941 and TLI = 0.913 (Table 5.16). See Table 5.17 for rotated factor solution of the outcome variables.

Table 5.16: Comparison of 2 Factor and 4 Factor Solution for Outcome Variables

Factor Solution Option	Mode Fit Information				
	Chi-Square (df)	**RMSEA**	**CFI**	**TLI**	**SRMR**
2 Factor Solution	62704.843* (134)	0.154	0.892	0.862	0.066
3 Factor Solution	34507.235* (117)	0.122	0.941	0.913	0.043
4 Factor Solution	18172.742* (101)	0.095	0.969	0.947	0.027

*Significant at 0.001 level

Table 5.17: Rotated Factor Solution of Outcome Variables (EFA)

Measures	Components Loadings		
	1	2	3
Job-related Anxiety			
ANX1- Tense	0.824		
ANX2- Worried	0.902		
ANX3- Uneasy	0.856		
Job-related Depression			
DEP1- Depressed	0.829		
DEP2- Gloomy	0.812		
DEP3- Miserable	0.794		
Job Satisfaction			
JS1- Sense of achievement from your work		0.626	
JS2- Scope for using your own initiative		0.855	
JS3- Amount of influence over your job		0.872	
JS4- Training you receive		1.038	
JS5- Opportunity to develop your skills in your job		1.156	
JS6- Amount of pay you receive		0.486	
JS7- Job security		0.466	
JS8- The work itself		0.530	
JS9- Amount of involvement in decision making		0.573	
Organisational Commitment			
ORGCMIT1- Share many of the values of my organisation			0.788
ORGCMIT2- Feel loyal to my organisation			0.990
ORGCMIT3- Am proud to tell who I work for			0.856

Estimator: WLSMV
Geomin rotated loadings of outcome variables (All loadings are * significant at 0.05 level)

5.4 Item and Scale Consistency

This sub-section presents results of item and scale consistency measures detailed below. SPSS 20 is used for carrying out this analysis.

5.4.1 Cronbach's Alpha

Table 5.18 and Table 5.19 show initial reliability statistics for the intermediate and outcome variables respectively. General cut-off criteria for Cronbach's alpha (α) suggest that, ideally, values above 0.7 are good, values of 0.60 are acceptable, but scales above 0.8 are highly reliable, and are preferred (Nunnally and Bernstein, 1994; Hair et al., 2010). Nevertheless, for scales of less than 10 items, it is often difficult to obtain a decent Cronbach's alpha. In those circumstances, it is often useful to report mean-inter-item-correlation (MIIC) values. MIIC ≥ 0.40, suggest strong relationship amongst items on the scale. Further, alpha if item is deleted is particularly useful for scales which initially have low alpha values (less than 0.70) (Pallant, 2007).

Broadly speaking, measures of reliability seem good for intermediate and outcome variables of the study. A close inspection of the α if item deleted values for perceived job control scale and job satisfaction scale highlights that removing item (JC5 – in Table 5.18) and (JS6 – in Table 5.19) improves the overall Cronbach's alpha for their respective scales. However, improvement in the Cronbach's alpha is not substantial. Therefore, none of the items are deleted from their respective scales at this stage. Notable exception is the scale pertaining to perceived job demands (Table 5.18), which has borderline value for Cronbach's alpha of 0.586, and a low value of MIIC (0.286). The α if item deleted values for this scale suggest that removal of any of the items lowers the overall value for Cronbach's alpha for perceived job demands scale. Thus, the items are retained to be evaluated for corrected-item-to-total-correlation values.

5.4.2 Corrected-Item-to-Total-Correlation

Corrected-item-to-total-correlation (CITTC) values below 0.30 indicate that the corresponding item measures something different from the scale as a whole. Items whose corrected-item-to-total-correlations is below 0.3 may be removed to improve the overall alpha of the construct, particularly in situations when the Cronbach's alpha of the overall scale is less than 0.70 (Churchill, 1979; Pallant, 2007).

Table 5.18: Internal Consistency Measures of Intermediate Measures

Measures	CITTC	α if item deleted	MIIC	α
Perceived Job Demands			0.281	**0.586**
JD1- Work very hard.	0.377	0.532		
JD2-Not enough time.	0.483	0.339		
JD3- Difficult to fulfil non-work commitments due to time on job.	0.358	0.556		
Perceived Job Control			0.515	**0.825**
JC1- Influence over tasks.	0.675	0.775		
JC2- Influence over the pace of work.	0.662	0.778		
JC3- Influence over how to do your work.	0.728	0.766		
JC4- Influence over the order of work.	0.692	0.774		
JC5- Influence over time to start or finish.	0.438	0.861		
Perceived Managerial Support			0.645	**0.959**
Downward Communication				
DCOM1- Managers disclose how organisation is run.	0.792	0.956		
DCOM2- Managers disclose staffing changes.	0.782	0.956		
DCOM3- Managers disclose changes on job.	0.790	0.956		
DCOM4- Managers disclose financial changes.	0.711	0.958		
Employee Consultation				
CONSULT1- Managers seek the views.	0.830	0.955		
CONSULT2- Managers respond to the suggestions.	0.841	0.955		
CONSULT3- Managers allow influencing final decisions.	0.802	0.956		
Managerial Trust				
TIM1- Managers keep their promises.	0.806	0.956		
TIM2- Managers sincerely understand employee's views.	0.834	0.955		
TIM3- Managers deal with employees honestly.	0.820	0.955		
TIM4- Managers treat employees fairly.	0.798	0.956		
Managerial Relations				
SRLT1- Managers understand responsibilities outside work.	0.678	0.959		
SRLT2- Managers encourage to develop skills.	0.731	0.957		
Perceived Family Support			0.213	**0.644***
Flexible Work Options				
FLEXTIME- Flexi-time is availed or is available	0.398	0.598		
JOBSHARE- Job sharing is availed or is available	0.399	0.602		
REDUCEHRS- Reduce working hours is availed or is available	0.444	0.582		
REDUCEDAY- Working the same number of hours per week across fewer days is availed or is available	0.422	0.589		
HOMEWRKN- Work from home is availed or is available	0.293	0.628		
Family Care Initiatives				
TERMTIME- Working only during term time is availed or is available	0.224	0.644		
PAIDLEV- Paid leave to care for dependents is availed or is available	0.351	0.609		

α = Cronbach's Alpha, **CITTC =** Corrected-Item-to-Total-Correlation, **MIIC =** Mean-Inter-Item-Correlation
*KR20

Table 5.19: Internal Consistency Measures of Outcome Measures

Outcome Measures	CITTC	α if item deleted	MIIC	α
Job-Related Anxiety			0.636	**0.844**
ANX1 - Tense	0.669	0.821		
ANX2 - Worried	0.751	0.742		
ANX3 - Uneasy	0.709	0.783		
Job-Related Depression				**0.904**
DEP1 - Depressed	0.787	0.880		
DEP2 - Gloomy	0.815	0.857		
DEP3 - Miserable	0.824	0.849		
Job Satisfaction			0.457	**0.879**
JS1 - Sense of achievement from work	0.674	0.862		
JS2 - Scope for using your own initiative	0.684	0.862		
JS3 - Amount of influence over your job	0.725	0.858		
JS4 - Training you receive	0.603	0.868		
JS5 - Opportunity for skill development	0.733	0.856		
JS6 - Amount of pay	0.457	0.882		
JS7 - Job security	0.501	0.877		
JS8 - The work itself	0.645	0.865		
JS9 - Amount of involvement in decision making	0.647	0.864		
Organisational Commitment			0.468	**0.852**
ORGCMIT1 - Share many of the values of my organisation	0.654	0.856		
ORGCMIT2 - Feel loyal to my organisation	0.780	0.739		
ORGCMIT3 - Am proud to tell who I work for	0.745	0.775		

α = Cronbach's Alpha, **CITTC =** Corrected-Item-to-Total-Correlation, **MIIC =** Mean-Inter-Item-Correlation

Tables 5.18 and 5.19 indicate that majority of variables of the study securely surpass the suggested cut-offs, and comfortably fall in a range of 0.30 to 0.841, including perceived job demands scale. This re-affirms that there exists good correlation between items and their respective scales. Nevertheless, two items from 'perceived family support' scale (Table 5.18) exhibit values of CITTC on the lower side (range 0.224 and 0.293). Low values in this respect were somewhat expected, and exhibit the amount of variation in the availability of the family support options within the establishments. Overall, Tables 5.18 and 5.19 exhibit that encouraging Cronbach's alpha/Kuder Richardson reliability coefficient values ($\alpha > 0.60$), mean-inter-item-correlations (> 0.40), and corrected item-to-total-correlations (> 0.30) are achieved for majority of the study's scales. This means that scales employed can be considered reasonably reliable for our data. Thus, all the items are retained in the analysis for subsequent measurement model evaluation (CFA stage).

5.5 Measurement Model Evaluation (CFA) of the Individual Level Data

Every effort was made to conceptually differentiate near identical or overlapping constructs. However, it was essential to ascertain that through operational measures too. In order to ensure that the study was assessing unique constructs, CFA was performed to confirm the psychometric properties of intermediate and outcome variables used in the study. CFA confirms whether the data has unique constructs by judging fit of the data to their respective factor structures. Anderson and Gerbing's (1988) two step procure was employed, which involves statistically testing the significance of the hypothesised factor/measurement model prior to estimating the path model to test hypotheses (Schumacker and Lomax, 2004).

The following sub-section present results of CFA analysis. Specifically, it assesses validity, reliability and unidimensionality of the measures. Poorly fitting items are identified, and decision is made to delete or retain them in the light of statistical parameters, and proposed guidelines for model fit statistics, detailed in Appendix C - 10. The measurement model of employee level data is evaluated in two stages. First, CFA is carried out for each individual construct, separately, and its statistical significance is evaluated. Second, CFA is conducted for the overall measurement model of employee level data, including all individual constructs, and the entire model's statistical significance and inter-constructs correlations is evaluated.

5.5.1 Model Fit Criteria

Several model fit criteria may be used to evaluate model fit in the SEM. Amongst the recommended statistical estimates, use of chi-square (χ^2) is the most prevalent. However, use of χ^2 solely is discouraged, as this measure is highly sensitive to sample size and model complexity

(Jorsekog and Sorbom, 1993). It is, therefore, recommended to use at least one absolute fit index and one incremental fit index in addition to chi-square statistic. Following this advice, standardised factor loadings, R^2, CFI, TLI and RMSEA are reported in addition to chi-square estimates.

5.5.2 CFA for Individual Constructs

Table 5.20 and Table 5.21 present results of CFA to confirm the psychometric properties of the intermediate and outcome variables individually, before estimating the overall measurement model at the individual level. The results of EFA have been used as basis for identifying the constructs in CFA. In line with the EFA results, intermediate variables include 3-item perceived job demands scale, 5-item perceived job control scale, 13-item perceived managerial support and 7-item perceived family support scale (see Table 5.12).

For outcome variables, one amendment has been made to the EFA results. EFA results showed that job-related anxiety and job-related depression load on to one factor (see Table 5.17). This may be because both anxiety and depression reflect negative emotional response, are highly inter-correlated and may have same stimuli. However, not necessarily both anxiety and depression reflect one construct. Generally, anxiety is a short term response of a negative emotion, and depression a prolonged response of negative stimuli. Theoretically, both anxiety and depression are also considered to be quiet distinct (Hollman and Wall, 2002), and are considered two major dimensions of strain (Warr, 1990). Consequently, CFA was run to confirm the distinct factor structure of these variables both for one factor vs. two factor model. Results of the hypothesised two factor model on comparisons showed better results (chi-square χ^2 (8) = 2466.655, $p < 0.001$; RMSEA = 0.119, CFI = 0.992, TLI = 0.986), inferring that keeping job-related anxiety and job-related depression as two separate constructs yielded better model fit statistics (see Appendix G, Table G-1). Resultantly, CFA on the outcome variables has been carried out treating both job-related anxiety and job-related depression as different constructs. Overall, in line with EFA results, outcome variables included 3-item perceived work-related anxiety scale, 3-item perceived work-related depression scale, 9-item job satisfaction scale, and 3-item organisational commitment scale (Table 5.17).

Table 5.20: CFA Results of Individual Constructs – Intermediate Variables

Intervening Variables	Std. Factor Loadings	R^2	Standardised Error Variance	χ^2 (df)	RMSEA	CFI	TLI	CR	AVE
Perceived Job Demands (PJD)				0.000* (0)	0.000	1.000	1.000	0.678	0.435
JD1	0.566*	0.320*	0.680						
JD2	0.868*	0.753*	0.247						
JD3	0.465*	0.216*	0.783						
Perceived Job Control (PJC)				349.230* (5)	0.056	0.998	0.995	0.894	0.632
JC1	0.819*	0.671*	0.329						
JC2	0.809*	0.655*	0.345						
JC3	0.907*	0.823*	0.177						
JC4	0.848*	0.719*	0.280						
JC5	0.543*	0.295*	0.705						
Perceived Managerial Support (PMS)				49502.907* (65)	0.186	0.961	0.953	0.973	0.739
DCOM1	0.886*	0.785*	0.215						
DCOM2	0.876*	0.767*	0.232						
DCOM3	0.852*	0.725*	0.275						
DCOM4	0.766*	0.587*	0.413						
CONSULT1	0.887*	0.787*	0.213						
CONSULT2	0.921*	0.848*	0.151						
CONSULT3	0.885*	0.783*	0.216						
TIM1	0.875*	0.766*	0.234						
TIM2	0.915*	0.837*	0.162						
TIM3	0.913*	0.833*	0.166						
TIM4	0.862*	0.744*	0.256						
SRLT1	0.743*	0.552*	0.447						
SRLT2	0.780*	0.609*	0.391						
Perceived Family Support (PFS)				769.389* (5)	0.084	0.958	0.916	0.809	0.469
FLEXTIME	0.556*	0.309*	0.690						
JOBSHARE	0.762*	0.580*	0.419						
REDUCEHRS	0.823*	0.677*	0.322						
REDUCEDAY	0.762*	0.581*	0.419						
TERMTIME	0.455*	0.207*	0.792						

*Significant at 0.05 level PJD, PJC, PMS --- Polytomous Variables PFS – Binary Variable

Table 5.21: CFA Results for Individual Construct - Outcome Variables

Outcome Variables	Standardised Factor Loadings	R^2	Standardised Error Variance	χ^2 (df)	RMSEA	CFI	TLI	CR	AVE
Job-Related Anxiety				0.000* (0)	0.000	1.000	1.000	0.885	0.721
ANX1	0.792*	0.627*	0.373						
ANX2	0.902*	0.813*	0.187						
ANX3	0.849*	0.720*	0.280						
Job-Related Depression				0.000* (0)	0.000	1.000	1.000	0.938	0.835
DEP1	0.884*	0.782*	0.218						
DEP2	0.920*	0.847*	0.153						
DEP3	0.936*	0.876*	0.124						
Job Satisfaction				21867.519* (27)	0.192	0.926	0.901	0.918	0.562
JS1	0.827*	0.683*	0.317						
JS2	0.850*	0.722*	0.278						
JS3	0.851*	0.724*	0.276						
JS4	0.751*	0.564*	0.436						
JS5	0.839*	0.703*	0.297						
JS6	0.505*	0.255*	0.745						
JS7	0.551*	0.303*	0.697						
JS8	0.785*	0.616*	0.384						
JS9	0.692*	0.479*	0.521						
Organisational Commitment				0.000* (0)	0.000	1.000	1.000	0.899	0.746
ORGCMIT1	0.766*	0.587*	0.413						
ORGCMIT2	0.939*	0.882*	0.118						
ORGCMIT3	0.878*	0.771*	0.229						

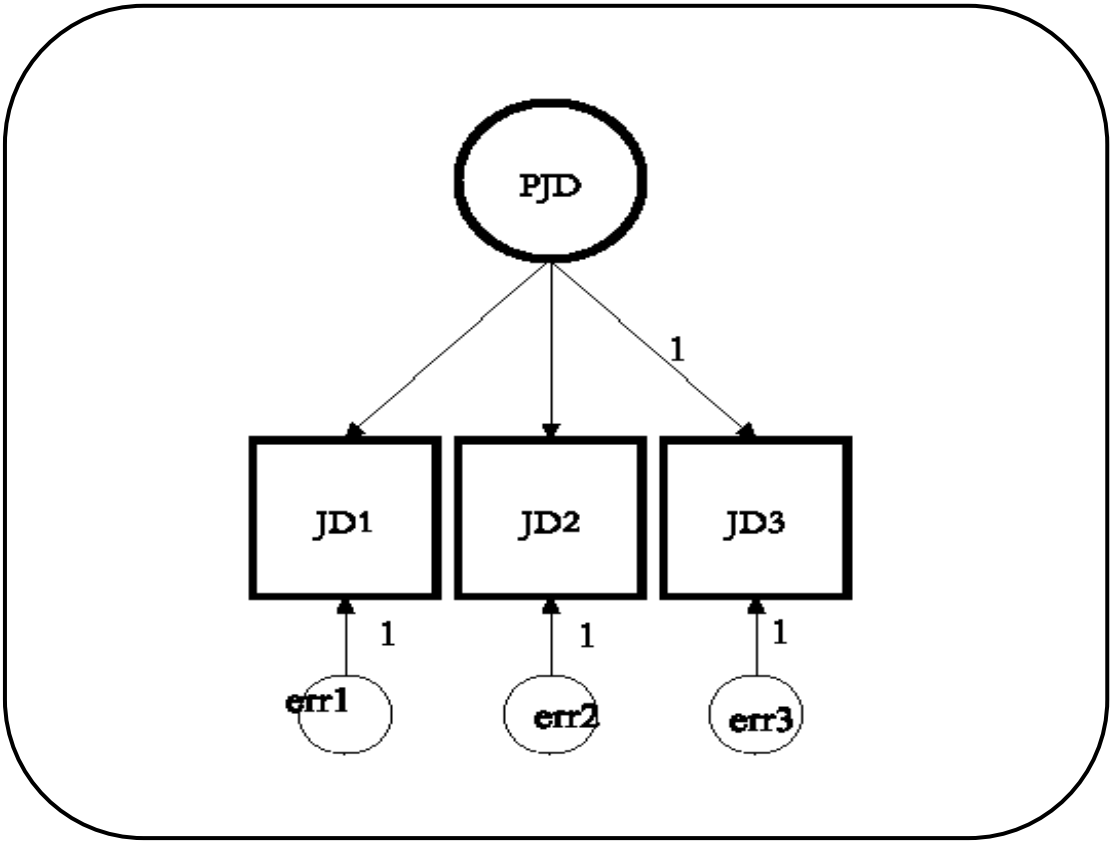
*Significant at 0.05 level

5.5.2.1 CFA Results for Individual Constructs – Intermediate Variables

It can be seen from Table 5.20 that perceived job demands (PJD) scale has a chi-square statistic χ^2 (0) = 0, $p < 0.001$, RMSEA = 0.000, CFI = 1.000, TLI = 1.000. These statistics highlight that the fit of the model is perfect. Since perceived job demands construct comprise of three indicators, it makes the scale saturated or just-identified. A saturated scale has number of equations in the model (i.e. data variances covariances) equal to the number of parameters to be estimated in the model. Therefore, fit of the model cannot be estimated (Schumacker and Lomax, 2004).

Nevertheless, standardised factor loadings of three indicators are above 0.40 and are statistically significant. Having significant standardised loadings depict that indicators comfortably converge on the underlying latent construct of PJD, and reliably measure the proposed latent factor which they are hypothesised to measure (Byrne, 2010). Reliability, validity and unidimensionality of PJD construct exhibit satisfactory results with composite reliability (CR) of 0.678 and average variance extracted (AVE) of 0.435. Ideally, minimum AVE should be at least 0.50 or higher. However, 0.435 is still considered borderline. Figure 5.10 depict the CFA model of the PJD construct.

Figure 5.9: CFA of Perceived Job Demands Construct



Perceived job control (PJC) and perceived managerial support (PMS) is measured using five items and thirteen items respectively (Table 5.20). For these constructs, fit indices indicate a good fit of the data. The only notable exception is RMSEA value of 0.186 for the PMS construct. Otherwise, all standardised factor loadings of the individual items loading on to their respective constructs are between 0.543 (JC5) and 0.921(CONSULT2), and are statistically significant. In addition, R^2 values of individual items on both PJC and PMS constructs exceed their recommended cut-offs. Since, dropping any item form the PMS scale does not improve RMSEA value for the scale, all items are retained on the scale. It may be noted that both CFI and TLI values comfortably exceed their recommended cut-off points. Hence, fitness of the PMS construct is considered satisfactory. Composite reliability estimates for PJC and PMS are 0.894 and 0.973 respectively, and AVE estimates are 0.632 and 0.739 respectively. Figures 5.11 and 5.12 illustrate CFA models for the PJC and PMS constructs, respectively.

Figure 5.10: CFA of Perceived Job Control Construct

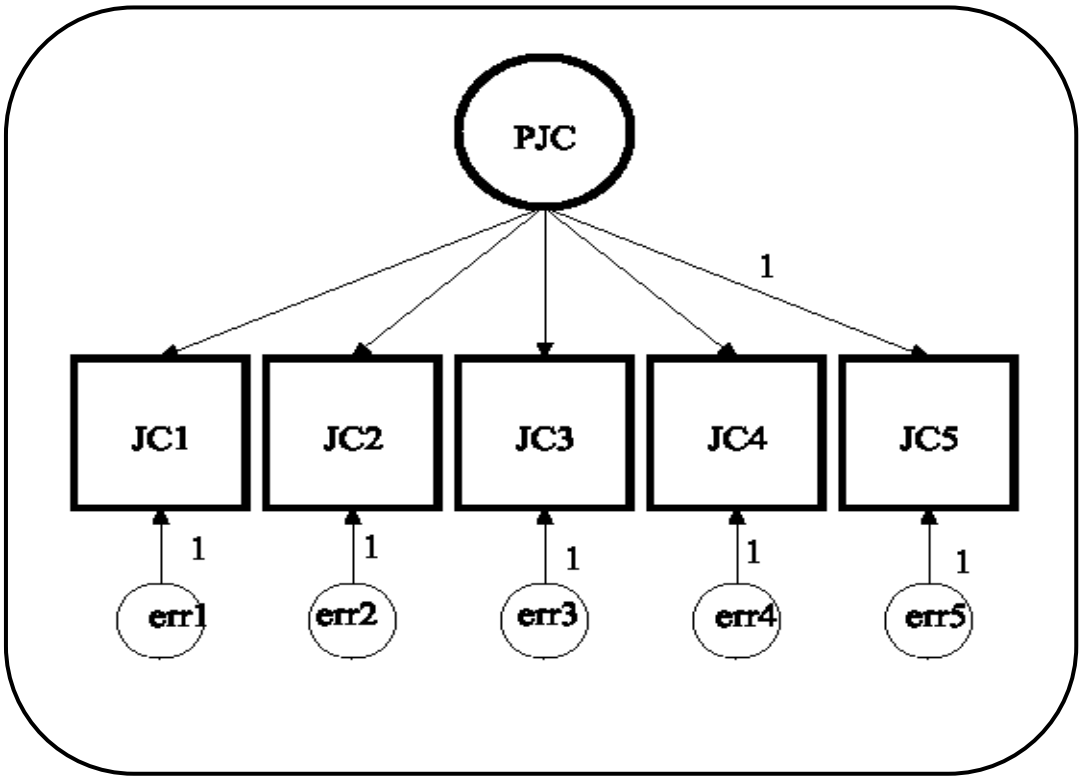
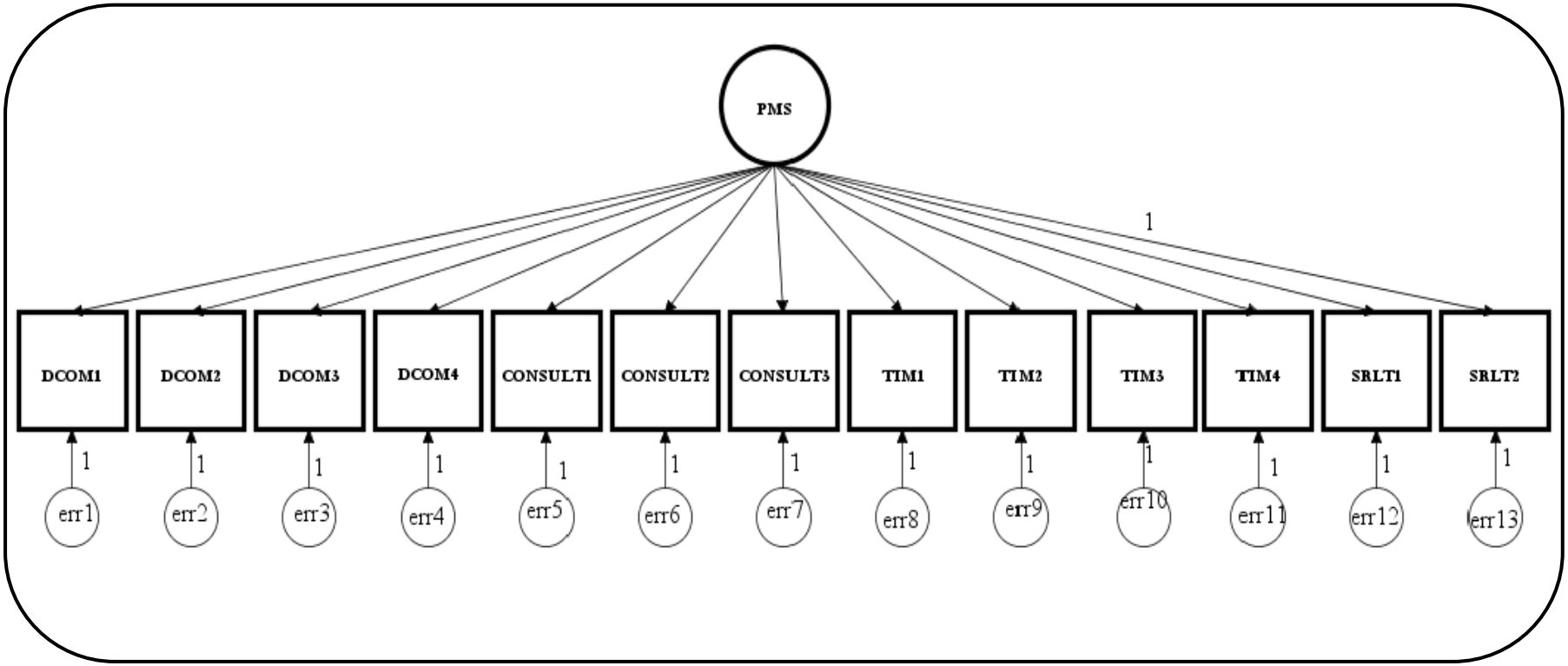


Figure 5.11: CFA of Perceived Managerial Support Construct



Perceived family support is initially measured by seven item. The initial CFA for this construct did not yield satisfactory results. As expected, chi-squared statistic (χ^2 (14) = 2151.215, $p < 0.001$) was significant due to being sensitive to sample size. All other fit indices also indicated that the model has a moderate fit (RMSEA = 0.084, CFI = 0.914, TLI = 0.871). The standardised factor loadings ranged between 0.469 (HOMEWRKN), 0.473 (PAIDLEV) to 0.767 (REDUCEHRS). Since the standardised loading of HOMEWRKN was lower than that of PAIDLEV, HOMEWRKN was removed from the PFS scale and CFA was run again.

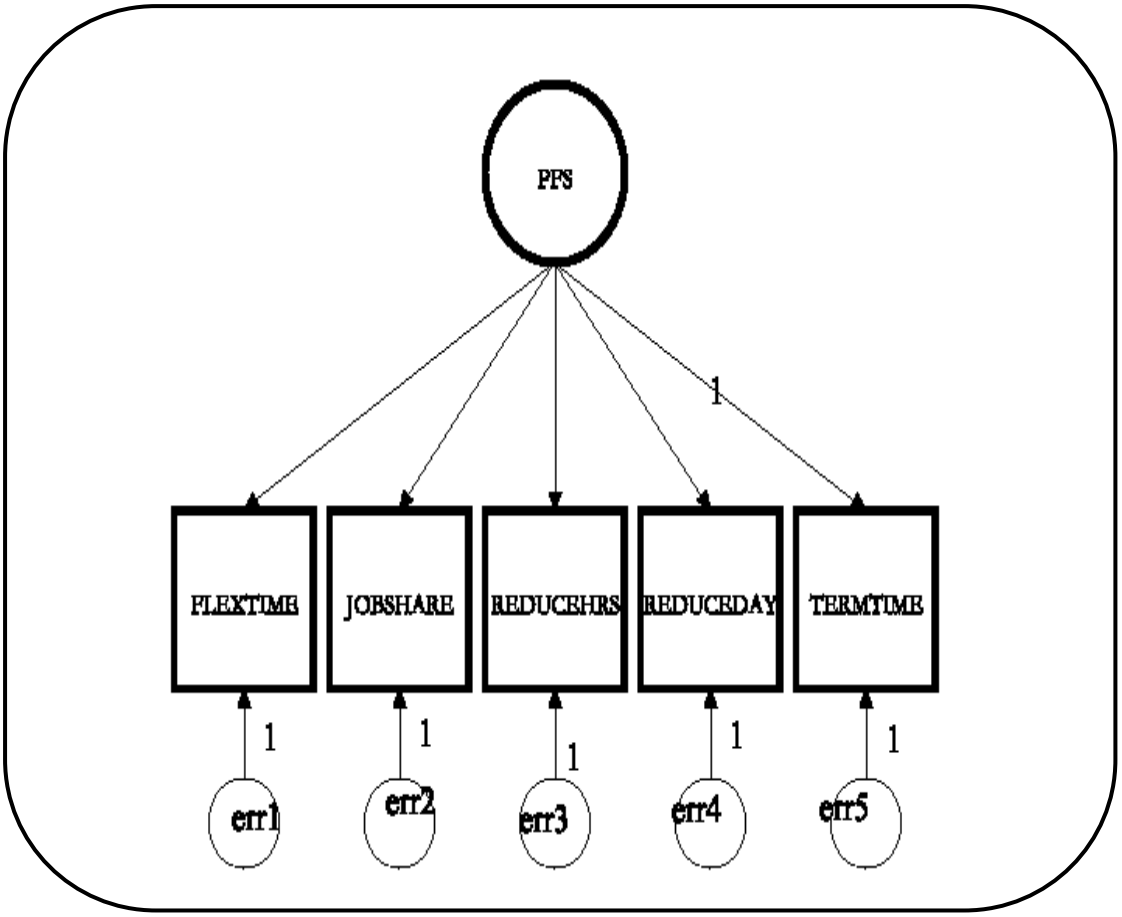
The fit statistics of the modified model were chi-square statistic (χ^2 (9) = 994.280, $p < 0.001$; RMSEA = 0.083, CFI = 0.955, TLI = 0.910). However, standardised factor loadings of another two items diminished (i.e. TERMTIME and PAIDLEV with 0.487 and 0.498 respectively). Thus, the modified model was not considered satisfactory, and both the indicators having relatively weak loadings in the initial model (i.e. PAIDLEV, HOMEWRKN) were deleted, and CFA was re-run on the remaining five items. Comparison of fit statistics of the models show that the re-modified 5-item PFS scale offers the best fit to the data (Table 5.22). Composite reliability and AVE of the 5-item PFS scale is 0.809 and 0.469 respectively (Table 5.20). Figure 5.13 exhibits final CFA model for PFS scale.

Table 5.22: Comparison of Modified Models for Individual Perceived Family Support Construct

Model	Model Fit Information				
	Chi-Square Fit (χ^2)	**Degrees of Freedom (df)**	**RMSEA**	**CFI**	**TLI**
Initial Model (7-item Model)	2151.215*	14	0.084	0.914	0.871
Modified Model 1 Removing HOMEWRKN	994.280*	9	0.083	0.955	0.910
Modified Model 2 Removing HOMEWRKN & PAIDLEV	769.389*	5	0.084	0.958	0.916

*$p < 0.001$ Note: Highlighted model was selected

Figure 5.12: CFA of Perceived Family Support Construct



5.5.2.2 CFA Results for Individual Constructs – Outcome Variables

Table 5.21 summarises CFA results of individual constructs pertaining to the outcome variables. Notably, work-related anxiety, work-related depression and organisational commitment are just identified constructs due to containing three items per scale each. Thus, all three of these models have zero degree of freedom, RMSEA equal to zero and CFI and TLI equal to 1.00. Otherwise, standardised factor loadings of all the items loading onto their respective constructs of anxiety, depression and organisational commitment are well above the recommended value of 0.60, and are statistically significant. This signifies that all the three constructs are reliable measures of their respective underlying concepts. Composite reliability and AVE estimates of all three constructs are also well above their recommended cut-off values. Figures 5.14, 5.15 and 5.16 illustrate CFA models of job-related anxiety, of job-related depression and organisational commitment constructs, respectively.

Figure 5.13: CFA of Perceived Work-Related Anxiety Construct

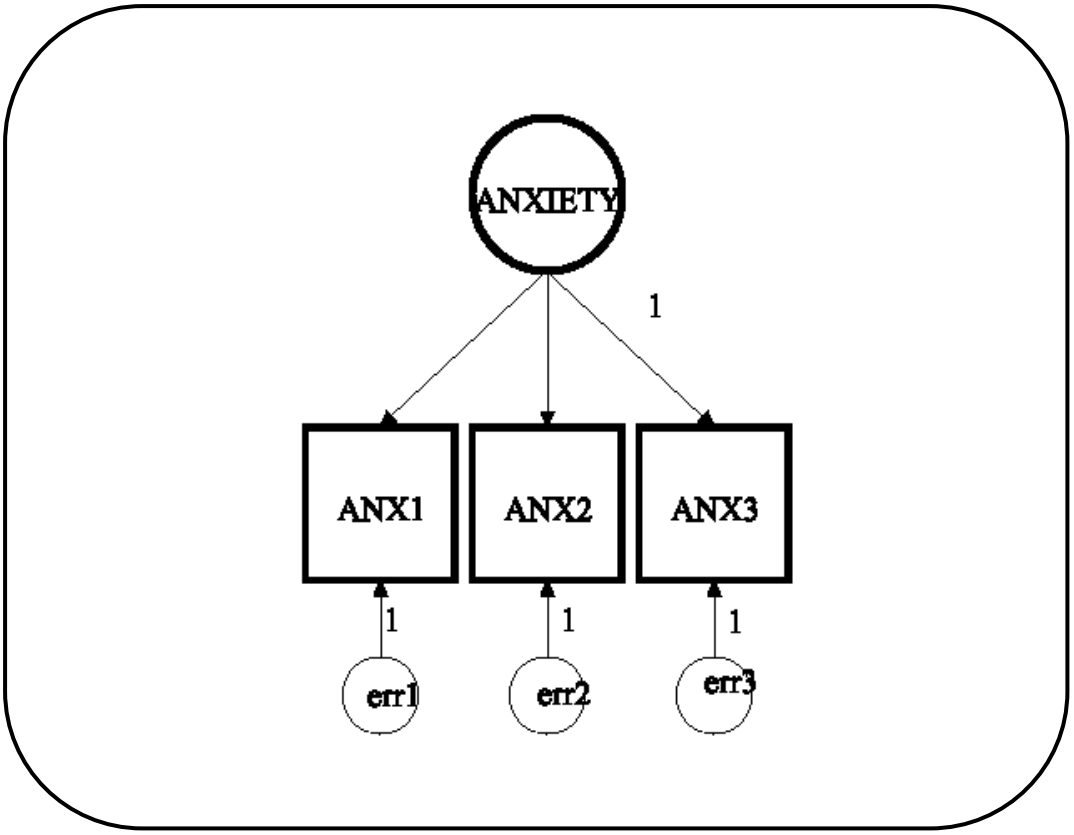


Figure 5.14: CFA of Perceived Work-Related Depression Construct

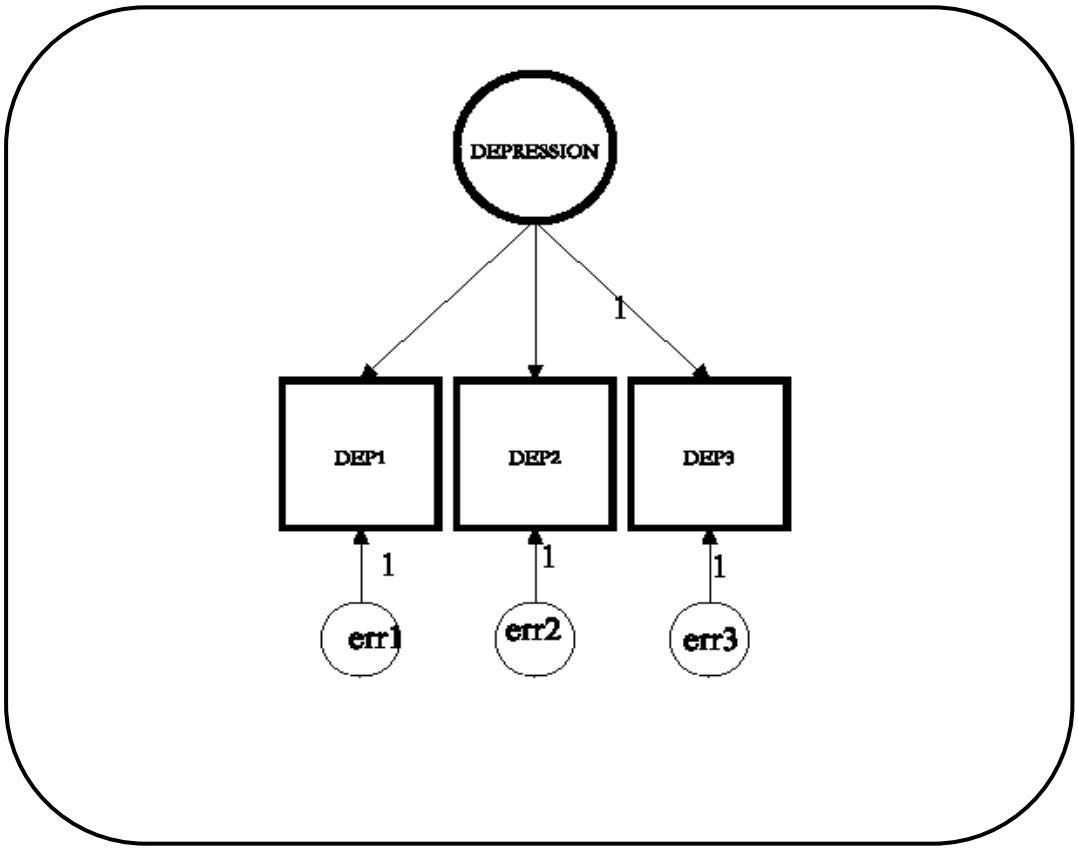
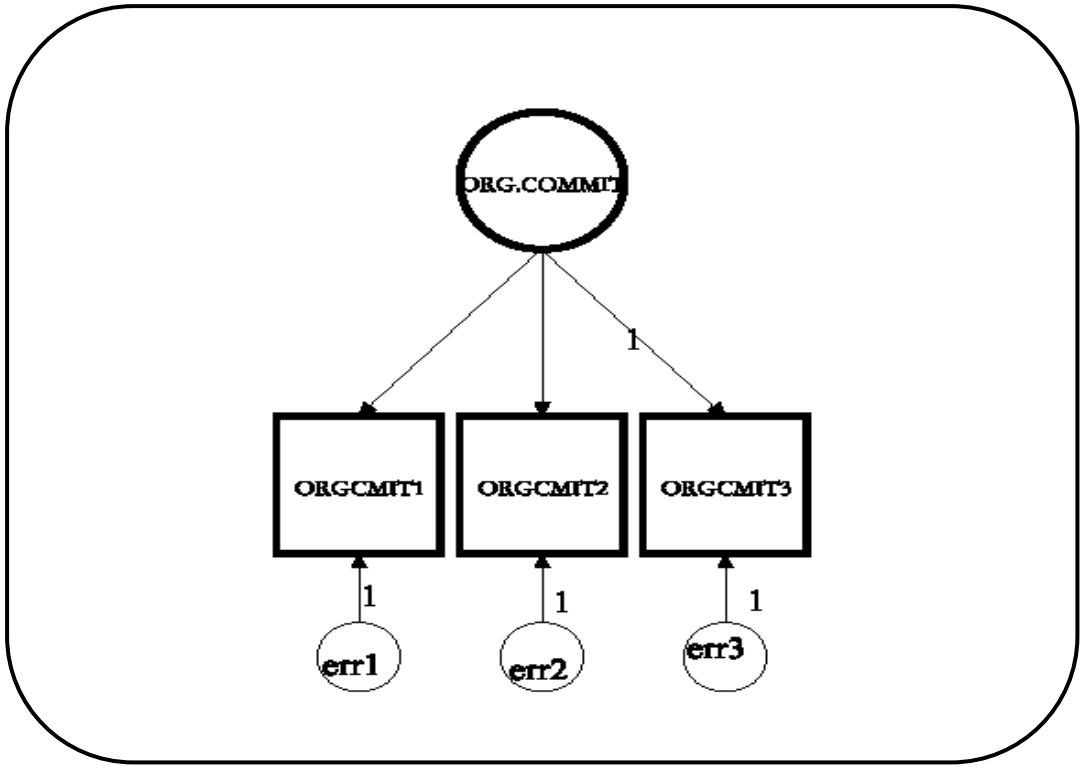


Figure 5.15: CFA of Perceived Organisational Commitment Construct



Job satisfaction construct is measured by nine items (Table 5.21). The initial confirmatory factor analysis of this construct yielded chi-square statistic (χ^2 (27) = 21867.519, $p < 0.001$) RMSEA = 0.192, CFI = 0.926, TLI = 0.901). All indicators had standardised factor loadings above 0.7, except for JS6 (0.505) and JS7 (0.551). In order to improve RMSEA, both JS6 and JS7 were removed, individually, and together. However, irrespective of the combination in which the two items were deleted, fit of the model deteriorated, and so did the AVE. Table 5.23 summarises results of comparison of the fit statistics achieved for respective modified models. Therefore, initial CFA for job satisfaction construct was retained at this stage. See Figure 5.17 for CFA model of job satisfaction construct. Composite reliability and AVE of the retained job satisfaction scale is 0.918 and 0.562 respectively (Table 5.21).

Figure 5.16: CFA of Perceived Job Satisfaction Construct

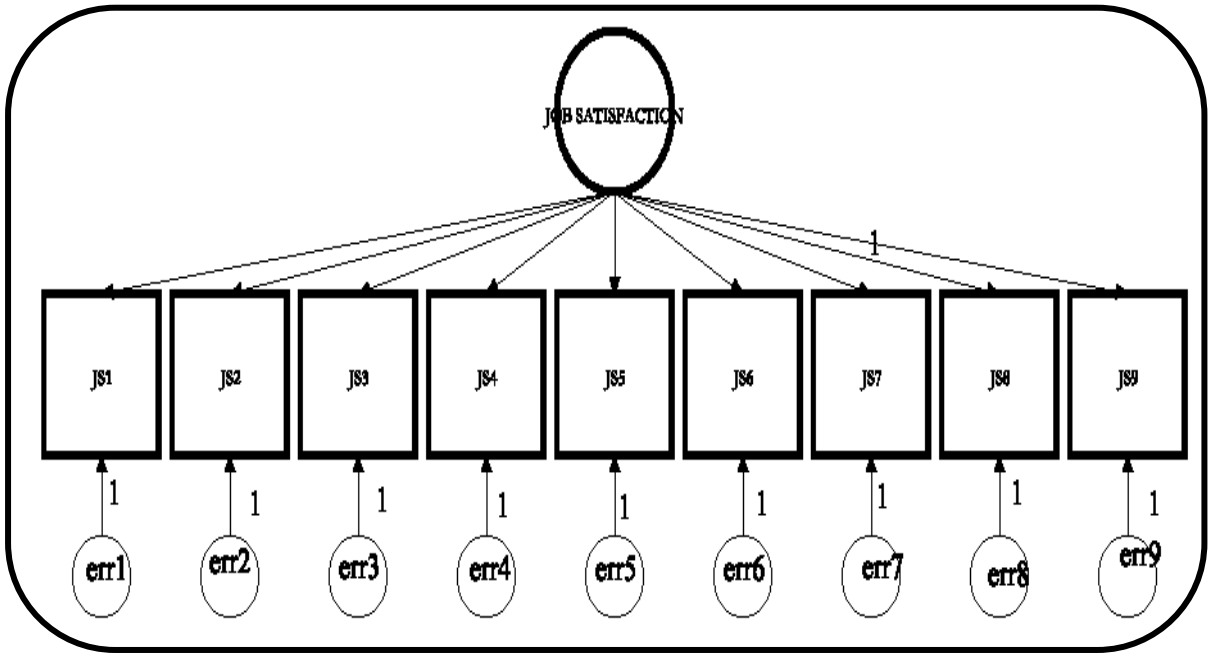


Table 5.23: Comparison of Modified Models for Individual Job Satisfaction Construct

Model	Model Fit Information				
	Chi-Square Fit (χ^2)	**Degrees of Freedom (df)**	**RMSEA**	**CFI**	**TLI**
Initial Model (9-item Model)	21867.519*	27	0.192	0.926	0.901
Modified Model 1 Removing JS6	19794.010*	20	0.212	0.930	0.902
Modified Model 2 Removing JS7	19922.949*	20	0.213	0.930	0.902
Modified Model 3 Removing JS6 & JS7	18288.104*	14	0.247	0.933	0.899

*$p < 0.001$ Note: Highlighted model was selected

Another CFA was run to test if job satisfaction and organisational commitment, both of which are positive indicators of well-being, can be considered as one factor instead of two distinct factors. The results of hypothesised one factor model revealed a chi-square χ^2 (44) = 43997.216, $p < 0.001$. Other goodness of fit statistics are RMSEA = 0.213, CFI = 0.889, TLI = 0.861. Therefore, confirming that job satisfaction and organisational commitment, undoubtedly, measure positive

indicators of well-being, but capture two distinct underlying aspects of positive well-being (see Appendix G, Table G-1).

5.5.3 CFA for Overall Measurement Model of the Individual Level Data

CFA of the overall measurement model is conducted for two reasons. First, to assess the validity, reliability and unidimensionality of constructs in the presence of other constructs. Second, to establish whether sufficient correlation exist amongst the latent constructs, and are present in the expected direction. Table 5.24 summarises final results for the overall measurement model of the individual level constructs of the study. The model comprises of eight constructs, namely perceived job demands, perceived job control, perceived managerial support, perceived family support, work-related anxiety, work-related depression, job satisfaction and organisational commitment. Items deleted at individual CFA stage are not included in the overall CFA model.

Initially, all items highlighted at individual CFA stage are incorporated into the measurement model. The measurement model fit indices, without any modification, are: chi-square χ^2 (874) = 121669.182, $p < 0.001$. Other goodness of fit statistics are RMSEA = 0.079, CFI = 0.937, TLI = 0.931. Although all model fit criteria seem to be in their moderately acceptable cut-off values, a closer inspection of standardised factor loadings revealed some irregularities. Three items are identified with low loadings namely: JD1 = 0.254, AUTOM5 = 0.535, and JS6 = 0.536. These loadings signify that JD1 has the poorest fit on its respective construct and overall model, while the other two items had relatively better fit than JD1. Although AUTOM5 and JS6 have loadings ≥ 0.50, these are notably lower relative to other items on their respective constructs. Notably, lower factor loadings of the three highlighted items compromised composite reliability and AVE of their respective constructs. Hence, identified items were removed from their respective constructs in subsequent models. Table 5.25 compares results of the modified measurement models.

Table 5.24: CFA for Overall Measurement Model - Level 1 Constructs

Constructs	Standardised Factor Loadings	R^2	Standardised Error Variance	CR	AVE
Job Demands				**0.578**	**0.409**
JD2	0.567*	0.321*	0.679		
JD3	0.705*	0.497*	0.503		
Job Control				**0.91**	**0.718**
JC1	0.853*	0.728*	0.272		
JC2	0.805*	0.647*	0.353		
JC3	0.904*	0.817*	0.182		
JC4	0.824*	0.679*	0.321		
Managerial Support				**0.977**	**0.721**
DCOM1	0.874*	0.764*	0.236		
DCOM2	0.864*	0.746*	0.254		
DCOM3	0.852*	0.725*	0.275		
DCOM4	0.762*	0.581*	0.419		
CONSULT1	0.887*	0.786*	0.214		
CONSULT2	0.919*	0.845*	0.155		
CONSULT3	0.889*	0.791*	0.209		
TIM1	0.876*	0.768*	0.232		
TIM2	0.912*	0.832*	0.168		
TIM3	0.908*	0.825*	0.175		
TIM4	0.869*	0.755*	0.245		
SRLT1	0.749*	0.561*	0.439		
SRLT2	0.808*	0.653*	0.347		
Family Support				**0.831**	**0.500**
FLEXTIME	0.652*	0.422*	0.578		
JOBSHARE	0.767*	0.588*	0.412		
REDUCEHRS	0.746*	0.557*	0.443		
REDUCEDAY	0.762*	0.581*	0.419		
TERMTIME	0.586*	0.343*	0.656		
Job-Related Anxiety				**0.888**	**0.726**
ANX1	0.787*	0.619*	0.381		
ANX2	0.827*	0.683*	0.317		
ANX3	0.936	0.875*	0.125		
Job-Related Depression				**0.939**	**0.836**
DEP1	0.886*	0.784*	0.216		
DEP2	0.919*	0.844*	0.156		
DEP3	0.937*	0.878*	0.122		
Job Satisfaction				**0.927**	**0.611**
JS1	0.783*	0.614*	0.386		
JS2	0.801*	0.641*	0.359		
JS3	0.822*	0.676*	0.324		
JS4	0.732*	0.536*	0.464		
JS5	0.816*	0.666*	0.334		
JS7	0.592*	0.348*	0.652		
JS8	0.764*	0.584*	0.416		

JS9	0.905*	0.819*	0.181		
Organisational Commitment				**0.903**	**0.758**
ORGCMIT1	0.802*	0.643*	0.356		
ORGCMIT2	0.882	0.778*	0.222		
ORGCMIT3	0.923*	0.852*	0.148		

χ^2 (751) = 106672.777, $p < 0.001$ Note: * Significant at 0.05 level
RMSEA = 0.080
CFI = 0.943
TLI = 0.937

Table 5.25: Comparison of Modified Models for Overall Measurement Model

Model	Model Fit Information				
	Chi-Square Fit (χ^2)	Degrees of Freedom (df)	RMSEA	CFI	TLI
Initial Model	121669.182*	874	0.079	0.937	0.931
Modified Model 1 Deleting JD1	112019.362*	832	0.078	0.941	0.936
Modified Model 2 Deleting JD1 & JC5	108399.560*	791	0.079	0.942	0.937
Modified Model 3 Deleting JD1, JC5, JS6	106672.777*	751	0.080	0.943	0.937

*$p < 0.001$ Note: Highlighted model was selected.

The final measurement model shows a good overall fit. Although chi-square is still statistically significant, it is attributed to sensitivity of the statistic to sample size. Although there is no drastic improvement in the overall goodness of fit statistics of the various modified models, removing items with lower standardised factor loadings has positively affected reliability and validity of the respective constructs.

As can be seen in Table 5.24, all the constructs have standardised factor loadings of greater than 0.60 with the majority of these between 0.801(JS2) and 0.937 (DEP3), except for JD2 (0.567). Turning to reliability estimates, R^2 values for the majority of indicators are greater than 0.50. In terms of composite reliability, all constructs surpassed the recommended value of 0.70 and are above 0.80 range. AVE estimates of all constructs also exceed 0.50 threshold with the majority having AVE of 0.70 and above (Fornell and Larcker, 1981). The only exception in this regard is construct measuring perceived job demands, which is borderline with having composite reliability of 0.578 and AVE of 0.409. Together these statistics imply that unidimensionality, convergent validity and reliability is not an issue with the constructs of the study. The following sub-section presents results of the assessment of divergent/discriminant validity.

5.5.3.1 Discriminant Validity

As described earlier (section 4.10.4.1.2), divergent validity is ascertained when a) correlations amongst the constructs are less than 0.85; b) square root of AVE of each constructs is higher than the inter-construct correlations; c) AVE of each construct is at least 0.50 (Fornell and Larcker, 1981; Hair et al., 2010; Kline, 2011). Table 5.26 present results of the square root of AVE of each

Table 5.26: Inter-Construct Correlations and Square Root of AVE

Constructs	PJD	PJC	FS	MS	JS	ANX	DEP	OC
Perceived Job Demands **(PJD)**	**0.640**							
Perceived Job Control **(PJC)**	-0.134	**0.847**						
Family Support **(FS)**	-0.053	0.129	**0.733**					
Managerial Support **(MS)**	-0.338	0.360	0.170	**0.849**				
Job Satisfaction **(JS)**	-0.300	0.591	0.155	0.753	**0.782**			
Job-Related Anxiety **(ANX)**	0.705	-0.194	-0.038	-0.404	-0.439	**0.852**		
Job-Related Depression **(DEP)**	0.569	-0.290	-0.093	-0.532	-0.612	0.869	**0.914**	
Organisational Commitment **(OC)**	-0.154	0.393	0.112	0.661	0.705	-0.287	-0.482	**0.870**

All correlations are significant at 0.01 level.
Diagonal entries (in bold and shaded grey) are Square Root of AVE of each construct.
Off-diagonal entries are Inter-Construct correlations

of study's constructs and inter-construct correlations. As can be seen, square root of AVE of each latent construct exceeds its respective inter-construct correlation and other constructs. Two notable exceptions in this respect are square root of AVE of PJD (0.640) and correlation of ANX (0.705), and square root of AVE of ANX (0.852) and correlation of DEP (0.869). Since the correlations do not exceed the respective square root of AVE greatly, these may not be considered huge departures from the recommended guidelines.

Further, Table 5.26 exhibits that correlation coefficients amongst the latent constructs are below the recommended cut-off of 0.85. The only exception in this regard is the correlation between ANX and DEP (0.869). Since both anxiety and depression are indicators of negative psychological well-being, a slightly higher correlation coefficient between the two may be argued and defended on theoretical grounds. Lastly, AVE of the majority of constructs exceed 0.50 (Table 5.24). Hence, divergent validity of the study's constructs is established, inferring that constructs of the study indeed signify separate underlying concepts.

In addition to the above checks, two other statistical procedures were conducted in which measurement models were tested in pairs to confirm that constructs highlighted in the overall measurement models were distinct. In the first approach, measurement model were tested between two constructs as two separate constructs. Subsequent to that, another measurement model was tested in which all indicators were loaded onto a single factor. The results of comparisons between pairs of constructs are exhibited in Appendix G, Table G-1. It can be seen that fit of the models for restricted models in which the indicators are loaded onto one factor are consistently worse, for each of the pairs tested, than that of the models with two distinct factors. This confirms that constructs of the study are different from each other, and should not be merged onto one factor.

Further, in the second approach, we tested fit of a constrained measurement model in which first a model is run with free correlations between each set of constructs. Subsequent to that, another model, in which the correlations between the two factors is set to zero, was estimated. In order to compare results of the constrained model with that of the correlated model, a nested comparison using DIFFTEST procedure is computed in Mplus. The results are presented in Appendix G, Table G-2. It is evident that the $\Delta \chi^2$ between the un-constrained and constrained models for each set of constructs remains significant, signifying that the two constructs should be allowed to correlate freely.

In summary, this section elaborated criteria on which individual level data used in the study is assigned to distinguishable underlying concepts, through procedures of EFA and CFA. Item and scale reliability of these constructs is established. CFA procedure further fortified issues of validity, unidimensionality and reliability of the constructs. The described procedures establish legitimacy, credibility and explanatory power of the subsequent statistical analysis. The next section presents statistical criteria on which identified constructs are aggregated to represent workplace level properties.

SECTION 3: Evaluation and Justification of Data Aggregation

5.6 Application of Data Aggregation Criteria

Aggregation of individual level data to meaningful higher level data must be justified theoretically and statistically, in order to ascertain that research is free from ecological fallacy (Fischer et al., 2005). This section presents results of statistical measures used to assess appropriateness of data aggregation. Specifically, intra-class correlation coefficients (ICC1 and ICC2), F-test along with inter-rater agreement are calculated. Both Rwg.j and Rwg.j Lindell are computed to assess inter-rater agreement. R software version 3.2.1 is used for this analysis. The results are reported in Table 5.27.

As shown in Table 5.27, all F-statistics are significant. This means that between workplace variances is larger than within workplace variance, for all of the employee level (level 1) survey dimensions namely: perceived job demands, perceived job control, perceived managerial support, perceived family support, work-related anxiety, work-related depression, job satisfaction and organisational commitment. Subsequently, ICC1 values range between 0.072 and 0.257. Few ICC1 are not high. Nevertheless, significant F-test statistics for all variables indicate that variance components attributable to establishment/workplace level are statistically significant. Further, evaluation of group mean reliability statistic (ICC2) show an overall satisfactory scenario. ICC2 values range between 0.489 and 0.787. With the exception of three marginal values 0.463, 0.489 and 0.530, all the variables exhibit good mean reliability. Recall that ICC1 values are independent of workplace size or number of workplace, whereas ICC2 are not (Bliese, 2000; Castro, 2002). Therefore, having satisfactory ICC2 values, in our data, also indicate that sample size of each workplace is sufficient to support aggregation of scores.

Table 5.27: Statistical Justification of Data Aggregation to Workplace Level

	Job Demands	Job Control	Managerial Support	Family Support	Job-Related Anxiety	Job-Related Depression	Job Satisfaction	Organisational Commitment
F Value	2.103*	2.352*	3.431*	4.715*	1.866*	1.958*	2.865*	3.098*
ICC1	0.090	0.108	0.201	0.257	0.072	0.078	0.148	0.159
ICC2	0.530	0.579	0.709	0.787	0.463	0.489	0.650	0.677
Rwg.j	0.6018	0.8551	0.8768	0.9847	0.7086	0.6942	0.8894	0.8134
Rwg.j Lindell	0.4513	0.6321	0.4811	0.9286	0.4914	0.4943	0.5701	0.6338

*All values are significant at $p < 0.001$.
Number of observations = 21981. Number of groups = 1923.
Mean group size for all composite is approx. 11.23 except for managerial support where it is equal to 9.698 and for family support it is equal to 10.72.
Cut-off Criteria:
ICC1 = >0.12
ICC2 = >0.6 (0.50 >ICC2 ≥ 0.70)
Rwg. j= >0.7
Rwg.j Lindell = >0.5

Finally, inter-rater agreement measure (Rwg.j and Rwg.j Lindell respectively) exhibits very strong agreement (> 0.70 and > 0.50 respectively). Taken together these statistics provide evidence and eligibility of aggregating employee level data to workplace level data. Hence, it may be claimed that, to a great extent, findings of this section support the use of aggregated survey scales to measure workplace level constructs. In terms of ICC1 and ICC2 values, moderate support is sought for perceived job demands, job-related anxiety and job-related depression. However, based on F-test, Rwg.j and Rwg.j Lindell values, it may be inferred that aggregation is justified for these scales.

Having established that aggregation is viable, the data from survey of employee questionnaire was aggregated. The aggregated data along with the contextual variables from SEQ were then merged with composite data from the management questionnaire, which was already at the workplace level. Table 5.28 presents descriptive statistics of merged data at the workplace level. The variables in Table 5.28 are composite variables, and, hence, treated as continuous data. Composite data from the management questionnaire contains data from 2,680 establishment, whereas number of observations/employees in the survey of employee questionnaire are 21,981. It may be noted that only those workplaces are included in the analysis where at least 5 employees were included in the survey of employee to represent their workplace. The merged data comprises 1,923 workplaces. Table 5.28 exhibits that all variables at the workplace level are normally distributed. The skewness and kurtosis measures of each composite variable are within the acceptable cut-off values of ±2.0 range, as suggested by Tabachnick and Fidell (2001). A number of multivariate outliers are found in the merged data (see Appendix F, Table F-3), which are all retained in the analysis. This is because respondents may genuinely have different and extreme views with regard to an issue. In terms of missing values, variables lie within the acceptable ranges of percentage of missingness. The only exception in this respect is perceived managerial support (16.8%).

Table 5.2 showed that individual items pertaining to perceived managerial support construct have percentage of missing values within acceptable limits. However, when aggregated, managerial support construct exceeded the recommended limit of missing values (10%). Probing the reason of missingness in the individual managerial support items (Appendix D, Table D-5) shows that majority of missing values result because respondents 'Don't Know' or refuse to answer, highlighting that source of this non-ignorable missing data process is unknown. One way to deal with high percentage of missing values was to delete the missing cases. However, this could have undermined sample size. Since this study uses FIML approach to deal with missing values, all the cases are retained in the analysis.

Table 5.28: Descriptive Statistics of Merged Aggregated Data (Workplace Level)

Variables	Valid Responses (N)	Missing Values	% Missing	Response Limits		Mean	SD	Skew	Std. Error of Skew	Kurtosis	Std. Error of Kurtosis
				Min.	Max.						
Skills & Ability Bundle	21280	931	4.2	0	15	9.07	2.482	-0.228	0.017	-0.201	0.034
Motivation Bundle	21966	245	1.1	0	13	4.11	2.836	1.059	0.017	0.590	0.033
Opportunity Bundle	21460	751	3.4	0	19	11.35	3.338	-0.501	0.017	0.111	0.033
Commitment Bundle	20993	1218	5.5	0	35	17.52	8.105	0.415	0.017	-0.849	0.034
Perceived Job Demands	21319	892	4.0	2	10	6.07	1.820	0.181	0.017	-0.567	0.034
Perceived Job Control	21351	860	3.9	4	16	12.77	3.025	-0.937	0.017	0.273	0.034
Perceived Managerial Support	18487	3724	16.8	13	65	43.30	11.701	-0.383	0.018	-0.286	0.036
Perceived Family Support	20536	1675	7.5	0	5	1.28	1.364	1.010	0.017	0.212	0.034
Job-related Anxiety	21562	649	2.9	3	15	6.71	2.717	0.711	0.017	0.213	0.033
Job-related Depression	21516	695	3.1	3	15	5.47	2.848	1.269	0.017	1.115	0.033
Job Satisfaction	20627	1584	7.1	8	40	28.65	5.862	-0.560	0.017	0.354	0.034
Organisational Commitment	21247	964	4.3	3	15	11.46	2.417	-0.675	0.017	0.649	0.034

Valid (N) Listwise 13976

5.7 Chapter Summary

This chapter is divided into three sections. The first sections deals with data screening and preparation techniques. Specifically, data is scrutinised for missing values, outliers and normality. In this section, data from management questionnaire (workplace level) and survey of employee questionnaire (individual level) is evaluated separately. Missing values are within acceptable ranges for both MQ and SEQ data, and are handled using the FIML approach. Several outliers are identified, but retained in the analysis, because outliers are considered important data points. Normality assumptions are met for both MQ and SEQ data.

The second section pertains to analysis of employee level data. Here, the data is analysed for finding appropriate number of underlying constructs for intermediate and outcome variables using EFA. Results of EFA are confirmed using CFA. The measurement model of the individual level constructs is evaluated in two stages. All constructs are evaluated for unidimensionality, reliability and construct validity. The results reveal that all measurement models meet the respective statistical thresholds criteria, and no massive violation is noted for any construct. Thus, the latent constructs satisfy conditions of unidimensionality, reliability, convergent and discriminant validity.

Final section deals with justification of aggregating individual level constructs for workplace level analysis. The aggregation is required because the independent variables of the study are measured at the workplace level. The statistical analysis conducted in order to justify aggregation revealed that aggregation is justified for these scales. Resultantly, data is merged for MQ and SEQ to proceed with workplace level analysis. The merged data follows normality. The next chapter presents results of the SEM analysis using path models to test study's hypotheses.

Chapter 6

Structural Equation Modelling

6.1 Introduction

The objective of this chapter is to present the results of the multivariate analysis of data on the relationship between HP-HR bundles, job demands and employee well-being, and to empirically examine if the principles of the JD-R model can be applied to strengthen the HP-HR/well-being link. To do so, the chapter employs the aggregated employee level data based on the purified measurement model highlighted in the preceding chapter (Chapter 5, section 5.5.3) to analyse the theoretical model of the study at the workplace level. Path analysis, using Mplus software version 7.1.1, with maximum likelihood estimation, is used to study the hypothesised relationships between composite HR variables and aggregated intermediate and outcome variables.

This chapter is divided into five sections based on the four core research questions outlined in Chapter 1. First section gives an overview of the components of the study's statistical model and describes the overall fit of the basic path model of the study. Second section addresses research questions 1 and 2 and reports the tests of the direct relationships between the variables of interest. Third section examines research question 3 and reports the tests of the mediating effects of perceived job demands between the HP-HR bundles and well-being, based on the labour process perspective. Fourth section investigates research question 4 and evaluates the moderating effects of job resources on the relationship between perceived job demands and well-being, in line with the JD-R model. Fifth section presents the results of the effects of control variables on perceived job demands and well-being.

SECTION 1: Overview of the Basic Path Model

6.2 Path Analysis Estimation in Structural Equation Modelling

As described earlier (Chapter 4, section 4.7), path analysis is a special case in the SEM technique that utilises observed variables in analysis. A path model specifies the manner in which independent (exogenous) observed variables directly and/or indirectly cause changes in the

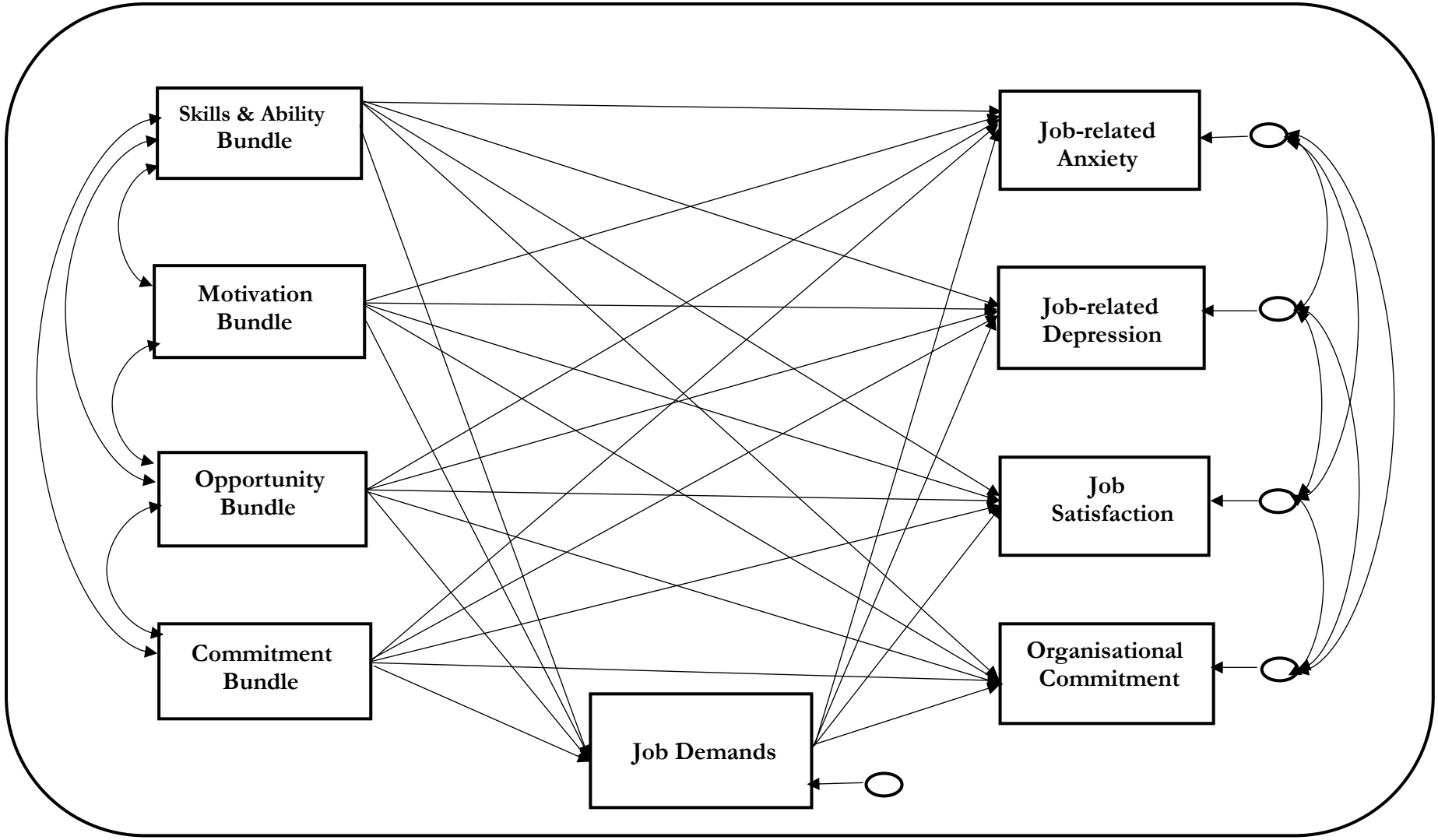
endogenous variables, and determine if conditional indirect effects exist between direct and/or indirect relationships (Byrne, 2010; Muthen and Muthen, 2010).

There are twelve observed variables in the study. Amongst these, four are exogenous HR variables i.e. skills and ability-enhancing bundle, motivation-enhancing bundle, opportunity-enhancing bundle and commitment-enhancing bundle. Three are exogenous moderators i.e. job control, managerial support and family support, which vary the strength and direction of the relationship between the mediator and the outcome variables. Four are outcome variables i.e. perceived job-related anxiety, job-related depression, job satisfaction and organisational commitment. Perceived job demands is the endogenous observed mediator. The hypothesised relationships between the observed variables are evaluated using standardised path co-efficients and their associated t-values. The sign of the standardised path co-efficient indicates if the hypothesised relationships exist in the expected directions. The magnitude of the path co-efficient reflects the strength of the relationship i.e. the bigger the co-efficient, the stronger is the relationship. Absolute t-values above 1.96 and above 2.58 indicate statistical significance at 0.05 and 0.01 levels respectively. The same set of fit indices are used to assess the overall fit of the path models that were used to evaluate the fit of the measurement model of the study. These include chi-square (χ^2), RMSEA, CFI, TLI (Hu and Bentler, 1999). Figure 6.1 illustrates the proposed path model based on the hypothesised direct and indirect relationships. The arrows in Figure 6.1 suggest direct and indirect relationships among the elements within the model. The modelling of direct relationships reflects both the mutual gains argument of improved influence of different bundles of HP-HR practices on four dimensions of employee well-being, and labour process argument of positive influence of bundles of HP-HR practices on perceived job demands. Labour process theory (Ramsay et al., 2000) explains how job demands have an indirect influence on employee well-being. As such, HP-HR bundles lead to heightened job demands, which in turn lead to compromised well-being. Direct relationships between the HP-HR bundles and well-being, HP-HR bundles and perceived job demands and job demands and well-being are examined simultaneously with the indirect relationships through the mediating variable.

6.2.1 Model Fit of the Mediation Model

Before discussing the results of the hypotheses, the overall fit of the basic path model was assessed to evaluate if the hypothesised relationships fit the research data well. In all analyses, we entered the control variables of individual demographic differences. The overall fit statistics of the path

Figure 6.1: Proposed Partial Mediation Path Model at the Workplace Level



For simplicity control vraibles are omitted from the diagram

Direct relationship: ——→

Correlation: ↺

model are: $\chi^2 =$ 0.000, *df* = 0, RMSEA = 0.00, CFI = 1.000, TLI = 1.000. This shows that the model is saturated or just identified i.e. all parameters/paths in the model are specified, and the number of equations is equal to the number of parameters being estimated. For our data this signifies that all variables in the model are related and there are as many parameters as degree of freedom. This implies that there is no difference between values in the sample covariance matrix S and the reproduced implied covariance matrix denoted by $\sum$ which is created based on our specified conceptual model (Schumacker and Lomax, 2004). Thus, our path model has zero degrees of freedom, the p-value cannot be calculated, and CFI, TLI are equal to one - the model has a perfect fit. In this model, control variables and HP-HR bundles explain 0.17 percent of the variance in perceived job demands (R^2 = 0.017). Control variables, HP-HR bundles and job demands explain 23.2 percent of the variance in job-related anxiety (R^2 = 0.232), 14.4 percent of the variance in job-related depression (R^2 = 0.148), 6.4 percent of the variance in job satisfaction (R^2 = 0.064) and 2.9 percent of the variance in organisational commitment (R^2 = 0.029). Control variables alone explain 0.9 percent of the variance in perceived job demands (R^2 = 0.009), 0.3 percent of the variance in job-related anxiety (R^2 = 0.003), 1.00 percent of the variance in job-related depression (R^2 = 0.010), 0.6 percent of the variance in job satisfaction (R^2 = 0.006) and 1.4 percent of the variance in organisational commitment (R^2 = 0.014). The following sections present the results of the hypothesised relationships investigating the direct, mediating and conditional indirect effects between the variables of the study. Assessment of research questions 1 and 2 are presented next.

SECTION 2: High Performance HR and Employee Outcomes

6.3 Assessment of the Direct Paths: An Overview

This section presents the tests of direct associations, based on research questions 1 and 2, examined in the study. 'Direct relationships are those relationships that link two constructs with a single arrow' (Hair et al., 2010, p. 766). Research question 1 explored the relationship between HP-HR practices and employee wellbeing. Hypotheses 1, 5 and 6 address Research Question 1. Hypothesis 1 posits that, based on the mutual gains perspective, the relationship between HP-HR practices and employee well-being is positive. Hypothesis 5 builds on hypothesis 1 and explores the assumptions of differential associations of HP-HR practices. It suggests that different dimension/bundles of HP-HR practices that constitute the overall HPWS are also expected to have a positive relationship between HP-HR practices and employee well-being, although these bundles may have differential associations in terms of the effect size from each other. Hypothesis

6 addresses the possibility of varying influences of HP-HR bundles on employee well-being and the possibility of trade-offs between different dimensions of employee well-being. In particular, hypothesis 6 posits that different HP-HR bundles would lead to positive perceptions of well-being in terms of lower anxiety, depression and increased job satisfaction and organisational commitment. In order to investigate the 3 hypotheses (1, 5 and 6), direct associations between HP-HR bundles and various dimensions of employee wellbeing are tested. A total of 16 conditions are tested to confirm the tests of the hypothesised direct relationships (Tests 1-4).

In examining research question 2, it is hypothesised that, based on the notions of the labour process perspective, HP-HR practices would lead to a negative appraisal of the extra work demands (Hypothesis 2). Extending the logic of HP-HR bundles to this association, it is expected that the respective bundles would also lead to an increase in perceived job demands. The differential impact of the four bundles of HP-HR practices is expected in terms of difference between the effect sizes of one bundle in comparison with the other for which four conditions are tested (T5a – T5d). Additionally, another four tests are conducted to link perceived job demands with employee well-being. Consistent with previous literature, it is argued that perceived work demands deteriorate the perceptions of employees about their work related well-being (see Appendix B, Table B-2). Employees give negative value to perceived job demands at work and respond to such situations with negative appraisal of their level of anxiety, depression, job satisfaction and organisational commitment (T6 – T9). Table 6.1 presents results of the tests of various conditions of direct relationships hypothesised in the study along with their associated standardised path co-efficient, t-value and significance levels.

6.3.1 High Performance HR Bundles and Employee Well-being

In examining the relationship between HP-HR bundles and employee well-being, a total of 16 conditions were tested grouped under four core tests (T1 – T4). It was hypothesised that there would be a positive relationship between the HP-HR bundles and employee well-being. Four facets of employee well-being were tested i.e. work-related anxiety, work-related depression, job satisfaction and organisational commitment. Similarly, the influence of four bundles of HP-HR practices was explored, in line with the AMOC model. Each test (T1 - T4) have four sub-dimensions each. For example, Test 1 has four conditions (T1a – T1d) which investigated the relationship between each HP-HR bundle and job-related anxiety. Test 1a to Test 1d predicted that there would be a negative relationship between each HP-HR bundle and job-related anxiety. Similarly, Tests 2a – 2d predicted a negative relationship between each HP-HR bundle and job-

Table 6.1: Tests of Direct Relationships

Tests of Conditions	Relationships	Co-efficients	Results
T1(-) *HP-HR bundles are negatively related to job-related anxiety*			
a	skills & ability → anxiety	0.025 (3.169**)	Rejected (SOD)
b	motivation → anxiety	-0.001 (-0.172)	Rejected (NS)
c	opportunity → anxiety	-0.026 (-3.354**)	Supported
d	commitment → anxiety	0.056 (7.571***)	Rejected (SOD)
T2 (-) *HP-HR bundles are negatively related to job-related depression*			
a	skills & ability → depression	0.016 (2.019*)	Rejected (SOD)
b	motivation → depression	-0.012 (-1.633)	Rejected (NS)
c	opportunity → depression	-0.033 (-4.184***)	Supported
d	commitment → depression	0.025 (3.174**)	Rejected (SOD)
T3 (+) *HP-HR bundles are positively related to job satisfaction*			
a	skills & ability → job satisfaction	-0.008 (-0.913)	Rejected (NS)
b	motivation → job satisfaction	-0.008 (-1.053)	Rejected (NS)
c	opportunity → job satisfaction	0.069 (8.090***)	Supported
d	commitment → job satisfaction	-0.100 (-12.188***)	Rejected (SOD)
T4(+) *HP-HR bundles are positively related to organisational commitment*			
a	skills & ability → org. commitment	-0.012 (-1.370)	Rejected (NS)
b	motivation → org. commitment	-0.003 (-0.413)	Rejected (NS)
c	opportunity → org. commitment	0.067 (7.843***)	Supported
d	commitment → org. commitment	-0.060 (-7.203***)	Rejected (SOD)
T5 (+) *HP-HR bundles are positively related to job demands*			
a	skills & ability → job demands	0.001(0.120)	Rejected (NS)
b	motivation → job demands	-0.019 (-2.480*)	Rejected (SOD)
c	opportunity → job demands	0.028 (3.283**)	Supported
d	commitment → job demands	0.065 (7.819***)	Supported
T6 (+) *Job demands are positively related to job-related anxiety*			
	job demands → anxiety	0.473 (80.376***)	Supported
T7 (+)*Job demands are positively related to job-related depression*			
	job demands → depression	0.368(56.524***)	Supported
T8 (-) *Job demands are negatively related to job satisfaction*			
	job demands → job satisfaction	-0.217 (-29.994***)	Supported
T9 (-) *Job demands are negatively related to organisational commitment*			
	job demands → org. commitment	-0.101 (-13.505***)	Supported

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

T = Tests

a, b, c & d refer to the conditions examined within a test.

Standardised coefficients are reported; t-values in parentheses.

NS = Not significant; SOD = Significant in opposite direction.

related depression. On the contrary, Tests 3a – 3d and 4a – 4d predicted a positive relationship between each HP-HR bundle and both job satisfaction (T3a – T3d) and organisational commitment (T4a – T4d), see Table 6.1.

The results show that only four conditions tested (T1c, T2c, T3c, and T4c) are supported. Specifically, opportunity-enhancing bundle has a negative relationship with job-related anxiety (β = -0.026, $p < 0.001$) and job-related depression (β = -0.033, $p < 0.001$), and a positive relationship with job satisfaction (β = 0.069, $p < 0.001$) and organisational commitment (β = 0.067, $p < 0.001$). This suggests that, as claimed by the mutual gains theorists, only opportunity-enhancing HR bundle reduces employee's work-related anxiety and depression, and increases their job satisfaction and organisational commitment. Thus, opportunity-enhancing HR practices improve employee well-being.

On the contrary, conditions T1a, T2a, T3a and T4a suggested a negative relationship between skills and ability-enhancing HR bundle and job-related anxiety and depression respectively (T1a and T2a), and a positive relationship between ability-enhancing HR bundle and job satisfaction and organisational commitment respectively (T3a and T4a). Interestingly, the relationship between ability-enhancing bundle and anxiety (T1a) is positive and significant (β = 0.025, $p < 0.01$) Thus, condition T1a is not supported. Similarly, contrary to the claims of mutual gains theorists, the relationship between skills and ability-enhancing practices and job-related depression is also positive and statistically significant (β = 0.016, $p < 0.05$), thus rejecting condition T2a. In the same vein, skills and ability-enhancing HR bundle have a negative relationship with both job satisfaction and organisational commitment, but these relationship are insignificant. Hence, conditions T3a and T4a are also not supported.

With regards to the effects of motivation-enhancing bundle, it was hypothesised that there would be a negative relationship between motivation-enhancing bundle and job-related anxiety (T1b) and job-related depression (T2b), and a positive relationship between motivation-enhancing bundle and both job satisfaction (T3b) and organisational commitment (T4b). The results for these conditions are also not accepted. The results demonstrated a negative, but statistically insignificant relationship between motivation-enhancing bundle and both job-related anxiety and job-related depression, thus rejecting both conditions T1b and T2b. Similarly, motivation-enhancing bundle has failed to provide support for a positive relationship with job satisfaction and organisational commitment respectively, although the results are statistically insignificant. Hence, both T3b and

T4b are also not supported. It may be inferred that motivation-enhancing practices have an insignificant direct effect on job-related anxiety and depression, job satisfaction and organisational commitment for employees in our data.

Finally, conditions T1d, T2d, T3d and T4d claim a negative relationship between commitment-enhancing bundle and job-related anxiety (T1d) and commitment-enhancing bundle and job-related depression (T2d), and a positive relationship between commitment-enhancing bundle and job satisfaction (T3d) and commitment-enhancing bundle and organisational commitment (T4d). The results do not provide support for any of the tested conditions. A positive and statistically significant path exists between commitment-enhancing bundle and job-related anxiety ($\beta = 0.056$, $p < 0.001$), thus condition T1d is not supported. The relationship between commitment-enhancing bundle and job-related depression is also positive and statistically significant ($\beta = 0.025$, $p < 0.01$), thus rejecting condition T2d. Further, commitment-enhancing bundle is found to be significantly and inversely related to job satisfaction ($\beta = -0.100$, $p < 0.001$) and organisational commitment ($\beta = -0.060$, $p < 0.001$). Therefore, both T3d and T4d have not been supported in the study.

6.3.2 High Performance HR Bundles and Perceived Job Demands

Hypothesis 2 investigated the relationship between HP-HR practices and perceived job demands. Since, the influence of four dimensions/bundles of HP-HR practices are tested separately on employees' perceived job demands, four conditions are tested to establish that there would be a positive relationship between each HP-HR bundle and perceived job demands (T5a - T5d).

The results presented in Table 6.1 revealed a mixed picture. Skills and ability-enhancing bundle has a positive relationship with job demands, as expected, though the result is not statistically significant. Contrarily, motivation-enhancing bundle is inversely related to perceived job demands and this relationship is statistically significant ($\beta = -0.019$, $p < 0.05$). Thus, conditions T5a and T5b are not supported in this study.

With regards to opportunity-enhancing bundle and commitment-enhancing bundle, both are found to be significantly and positively related to perceived job demands as predicted ($\beta = 0.028$, $p < 0.01$) and ($\beta = 0.065$, $p < 0.001$) respectively. Thus, providing support for conditions T5c and T5d.

6.3.3 Perceived Job Demands and Employee Well-being

Four test (T6 – T9) investigated the relationships between perceived job demands and four facets of employee well-being. Perceived job demands were deemed to have a positive relationship with job-related anxiety (T6) and job-related depression (T7) respectively. Both the conditions are supported in the path analysis results. The results revealed a positive and significant relationship between both job demands and anxiety ($\beta = 0.473$, $p < 0.001$) and job demands and depression ($\beta = 0.368$, $p < 0.001$).

Further, it was predicted that there would be an inverse relationship between job demands and employees' job satisfaction (T8), and between job demands and employees' organisational commitment (T9). As expected, the results revealed a negative and statistically significant relationship between job demands and both job satisfaction and organisational commitment ($\beta = -0.217$, $p < 0.001$) and ($\beta = -0.101$, $p < 0.001$) respectively. Therefore, conditions T8 and T9 are supported.

SECTION 3: High Performance HR, Job Demands and Employee Well-being

6.4 Assessment of Indirect (Mediating) Paths: An Overview

In the section above, we estimated direct relationships between our predictor variables and outcomes. However, we also examined whether the observed effect is due purely to a direct relationship between our predictors and outcomes, or whether it occurs partially or fully through any intermediate/mediating variable. Research question 3 addresses this aspect and the second part of the research model investigates this association with hypothesis 3, which explores the role of perceived job demands as mediator of the HP-HR/well-being link. Hypothesis 3 posits that, based on the labour process perspective, HP-HR practices can affect employee well-being through employees' perceived job demands. The work intensification is suggested to be a key explanatory mediating variable of the HP-HR/well-being link. The differential associations of the bundles of HP-HR practices on different dimensions of well-being are also examined in this mediation link. This study explores if some HP-HR bundles have stronger effects than the others on perceived job demands, and through these to employee anxiety, depression, job satisfaction and organisational commitment through the associated test (T10 – T13). A total of 16 conditions are examined through T10 – T13 to test the indirect relationships hypothesised in the study.

Mplus uses the Sobel's equation for testing mediation and facilitates bootstrapping procedure (Shrout and Bolger, 2002). Hence, our mediation analysis is equivalent to independently conducting the mediation analysis using the Sobel's test with bootstrapped standard errors. We used bootstrapping confidence intervals (CIs) to validate the significance of the mediation analysis (Preacher and Hayes, 2004). Bootstrapped confidence intervals effectively reduces power problems introduced by asymmetric and other non-normal sampling distributions of an indirect effect (MacKinnon, Lockwood and Williams, 2004). The significance of the indirect relationship is validated by examining if the 95% confidence interval contains zero (an indicator of lack of significance). The results of mediation analysis based on 1000 bootstrapped samples illustrating each indirect path along with its associated standardised path co-efficient, t-value and significance levels are included in the Table 6.2.

6.4.1 High Performance HR Bundles, Job Demands and Employee Well-Being Dimensions

Conditions 10a, 10b, 10c and 10d proposed that perceived job demands mediate a positive relationship between skills and ability-enhancing bundle and job-related anxiety; motivation-enhancing bundle and job-related anxiety; opportunity-enhancing bundle and job-related anxiety; and commitment-enhancing bundle and job-related anxiety respectively. Results in Table 6.2 show that perceived job demands positively mediate the relationship between skills and ability-enhancing bundle and anxiety, but this relationship is insignificant (95% CI: -0.006, 0.007). Contrary to the expectation, job demands fully mediate a significant negative relationship between motivation-enhancing bundle and job-related anxiety (β = -0.009, p < 0.05; 95% CI: -0.015, -0.003). Hence, both conditions T10a and T10b are not supported. Further, it can be seen that perceived job demands partially mediate the relationship between opportunity-enhancing bundle and job-related anxiety (β = 0.013, p < 0.01; 95% CI: 0.007, 0.020), and commitment-enhancing bundle and job-related anxiety (β = 0.031, p < 0.001; 95% CI: 0.024, 0.038). Thus, conditions T10c and T10d are supported.

Table 6.2: Tests of Indirect (Mediating) Relationships

Tests/ Conditions	Relationships	Co-efficients	Results
T10 (+) *Job Demands will mediate the relationship between HP-HR bundles and job-related anxiety*			
a	skills & ability → job demands → anxiety	0.000 (0.120)	Rejected (NS)
b	motivation → job demands → anxiety	-0.009 (-2.479*)	Rejected(SOD)
c	opportunity → job demands → anxiety	0.013(3.279**)	Supported
d	commitment → job demands → anxiety	0.031(7.783***)	Supported
T11 (+) *Job Demands will mediate the relationship between HP-HR bundles and job-related depression*			
a	skills & ability → job demands → depression	0.000 (0.120)	Rejected (NS)
b	motivation → job demands → depression	-0.007 (-2.477*)	Rejected(SOD)
c	opportunity → job demands → depression	0.010 (3.276**)	Supported
d	commitment → job demands → depression	0.024 (7.738***)	Supported
T12 (-) *Job Demands will mediate the relationship between HP-HR bundles and job satisfaction*			
a	skills & ability → job demands →job satisfaction	0.000 (-0.120)	Rejected (NS)
b	motivation → job demands → job satisfaction	0.004 (2.471*)	Rejected(SOD)
c	opportunity → job demands → job satisfaction	-0.006 (-3.262**)	Supported
d	commitment → job demands → job satisfaction	-0.014 (-7.562***)	Supported
T13 (-) *Job Demands will mediate the relationship between HP-HR bundles and organisational commitment*			
a	skills & ability →job demands → org. commitment	0.000 (0.120)	Rejected (NS)
b	motivation → job demands → org. commitment	0.002 (2.439*)	Rejected(SOD)
c	opportunity → job demands →org. commitment	-0.003 (-3.189**)	Supported
d	commitment → job demands → org. commitment	-0.007 (-6.759***)	Supported

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

T = Tests

a, b, c & d refer to the conditions examined within a test.

Standardised coefficients are reported; t-values in parentheses

NS = Not significant; SOD = Significant in opposite direction.

To test whether perceived job demands serves as a mediator between each of the HP-HR bundle and job-related depression conditions T11a to T11d are tested. It is interesting to note that the relationship between skill and ability-enhancing bundle and job-related depression through perceived job demands is insignificant (95% CI: -0.005, 0.005). Further, job demands fully mediate a significant negative relationship between motivation-enhancing bundle and job-related depression (β = -0.007, $p < 0.05$; 95% CI: -0.012, -0.002). Hence, conditions T11a and T11b are not supported. Further, it can be seen that perceived job demands partially mediate a positive significant relationship between opportunity-enhancing bundle and job-related depression (β = 0.010, $p < 0.01$; 95% CI: 0.005, 0.016), and commitment-enhancing bundle and job-related depression (β = 0.024, $p < 0.001$; 95% CI: 0.019, 0.029). Thus, both conditions T11c and T11d are supported.

Conditions T12a – T12d examined mediating effects of perceived job demands on the relationship between each of the HP-HR bundle and job satisfaction. The results in Table 6.2 reveal that only two of the four conditions in T12 are supported by the data. The relationship between skills and ability-enhancing bundle and job satisfaction through perceived job demands is insignificant (95% CI: -0.003, 0.003). Further, contrary to the proposition in T12b, job demands mediate a significant positive relationship between motivation-enhancing bundle and job satisfaction (β = 0.004, $p <$ 0.05; 95% CI: 0.001, 0.007). Therefore, both T12a and T12b are rejected. As expected, job demands partially and negatively mediate both the relationship between opportunity-enhancing bundle and job satisfaction (β = -0.006, $p < 0.01$; 95% CI: -0.009, -0.003), and the relationship between commitment-enhancing bundle and job satisfaction (β = -0.014, $p < 0.001$; 95% CI: -0.017, -0.011). Thus, both conditions T12c and T12d are supported.

Finally, last conditions in the mediation analysis proposed that perceived job demands mediate a negative relationship between each of the HP-HR bundle and organisational commitment (Conditions T13a, T13b, T13c and T13d). Amongst these, support is found for T13c and T13d, where perceived job demands partially mediate both the relationship between opportunity-enhancing bundle and organisational commitment (β = -0.003, $p < 0.01$; 95% CI: -0.004, -0.001), and the relationship between commitment-enhancing bundle and organisational commitment (β = -0.007, $p < 0.001$; 95% CI: -0.008, -0.005). No support is found for T13a, as the relationship between skills and ability-enhancing bundle and job satisfaction through perceived job demands is insignificant (95% CI: -0.001, 0.001). Similarly, T13b is rejected because job demands mediate a significant positive relationship between motivation-enhancing bundle and organisational

commitment (β = 0.002, p < 0.05; 95% CI: 0.001, 0.003), instead of the expected negative relationship through job demands.

6.4.2 Comparison of the results of Direct and Indirect Relationships: A Summary

Results in Table 6.1 and Table 6.2 revealed that the relationship between the HP-HR bundles and job demands influence the overall effect of the HP-HR practices on employee well-being. Direct effects of HP-HR bundles on well-being seems less salient than direct effects of HP-HR bundles on job demands in determining well-being. Employee well-being is seen as a function of the effects of the HP-HR practices through perceived job demands. To evaluate the size of the indirect effect to the direct effect, ratio of the indirect effect to the direct effect (RM) is tested using the following equation:

$$\text{RM} = \frac{a*b}{\acute{c}}$$

Where, a = the regression coefficient between the independent variable and the mediator; b = the regression coefficient between the mediator and the dependent variable and ć = the regression coefficient between the independent variable and the outcome variable (Hayes, 2013). | RM | > 1 means that the indirect effect (a*b) is larger than the direct effect (ć), and vice versa. When the indirect effects and direct effects have the same sign, then RM > 1 indicates that more of the total effect of X on Y is carried indirectly through the mediator, whereas RM < 1 shows that more of the total effect is predicted by the direct effect (Hayes, 2013). Since our sample size > 2000, RM estimate can be trusted as an indicator of the size of the indirect effect to the direct effect (MacKinnon, Warsi and Dwyer, 1995).

Skills and ability-enhancing practices have shown varying direct relationships with well-being (Table 6.1). Nevertheless, the indirect relationship of skills and ability bundle on well-being through perceived job demands is statistically insignificant altogether (Table 6.2). Since skills and ability bundle do not predict job demands (β = 0.001, *ns*), overall perceived job demands have no mediation effect on the relationship between skills and ability-enhancing bundle and employee well-being[9].

[9] Ratios of the indirect to direct effects for skill and ability-enhancing bundle are not computed, because the standardised path from skills and ability-enhancing bundle to job demands is insignificant.

Our results demonstrate that motivation bundle does not directly predict employee well-being (Table 6.1). Nevertheless, motivation bundle is seen to reduce anxiety and depression and increase job satisfaction and organisational commitment through perceived job demands (Table 6.2). Since motivation-enhancing practices reduce perceptions of job demands (β = -0.019, $p < 0.05$), the overall effect of these on well-being through perceived job demands is positive. The mediation is a full mediation as only indirect effects are significant[10].

Opportunity-enhancing bundle is shown to have a direct positive impact on employee well-being (Table 6.1). At the same time opportunity enhancing practices are shown to positively predict job demands (β = 0.028, $p < 0.05$). Taken together, perceived job demands reduce direct positive impact of opportunity enhancing practices on well-being, and mediate a negative relationship between opportunity-enhancing HR bundle and well-being. The ratio of the indirect effects to direct effects of opportunity-enhancing bundle on job-related anxiety, job-related depression, job satisfaction and organisational commitment through perceived job demands are: RMs = -0.5, -0.312, -0.086 and -0.0417, respectively. This indicates that the indirect effects are 50%, 31.2%, 8.6% and 4.17% of the size of the direct effects respectively.

Commitment-enhancing bundle is shown to be detrimental to employee well-being and perceived job demands (Table 6.1). Due to the positive association between commitment-enhancing practices and perception of job demands (β = 0.065, $p < 0.001$), perceived job demands mediate an inverse relationship between commitment-enhancing bundle and employee well-being. The ratio of the indirect effects to direct effects of commitment-enhancing bundle on job-related anxiety, job-related depression, job satisfaction and organisational commitment through perceived job demands are: RM = 0.535, 0.956, 0.141 and 0.109 respectively. This shows that indirect effects are 53.57%, 95.68%, 14.1% and 10.9% of the size of the direct effects respectively. Because a*b and ć in the RMs of commitment bundle also have the same sign, we can say that more of the total effect of commitment enhancing bundle on job-related anxiety, job related depression, job satisfaction and organisational commitment is determined directly rather than indirectly through perceived job demands.

[10] Ratios of the indirect to direct effects for motivation-enhancing bundle are not computed, because the standardised paths from motivation-enhancing bundle to anxiety, depression, job satisfaction and organisational commitment are insignificant i.e. there is full mediation and no direct effects.

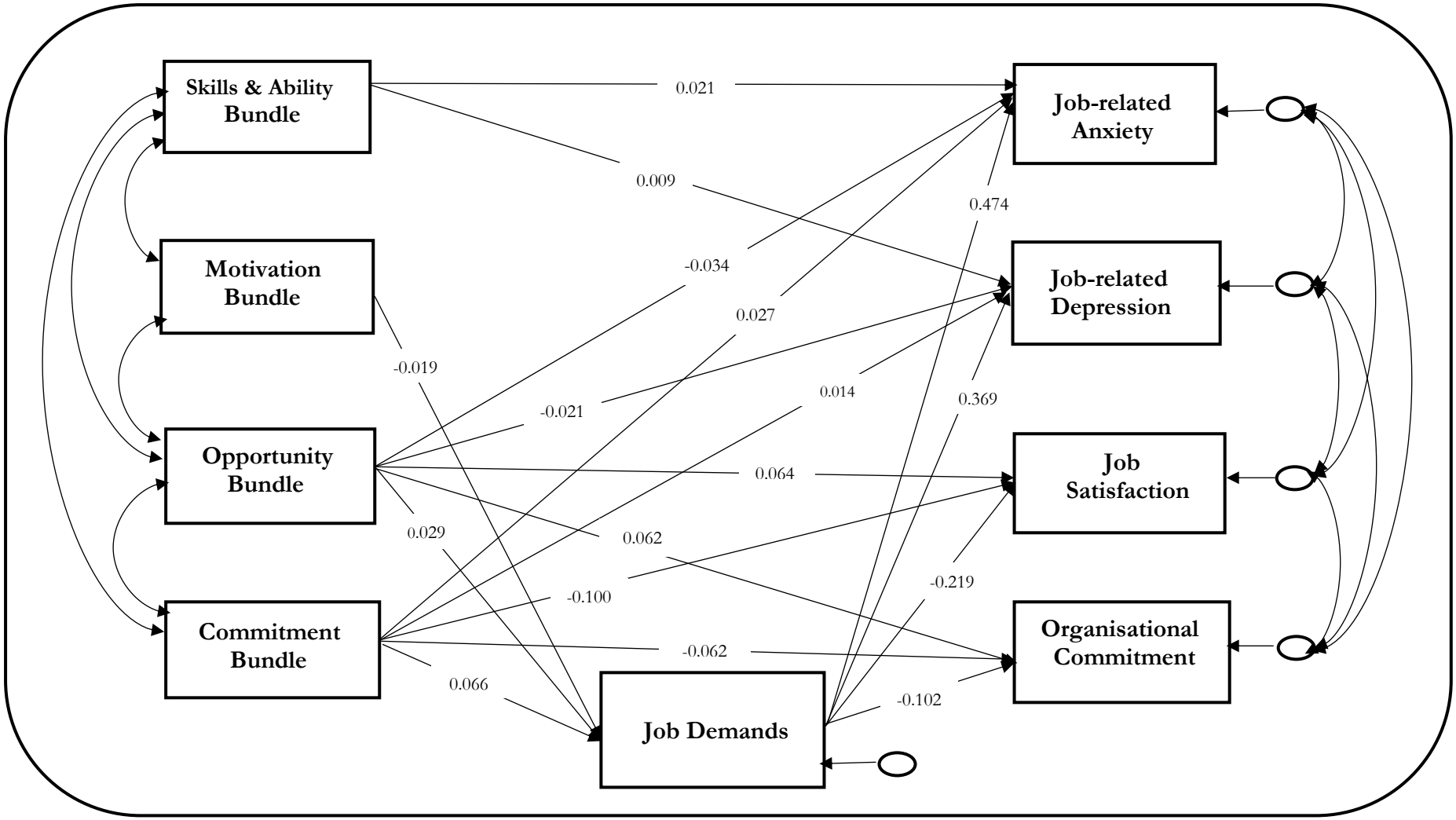
6.4.3 Model Re-Evaluation for Partially Mediated Model

Results in Table 6.1 and Table 6.2 revealed a number of insignificant paths. The direct paths from motivation bundle to job-related anxiety, motivation bundle to job-related depression, motivation bundle to job satisfaction, motivation to organisational commitment, skills and ability bundle to job satisfaction, skills and ability bundle to organisational commitment, skills and ability-enhancing bundle to perceived job demands, gender to job-related anxiety, marital status to job-related anxiety and job status to job satisfaction were insignificant, and were deleted. Similarly, the paths from skills and ability bundle to job-related anxiety via perceived job demands, skills and ability bundle to job-related depression via perceived job demands, skills and ability bundle to job satisfaction via perceived job demands and skills and ability bundle to organisational commitment via perceived job demands were insignificant, and were deleted.

The model was re-run using the maximum likelihood estimation method. The revised model achieved a good fit. Although the chi-square value is statistically significant χ^2 (10) = 15.785, p = 0.106, RMSEA = 0.006 is well within the value of (< 0.08) and both CFI = 1.000 and TLI = 0.999 are above their recommended cut-off of 0.095. Thus, the minimum requirements of model fit criteria are attained for the revised model and the overall model attained a good fit (see Figure 6.2). In this model, control variables and HP-HR bundles explain 0.17 percent of the variance in perceived job demands (R^2 = 0.017). Control variables, HP-HR bundles and job demands explain 23.2 percent of the variance in job-related anxiety (R^2 = 0.232), 14.7 percent of the variance in job-related depression (R^2 = 0.147), 6.4 percent of the variance in job satisfaction (R^2 = 0.064) and 2.9 percent of the variance in organisational commitment (R^2 = 0.029).

The results of the revised model show that perceived job demands, skills and ability-enhancing and commitment-enhancing practices are significant positive predictors of both job-related anxiety and job-related depression. Whereas, opportunity-enhancing significantly reduce job-related anxiety and depression. Perceived job demands and commitment-enhancing practices significantly reduce job satisfaction, and opportunity-enhancing practices significantly improve job satisfaction. Similarly, perceived job demands and commitment-enhancing practices significantly reduce organisational commitment, and opportunity-enhancing practices significantly improve organisational commitment. Both opportunity-enhancing and commitment-enhancing practices are significant positive predictors of perceived job demands, and motivation-enhancing practices have a significant negative effect on perceived job demands. Perceived job demands remain a significant positive mediator between both opportunity-enhancing and commitment-enhancing

Figure 6.2: Revised Partial Mediation Path Model at the Workplace Level



For simplicity control vraibles are omitted from the diagram
All presented paths are standardised coefficeints and significant ($p < 0.001$)

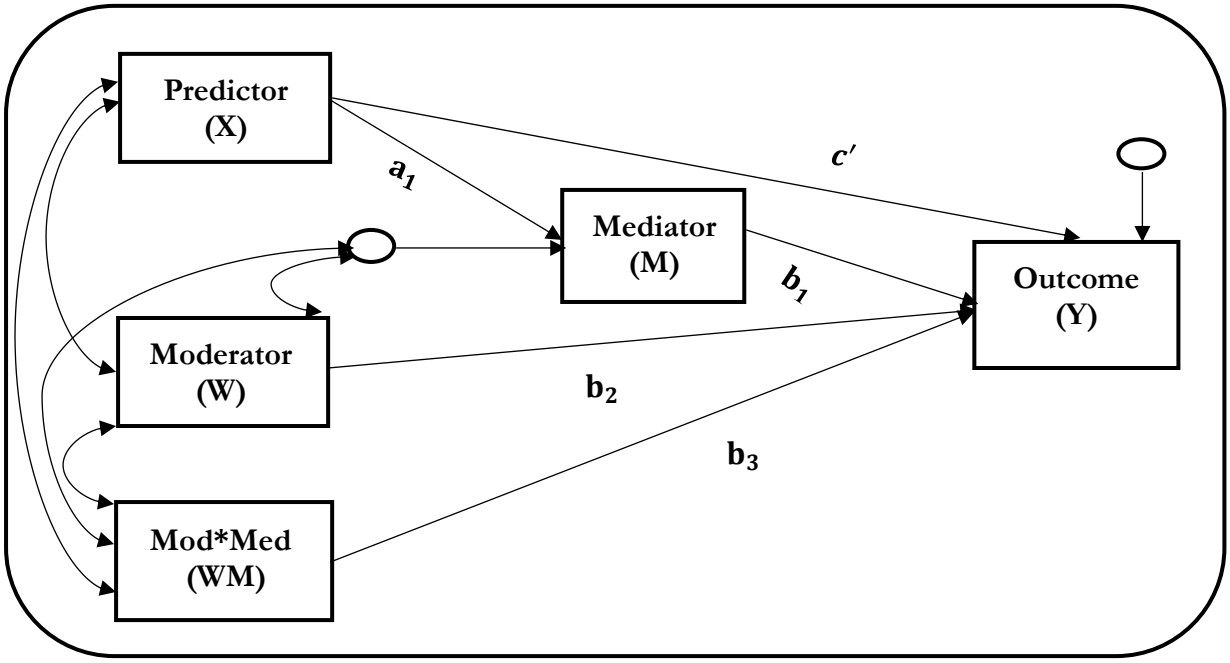
practices and well-being, and a significant negative mediator between motivation-enhancing practices and well-being.

SECTION 4: Job Resources, Job Demands and Employee Well-being

6.5 Assessment of Moderated mediation (Conditional Indirect) Paths: An Overview

This section addresses research question 4 and elaborates whether, and if so how, the relationship between perceived job demands and employee well-being in a high performance work environment vary systematically as a function of job resources (i.e. perceived job control, managerial support and family support). Hypothesis 4 addresses research question 4 and posits that job resources (i.e. perceived job control, managerial support and family support) will buffer the negative effects of perceived job demands on employee well-being. It is argued that the indirect relationship between HP-HR practices and well-being is therefore conditional on perceptions of availability of job resources. Preacher, Rucker and Hayes (2007, p. 186) define 'conditional indirect effects as the magnitude of an indirect effect at a particular value of a moderator (or at particular values of more than one moderator)'. Preacher et al.'s (2007) model 3 is used to explain how the magnitude of the indirect effect in our data varies as a function of the three moderators. Figure 6.3 explains this relationship in a path diagram mathematically.

Figure 6.3: Path Diagram of Moderated Mediation Model 3 – Preacher et al. (2007)



For simplicity the correlated measurement errors are omitted from the diagram

To assess conditional indirect effects (also referred to as moderated mediation), we examined four conditions: 1) significant effects from HP-HR bundles on perceived well-being; 2) significant effects of perceived job demands on well-being; 3) significant interaction between perceived job demands and job resources in predicting well-being; 4) different conditional indirect effects of the HP-HR bundles on well-being, via perceived job demands, across low and high levels of each of the job resources. The last condition is the essence of moderated mediation, and establishes whether the strength of the indirect effect, via perceived job demands, differs across different levels of job resources (Preacher et al., 2007). Moderated mediation is established when the conditional indirect effect of the HP-HR bundles on well-being, via job demands, differs in strength across low, moderate and high levels of job control, managerial support and family support respectively.

The interaction terms were formed between mediator and moderator variables. The moderating effects of job control (JC), managerial support (MS) and family support (FS) were examined individually on the paths between perceived job demands (JD) and well-being (JD → ANX, JD → DEP, JD → JSATS and JD → ORGCMIT). To avoid multicolinearity all existing variables (JD, JC, MS and FS) were first mean centered. An interaction term was created by multiplying the mean centered variables. Table 6.3 presents how interaction terms were formed in the current study.

Table 6.3: Interaction Terms

Interaction Variable	Existing Variables (Mean Centered)
JDJC	JD*JC
JDMS	JD*MS
JDFS	JD*FS

The resulting product terms were then individually regressed onto the outcome variable for different paths between each HP-HR bundle and well-being, examined through four tests each. Controls variables were entered in all the analyses. Conditional indirect effects were estimated with bootstrapping confidence intervals based on 5000 bootstrapped samples. The following sections present the results of the moderated mediation hypotheses.

6.5.1 Moderating Effect of Perceived Job Control on the relationship between Perceived Job Demands and Employee Well-being

To examine the moderational effect of job control on the relationship between the HP-HR bundles and employee well-being via job demands, we tested four models (T14a – T14d; see Figures 6.4a – 6.4d). In each one of the four models, the interaction of job demands and job control was the moderator variable, and was created as explained in Table 6.3. Perceived job-related anxiety, job-related depression, job satisfaction and organisational commitment were taken as outcome variables separately in the four models, and were modelled as observed variables. The four HP-HR bundles, control variables, job control and the interaction term were the exogenous observed variables in each of the four models. Table 6.4 presents the results of the moderational effect of job control on the mediation between HP-HR bundles and job-related anxiety, job-related depression, job satisfaction and organisational commitment via perceived job demands. Table 6.5 presents the moderated mediation effects at different levels of job control. It can be seen from Table 6.4 that the moderated mediation models have a good fit to the data for each model.

Results presented in the second column of Table 6.4 demonstrate that condition 1 for moderated mediation is supported for all HP-HR bundles, except for the motivation-enhancing bundle. Condition 2 is also satisfied because job demands are significant in predicting anxiety ($\beta = 0.463$, $p < 0.001$). Additionally, job control has a significant negative relationship with anxiety ($\beta = -0.126$, $p < 0.001$). Condition 3 is satisfied as the interaction effect has a statistically significant negative effect on anxiety ($\beta = -0.044$, $p < 0.001$), indicating that job control moderates the relationship between perceived job demands and job-related anxiety (see Figure 6.5, Panel A). In this figure, with increasing perceptions of job demands, we see that at high levels of job control, job-related anxiety is much lower (less steep), while at medium and lower levels of job control, job-related anxiety is significantly greater (slope of perceived job demand predicting job-related anxiety is steeper). Thus, model T14a is supported[11]. Results based on the first 3 conditions show that job control moderates the mediation for the HP-HR bundles and job-related anxiety. The conditional indirect effect is insignificant for skills and ability bundle (95% CI: -0.009, 0.006), but significant

[11] A revised model incorporating the effects of perceived job demands on anxiety moderated by job control, excluding the insignificant paths in the original model, was also tested. The results of the revised model revealed no significant improvement in the model fit: $\Delta \chi^2$ (5) between the original model and the revised model was 5.981, ΔCFI was 0.000, ΔTLI was 0.006 and ΔRMSEA was 0.003. Therefore, the original model was deemed to fit the data adequately.

Figure 6.4a: Moderated Mediation of Perceived Job Control between the HP-HR Bundles and Job-related Anxiety via Job Demands

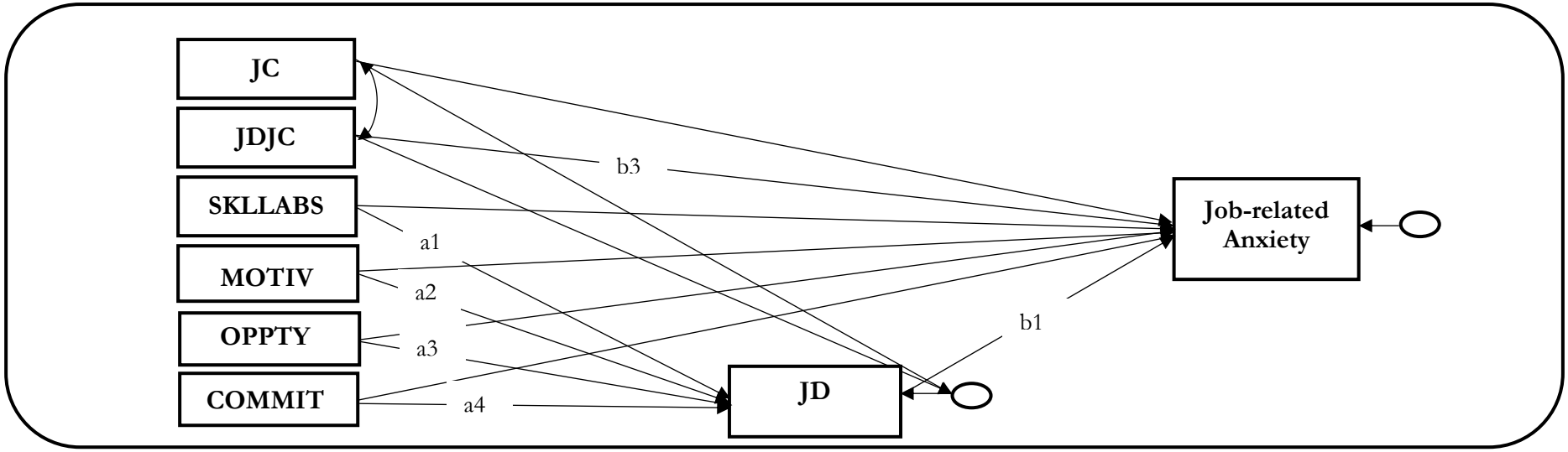
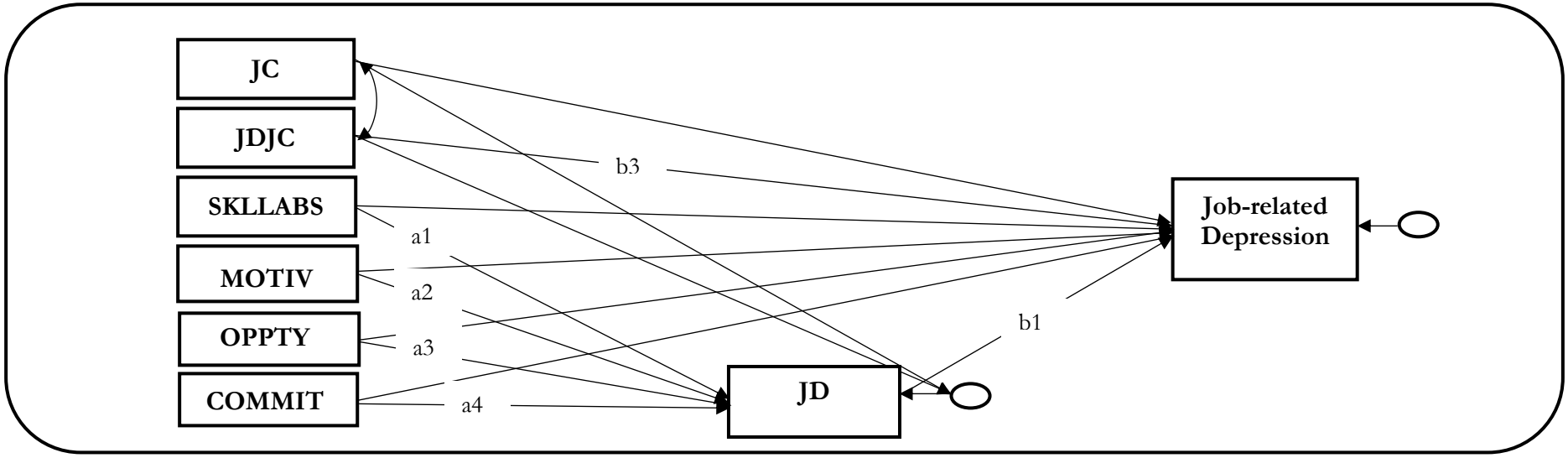


Figure 6.4b: Moderated Mediation of Perceived Job Control between the HP-HR Bundles and Job-related Depression via Job Demands



For simplification control variables and correlations between exogenous variables are omitted from the diagrams

Figure 6.4c: Moderated Mediation of Perceived Job Control between the HP-HR Bundles and Job Satisfaction via Job Demands

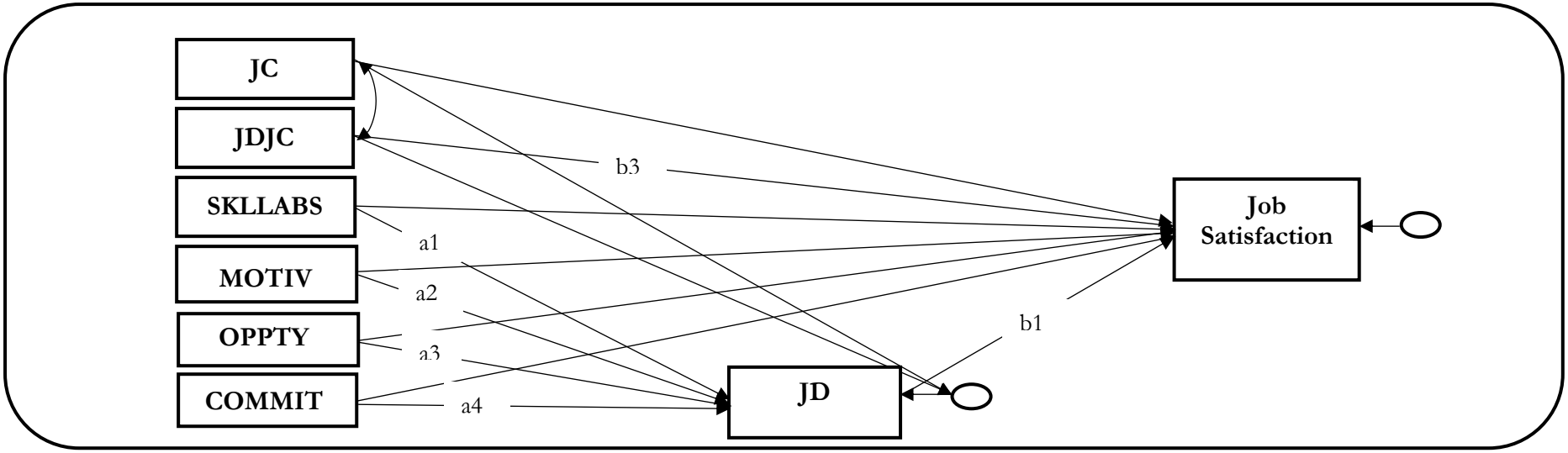
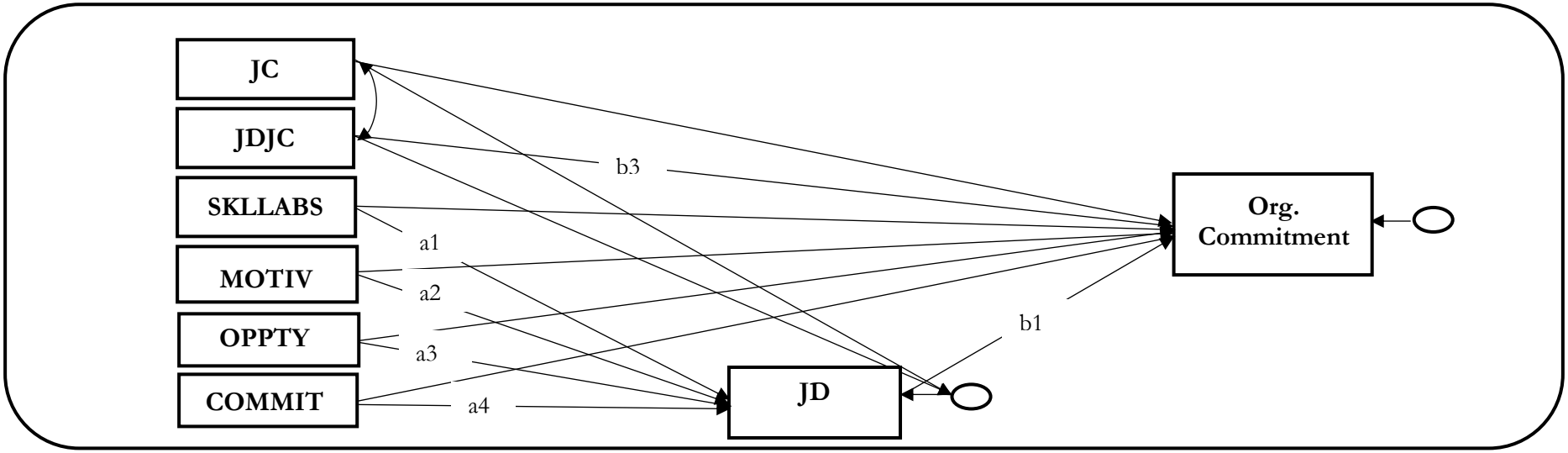


Figure 6.4d: Moderated Mediation of Perceived Job Control between the HP-HR Bundles and Org. Commitment via Job Demands



For simplification control variables and correlations between exogenous variables are omitted from the diagrams

Table 6.4: Conditional Indirect effects of Perceived Job Control on Well-being

Predictors	**Outcomes**			
	Anxiety	**Depression**	**Job Satisfaction**	**Org. Commitment**
Job demands(JD)	0.463(78.520***)	0.350(54.259***)	-0.175(-27.028***)	-0.076(-10.426***)
Job control (JC)	-0.126(-19.171***)	-0.213(-31.867***)	0.484(83.862***)	0.325(48.126***)
Job demands * job control (JDJC)	-0.044(-6.663***)	-0.064(-9.433***)	0.042(6.382***)	0.038(5.359***)
HP-HR Bundle				
skills & ability	0.020(2.664**)	0.009(1.196)	0.009(1.228)	-0.002(-0.181)
motivation	0.001(0.166)	-0.007(-1.030)	-0.017(-2.553*)	-0.010(-1.403)
opportunity	-0.021(-2.834**)	-0.027(-3.409**)	0.052(6.921***)	0.055(6.740***)
commitment	0.052(7.139***)	0.019(2.571*)	-0.091(-12.663***)	-0.052(-6.605***)
Controls				
Gender	0.002(0.344)	0.063(9.261***)	-0.061(-9.353***)	-0.094(-13.214***)
Age	-0.032(-4.683***)	-0.059(-8.385***)	0.017(2.463**)	0.024(3.174**)
Marital Status	0.012(1.813)	-0.012(-1.669)	0.008(1.107)	0.019(2.550*)
Job Status	-0.027(-4.081***)	-0.045(-6.572***)	0.013(1.958)	0.035(4.945***)
Dependent Children	-0.012(-1.870)	-0.021(-2.987**)	0.012(1.787)	0.026(3.608***)
Predictors of Job Demands				
Skills & ability	-0.001(-0.156)	-0.002(-0.241)	-0.003(-0.292)	-0.002(-0.279)
Motivation	-0.018(-2.275*)	-0.018(-2.332*)	-0.018(-2.263*)	-0.018(-2.246*)
Opportunity	0.031(3.565***)	0.030(3.527***)	0.030(3.497***)	0.030(3.455**)
Commitment	0.063(7.555***)	0.063(7.552***)	0.063(7.607***)	0.063(7.605***)
Controls				
Gender	0.030(4.029***)	0.030(3.971***)	0.030(3.953***)	0.030(3.942***)
Age	0.018(2.306*)	0.020(2.507*)	0.020(2.500**)	0.020(2.538*)
Marital status	0.043(5.468***)	0.042(5.412***)	0.042(5.362***)	0.042(5.346***)
Job status	-0.059(-7.956***)	-0.059(-7.960***)	-0.060(-7.983***)	-0.059(-7.947***)
Dependent children	0.049(6.502***)	0.048(6.401***)	0.048(6.410***)	0.048(6.406***)
Model Fit				
χ^2 (df)	155.737***(18)	155.274***(18)	156.464***(18)	156.082***(18)
RMSEA	0.021	0.020	0.021	0.021
CFI	0.975	0.967	0.978	0.963
TLI	0.968	0.958	0.972	0.960
Result				
T14	*Perceived job control will buffer the negative effects of job demands on employee well-being*			
a	Supported			
b		Supported		
c			Supported	
d				Supported

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

T = Tests

a, b, c & d refer to the models examined within a test.

Standardised coefficients are reported; t-values in parentheses

Conditional indirect effects are produced at job control level = -1

Table 6.5: Significance of Conditional Indirect Effects of Perceived Job Control

Outcome		Predictor				
	JC Level		Skills & Ability Bundle	Motivation Bundle	Opportunity Bundle	Commitment Bundle
Anxiety		b1+b3*JC	a1(b1+b3*JC)	a1(b1+b3*JC)	a1(b1+b3*JC)	a1(b1+b3*JC)
	Low	0.032	-0.000	-0.000	0.000	0.002
	Moderate	-0.101	0.002	0.002	-0.003	-0.006
	High	-0.232	0.000	0.004	-0.007	-0.014
Depression						
	Low	-0.278	0.000	0.005	-0.009	-0.018
	Moderate	-0.470	0.000	0.008	-0.014	-0.030
	High	-0.661	0.001	0.011	-0.020	-0.042
Job Satisfaction						
	Low	0.236	-0.000	-0.004	0.007	0.015
	Moderate	0.363	-0.001	-0.007	0.011	0.023
	High	0.489	-0.001	-0.009	0.015	0.031
Org. Commitment						
	Low	0.297	-0.000	-0.005	0.009	0.019
	Moderate	0.410	-0.000	-0.008	0.012	0.026
	High	0.525	-0.001	-0.010	0.016	0.033

Low = Mean -1SD; Moderate = Mean; High = Mean + 1SD
Mean Job Control = 12.77, SD = 3.025
b1 = JD → Outcome (anxiety, depression, job satisfaction and org. commitment)
b3 = JDJC → Outcome (anxiety, depression, job satisfaction and org. commitment)
a1 = path from predictor (skills & ability, motivation, opportunity and commitment bundles) → Job Demands
Estimates of conditional indirect effects are based on standardised co-efficients

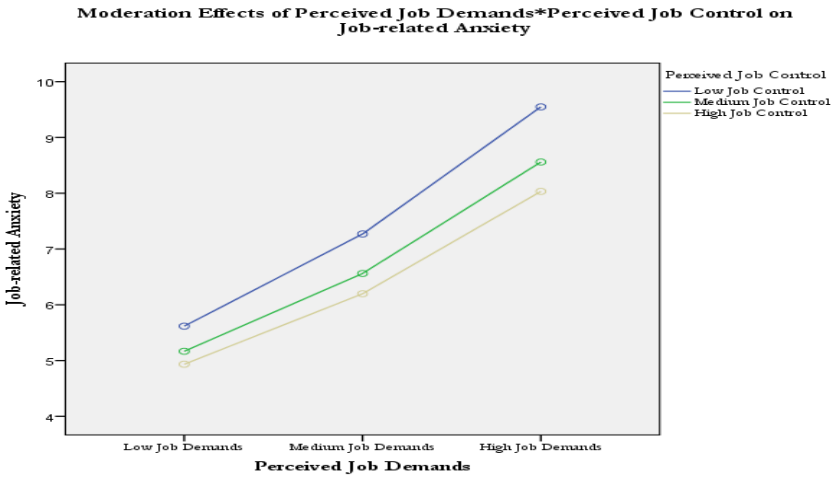
for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of - 0.014, -0.002; 0.006, 0.018 and 0.008, 0.122, respectively. To further validate findings of moderated mediation relationship, we operationalised job control at three levels: mean and 1 SD below and above the mean (Preacher et al., 2007).

Results in Table 6.5 suggest lack of moderated mediation for skills and ability bundle, as the conditional indirect effects from this bundle do not change at different levels of job control. Moderated mediation is verified for the remaining HP-HR bundles, as the conditional indirect effects of these HP-HR bundles on job-related anxiety, via job demands, are stronger in the moderate and high job control conditions.

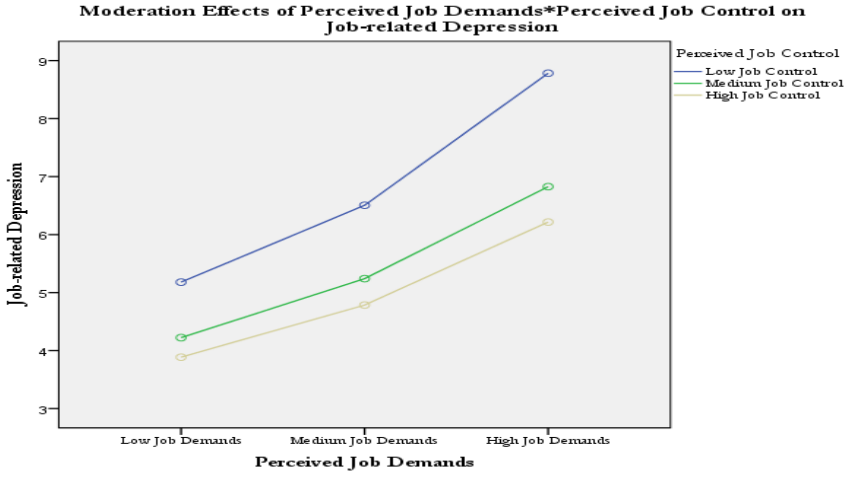
Results presented in the third column of Table 6.4 show that condition 1 is supported for the opportunity and commitment-enhancing bundle. Perceived job demands is positively related to depression ($\beta = 0.350$, $p < 0.001$), job control is negatively related to depression ($\beta = -0.213$, $p < 0.001$) and the interaction term of job control and job demands is significant in negatively predicting job-related depression ($\beta = -0.064$, $p < 0.001$). Therefore, both condition 2 and 3 are satisfied, showing that job control moderates the relationship between perceived job demands and job-related depression (see Figure 6.5, Panel B). As predicted, the positive relationship between perceived job demands and job-related depression is significantly lower at higher levels of job control compared to medium and lower levels of job control. Thus, model T14b is supported[12]. The conditional indirect effect is insignificant for skills and ability bundle (95% CI: -0.007, 0.005), but significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of -0.011, -0.002; 0.005, 0.014 and 0.006, 0.010, respectively. Results in Table 6.5 validate moderated mediation relationship and establish condition 4 for the HP-HR bundles other than the skills and ability bundle. The conditional indirect effects are stronger in the moderate and high job control conditions for motivation-enhancing, opportunity-enhancing and commitment- enhancing bundles.

[12] The results of the revised model incorporating the effects of perceived job demands on depression moderated by job control, excluding the insignificant paths in the original model, revealed no significant improvement in the model fit: $\Delta \chi^2$ (4) between the original model and the revised model was 13.542, ΔCFI was 0.005, ΔTLI was 0.008 and ΔRMSEA was 0.001. Therefore, the original model was retained.

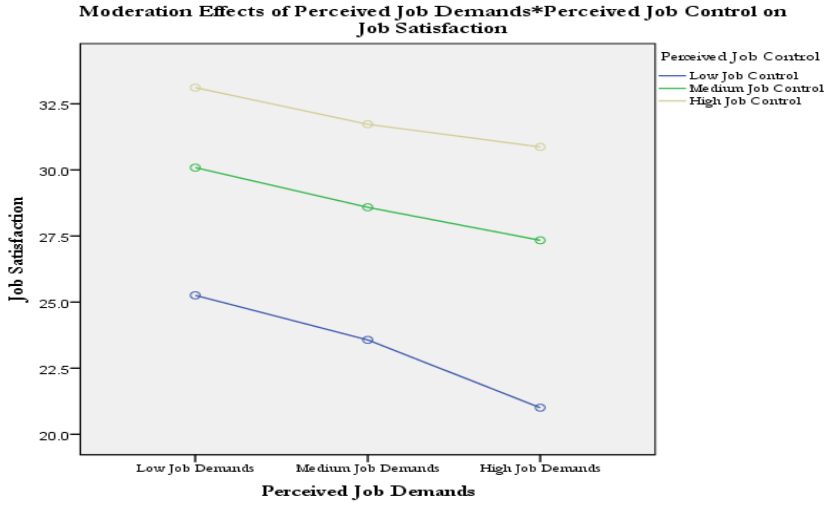
Figure 6.5: Moderation Effects of Perceived Job Control on Employee Well-being



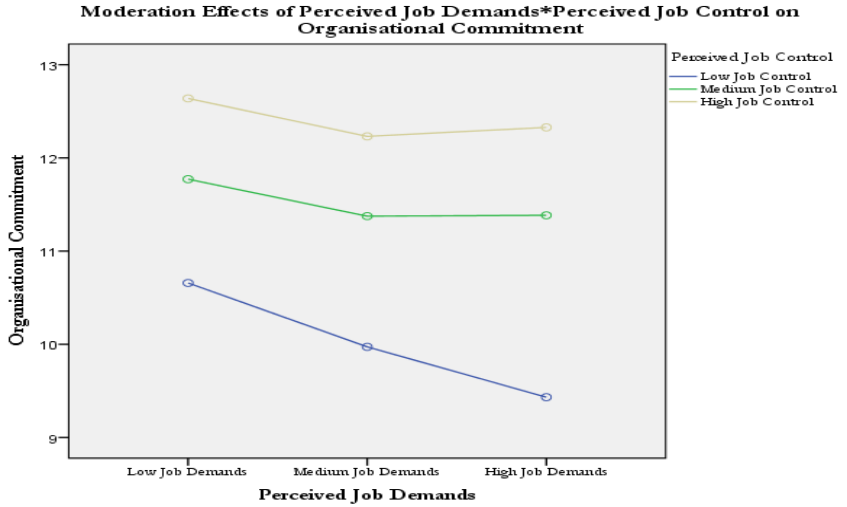
Panel A



Panel B



Panel C



Panel D

Results in the fourth column of Table 6.4 show that condition 1 is satisfied partially, as only motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles have significant direct effects on job satisfaction. Condition 2 and 3 are satisfied, as job demands are negatively and significantly related to job satisfaction (β = -0.175, p < 0.001), and job control is positively and significantly related to job satisfaction (β = 0.484, p < 0.001). The interaction effect shows a positive and statistically significant relationship with job satisfaction (β = 0.042, p < 0.001), signifying that job control moderates the relationship between perceived job demands and job satisfaction (see Figure 6.5, Panel C, which illustrates that at high levels of job control, the negative relationship between perceived job demands and job satisfaction becomes significantly flatter). Thus, model T14c is supported[13]. The conditional indirect effect is insignificant for skills and ability bundle (95% CI: -0.005, 0.008), but significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.02, 0.012; -0.015, -0.005 and -0.011, -0.007 respectively. The moderated mediation relationship is further validated, as the conditional indirect effects are stronger in the moderate and high job control conditions for the HP-HR bundles other than the skills and ability bundle (Table 6.5).

Results in the fifth column of Table 6.4 demonstrate that job demands are negatively and significantly related to organisational commitment (β = -0.076, p < 0.001), and job control positively significantly predicts organisational commitment (β = 0.325, p < 0.001). The interaction for job demands and job control is significant in predicting organisational commitment (β = 0.038, p < 0.001), indicating that job control moderates the relationship between perceived job demands and organisational commitment (Figure 6.5, Panel D illustrates that the negative relationship between perceived job demands and organisational commitment is significantly less negative (almost flat) at high level of job control). Thus, model T14d is supported[14]. The conditional indirect effect is insignificant for skills and ability bundle (95% CI: -0.001, 0.001), but significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.001, 0.003; -0.003, -0.001 and -0.002, -0.001, respectively. The significance of the

[13] The results of the revised model incorporating the effects of perceived job demands on job satisfaction moderated by job control, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta \chi^2$ (1) between the original model and the revised model was 10.084, ΔCFI was 0.002, ΔTLI was 0.006 and ΔRMSEA was 0.002. Therefore, the original model was retained.

[14] The results of the revised model incorporating the effects of perceived job demands on organisational commitment moderated by job control, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta \chi^2$ (2) between the original model and the revised model was 16.853, ΔCFI was 0.005, ΔTLI was 0.009 and ΔRMSEA was 0.001. Therefore, the original model was deemed to fit the data appropriately.

moderated mediation is established by differences in the conditional indirect effects at high, moderate and low levels of job control for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles (Table 6.5).

6.5.2 Moderating Effect of Perceived Managerial Support on the relationship between Perceived Job Demands and Employee Well-being

The moderational effect of perceived managerial support on the relationship between the HP-HR bundles and well-being via perceived job demands was examined using four models (T15a – T15d; see Figures 6.6a – 6.6d). In each of the four models the moderator variable was the interaction of job demands and managerial support, and was created as explained in Table 6.3. Perceived job-related anxiety, job-related depression, job satisfaction and organisational commitment were taken as outcome variables individually in the four models, and were modelled as observed variables. The four HP- HR bundles, control variables, managerial support and the interaction term were the exogenous observed variables in all of the four models. Table 6.6 presents the results of moderational effect of perceived managerial support on the mediation between HP-HR bundles and job-related anxiety, job-related depression, job satisfaction and organisational commitment via perceived job demands. Table 6.7 presents the moderated mediation effects at different levels of managerial support. Overall fit statistics of the four moderated mediation models presented in Table 6.6 suggest moderate fit to the data for the respective models.

Second column of Table 6.6 demonstrates that skills and ability and commitment-enhancing bundles are significantly related to job-related anxiety. Thus, establishing condition 1 partially. Condition 2 is satisfied, as perceived job demands positively and significantly predict job-related anxiety ($\beta = 0.408, p < 0.001$). Managerial support is negatively associated with job-related anxiety ($\beta = -0.274, p < 0.001$). Condition 3 is established as job demands significantly interacted with managerial support in predicting job-related anxiety ($\beta = -0.031, p < 0.001$), indicating that managerial support moderates the relationship between perceived job demands and job-related anxiety (see Figure 6.7, Panel A). As predicted, the positive relationship between perceived job demands and job-related anxiety is significantly weaker when organisations display high managerial support compared to medium and low managerial support. Thus, model T15a is supported[15].

[15] The results of the revised model incorporating the effects of perceived job demands on anxiety moderated by managerial support, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta \chi^2$ (4) between the original model and the revised model was 4.893, ΔCFI was 0.000, ΔTLI was 0.007 and ΔRMSEA was 0.004. Therefore, the original model was retained.

Figure 6.6a: Moderated Mediation of Perceived Managerial Support between the HP-HR Bundles and Job-related Anxiety via Job Demands

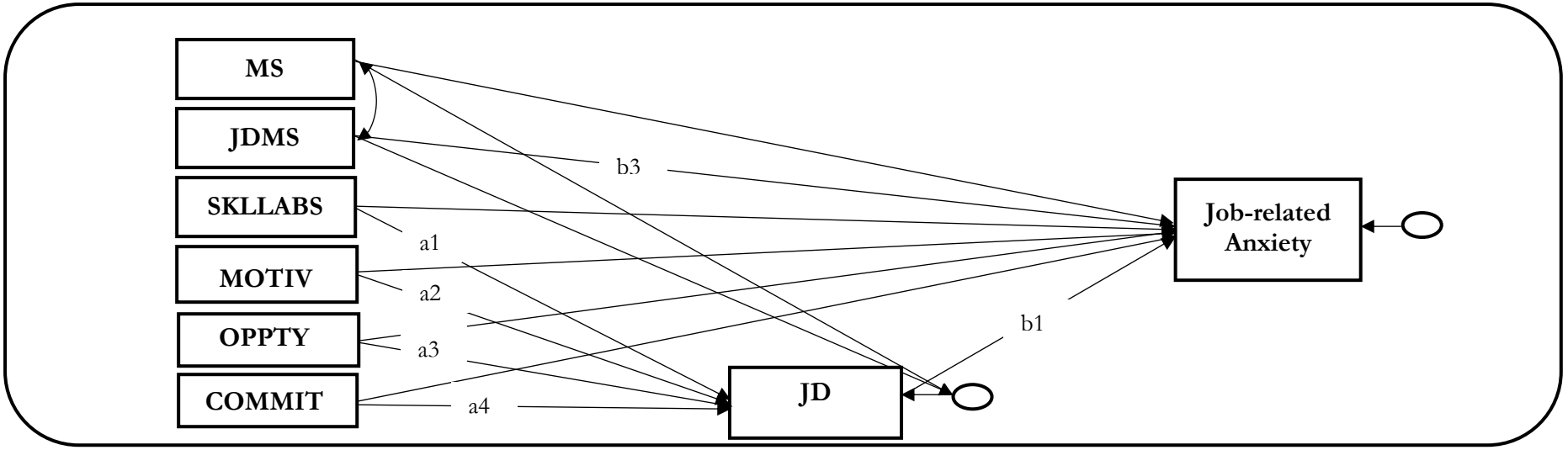
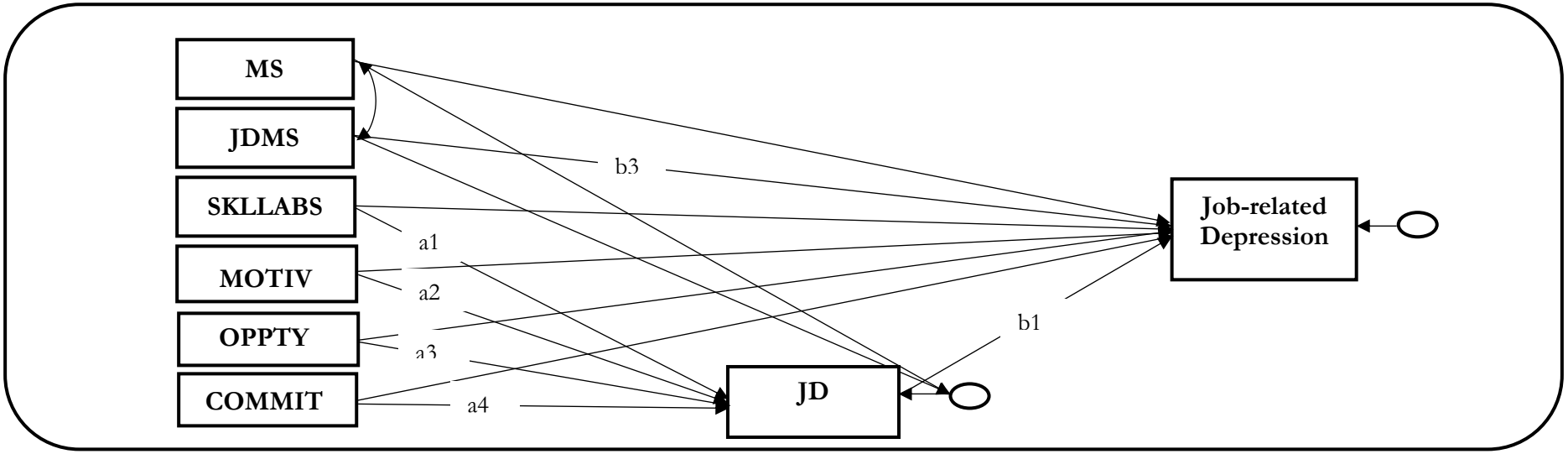


Figure 6.6b: Moderated Mediation of Perceived Managerial Support between the HP-HR Bundles and Job-related Depression via Job Demands



For simplification control variables and correlations between exogenous variables are omitted from the diagrams

Figure 6.6c: Moderated Mediation of Perceived Managerial Support between the HP-HR Bundles and Job Satisfaction via Job Demands

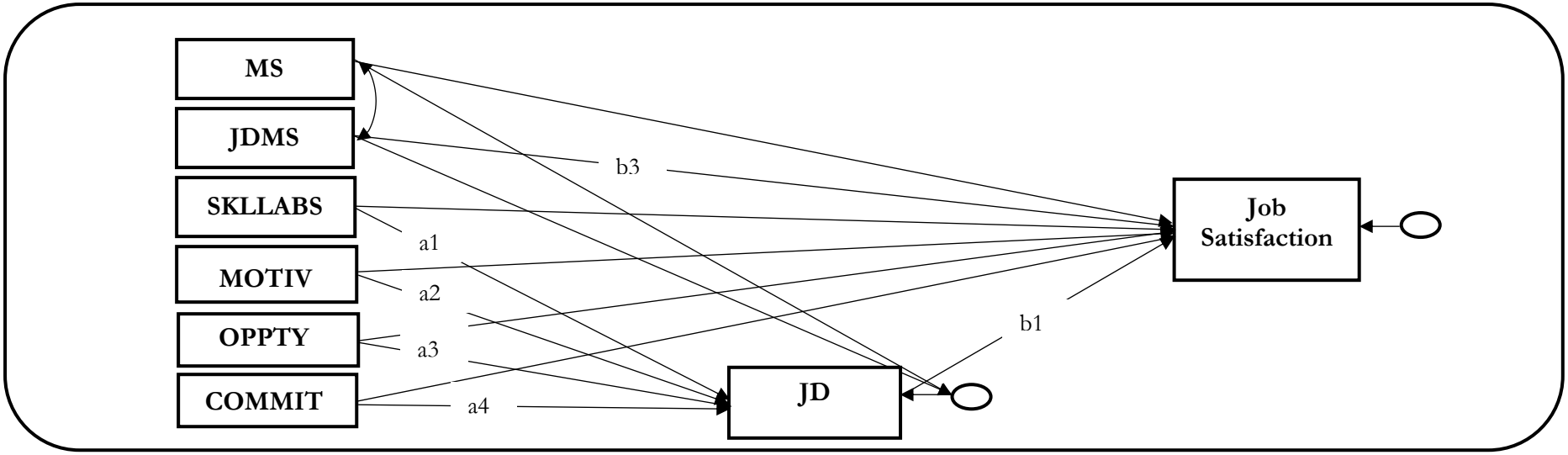
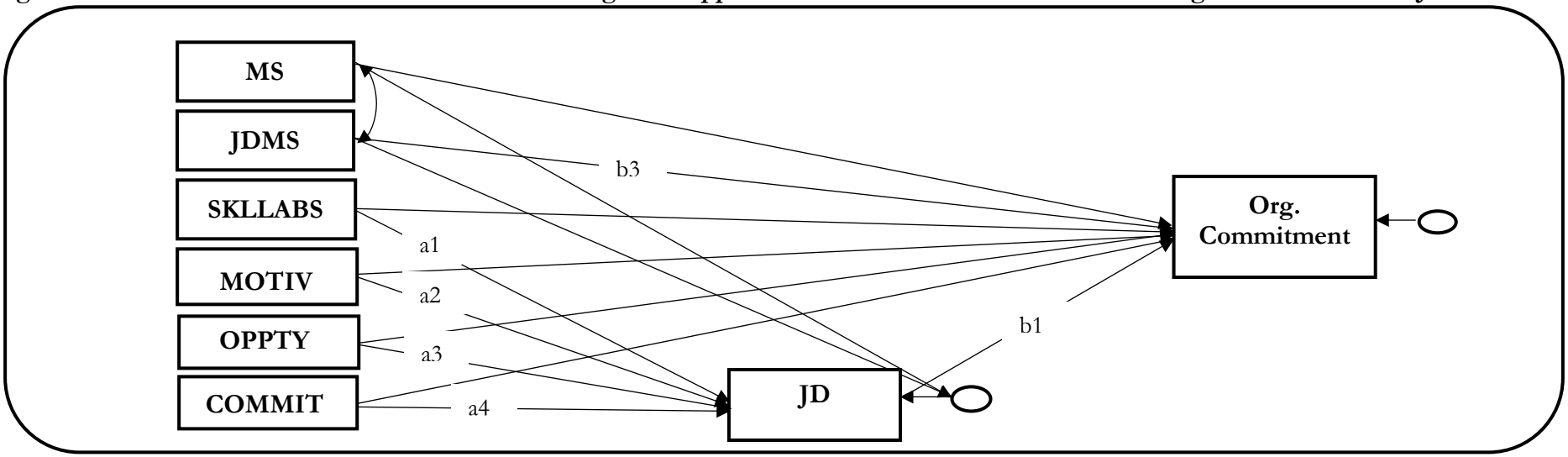


Figure 6.6d: Moderated Mediation of Perceived Managerial Support between the HP-HR Bundles and Org. Commitment via Job Demands



For simplification control variables and correlations between exogenous variables are omitted from the diagrams

Table 6.6: Conditional Indirect effects of Perceived Managerial Support on Well-being

Predictors	**Outcomes**			
	Anxiety	**Depression**	**Job Satisfaction**	**Org. Commitment**
Job demands(JD)	0.408(66.291***)	0.265(41.172***)	-0.047(-8.289***)	-0.045(7.028***)
Managerial support (MS)	-0.274(-40.098***)	-0.424(-67.077***)	0.715(173.666***)	0.618(117.015***)
Job demands * managerial support (JDMS)	-0.031(-4.575***)	-0.067(-10.040***)	0.004(0.777)	0.002(0.361)
HP-HR Bundles				
Skills & ability	0.021(2.766**)	0.010(1.416)	0.004(0.611)	-0.002(-0.240)
Motivation	0.006(0.924)	0.000(0.040)	-0.027(-4.696***)	-0.020(-3.150**)
Opportunity	-0.012(-1.611)	-0.012(-1.702)	0.034(5.458***)	0.036(5.094***)
Commitment	0.039(5.532***)	-0.001(-0.100)	-0.053(-8.641***)	-0.019(-2.835**)
Controls				
Gender	-0.017(-2.642**)	0.032(5.018***)	-0.009(-1.681)	-0.049(-7.797***)
Age	-0.038(-5.792***)	-0.070(-10.682***)	0.043(7.560***)	0.044(6.797***)
Marital Status	0.009(1.370)	-0.016(-2.435*)	0.027(4.673***)	0.031(4.748***)
Job status	-0.012(-1.942)	-0.021(-3.349**)	-0.030(-5.399***)	-0.001(-0.149)
Dependent children	-0.09(-1.404)	-0.016(-2.478*)	0.005(0.972)	0.019(3.038**)
Predictors of Job Demands				
Skills & ability	-0.002(-0.272)	-0.003(-0.315)	-0.003(-0.364)	-0.003(-0.362)
Motivation	-0.012(-1.578)	-0.013(-1.638)	-0.012(-1.570)	-0.012(-1.541)
Opportunity	0.038(4.541***)	0.038(4.463***)	0.038(4.469***)	0.038(4.481***)
Commitment	0.047(5.777***)	0.047(5.749***)	0.047(5.687***)	0.047(5.691***)
Controls				
Gender	0.011(1.543)	0.010(1.377)	0.010(1.336)	0.010(1.333)
Age	0.011(1.422)	0.012(1.567)	0.012(1.558)	0.012(1.578)
Marital status	0.040(5.209***)	0.040(5.198***)	0.039(5.063***)	0.039(5.048***)
Job status	-0.044(-5.925***)	-0.043(-5.881***)	-0.043(-5.843***)	-0.043(-5.828***)
Dependent children	0.049(6.683***)	0.049(6.593***)	0.049(6.623***)	0.049(6.667***)
Model Fit				
χ^2 (df)	436.646***(18)	453.278***(18)	460.637***(18)	465.169***(18)
RMSEA	0.036	0.037	0.037	0.037
CFI	0.960	0.961	0.966	0.966
TLI	0.940	0.939	0.961	0.946
Result				
T15 *Perceived managerial support will buffer the negative effects of job demands on employee well-being*				
a	Supported			
b		Supported		
c			Rejected (NS)	
d				Rejected (NS)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Standardised coefficients are reported; t-values in parentheses

T = Tests

a, b, c & d refer to the models examined within a test.

NS = Not significant

Conditional indirect effects are produced at managerial support level = -1

Table 6.7: Significance of Conditional Indirect Effects of Perceived Managerial Support

Outcome		Predictor				
	MS Level		Skills & Ability Bundle	Motivation Bundle	Opportunity Bundle	Commitment Bundle
		b1+b3*MS	a1(b1+b3*MS)	a1(b1+b3*MS)	a1(b1+b3*MS)	a1(b1+b3*MS)
Anxiety	Low	-0.585	0.001	0.007	-0.022	-0.028
	Moderate	-0.935	0.001	0.011	-0.036	-0.043
	High	-1.298	0.002	0.017	-0.050	-0.061
Depression						
	Low	-1.879	0.005	0.024	-0.072	-0.088
	Moderate	-2.636	0.007	0.035	-0.100	-0.124
	High	-3.42	0.010	0.044	-0.130	-0.161
Job Satisfaction						
	Low	0.081	-0.000	-0.000	0.003	0.003
	Moderate	0.126	-0.000	-0.001	0.004	0.005
	High	0.173	-0.000	-0.001	0.006	0.008
Org. Commitment						
	Low	0.109	-0.000	-0.001	0.004	0.005
	Moderate	0.132	-0.000	-0.001	0.005	0.006
	High	0.155	- 0.000	-0.001	0.005	0.006

Low = Mean – 1SD; Moderate = Mean; High = Mean + 1SD
Mean Managerial Support = 43.30 SD = 11.701
b1 = JD → Outcome (anxiety, depression, job satisfaction and org. commitment)
b3 = JDMS → Outcome (anxiety, depression, job satisfaction and org. commitment)
a1 = path from predictor (skills & ability, motivation, opportunity and commitment bundles) → Job Demands
Estimates of conditional indirect effects are based on standardised co-efficients

The conditional indirect effects are insignificant for skills and ability-enhancing and motivation-enhancing bundle (95% CI: -0.007, 0.005 and -0.010, 0.000, respectively), but significant for opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.008, 0.018 and 0.005, 0.008, respectively. To satisfy condition 4, the significance of the moderated mediation is established by differences in the mediation effects at high, moderate and low levels of managerial support. Results in Table 6.7 highlight that the conditional indirect effects via job demands are higher in moderate and high levels of managerial support for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles.

Third column of Table 6.6 highlights that none of the HP-HR bundles have a significant direct relationship with job-related depression. Nevertheless, job demands are positively and significantly related to job-related depression (β = 0.265, $p < 0.001$), supporting condition 2. Managerial support is inversely associated to job-related depression (β = -0.424, $p < 0.001$). Condition 3 is satisfied, as the path from interaction of job demands and managerial support to job-related depression is negative and statistically significant (β = -0.067, $p < 0.001$), indicating that perceived managerial support moderates the relationship between perceived job demands and job-related depression (see Figure 6.7, Panel B). The Figure illustrates that the positive relationship between perceived job demands and job-related depression is significantly less positive when organisations display high managerial support compared to medium and low managerial support. Thus, model T15b is supported[16]. The conditional indirect effects are insignificant for skills and ability-enhancing and motivation-enhancing bundle (95% CI: -0.005, 0.003 and -0.007, 0.000, respectively), but significant for opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.005, 0.012 and 0.003, 0.006, respectively. The moderated mediation relationship is further validated, as the conditional indirect effects of job demands on job-related depression are stronger in the moderate and high managerial support conditions (Table 6.7).

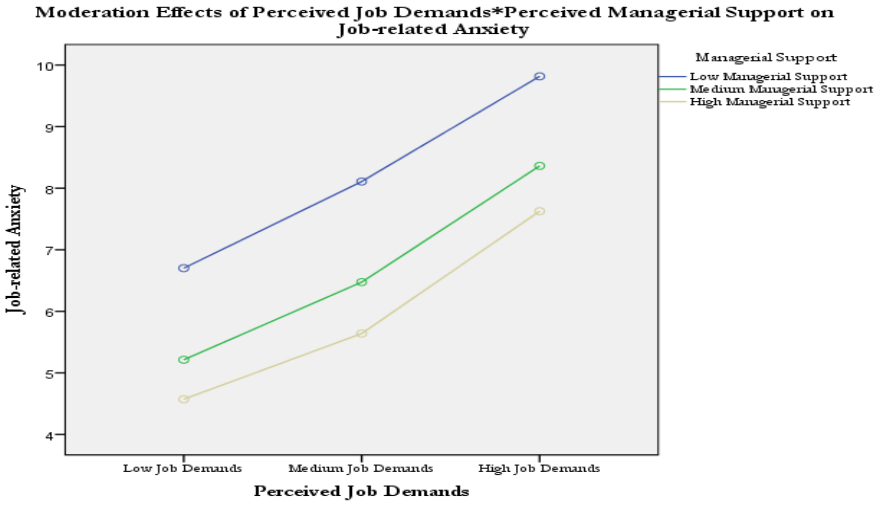
Results presented in the fourth column of Table 6.6 show that all the HP-HR bundles have a direct significant effect on job satisfaction, except for the skills and ability-enhancing bundle. Perceived job demands demonstrate a significant negative relationship with job satisfaction (β = -0.047, $p <$ 0.001), whereas managerial support is positively and significantly related to job satisfaction (β =

[16] The results of the revised model incorporating the effects of perceived job demands on depression moderated by managerial support, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta\chi^2$ (4) between the original model and the revised model was 3.45, ΔCFI was 0.002, ΔTLI was 0.008 and ΔRMSEA was -0.001. Therefore, the original model was retained.

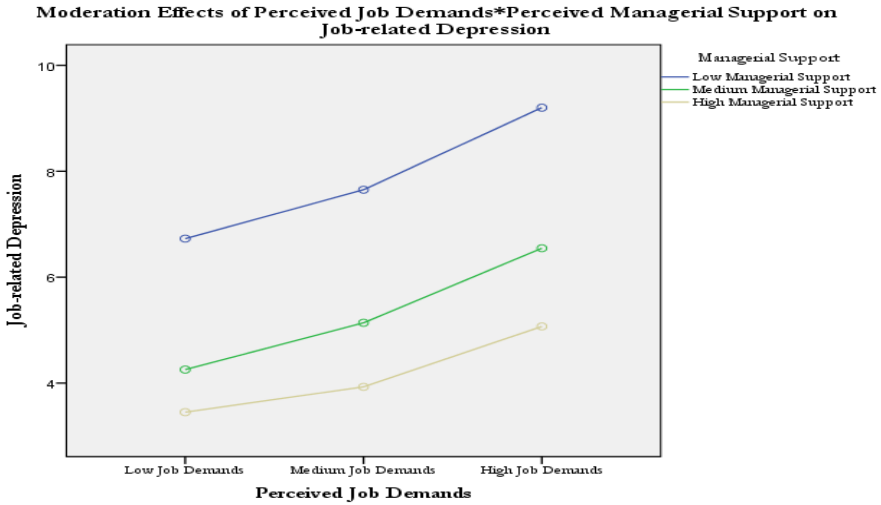
0.715, $p < 0.001$). However, managerial support did not significantly interact with job demands in predicting job satisfaction, indicating that perceived managerial support does not moderate the relationship between perceived job demands and job satisfaction. Figure 6.7, Panel C illustrates that the relationship between perceived job demands and job satisfaction is almost flat (i.e. no relationship) at high, medium or low levels of managerial support. Thus, model T15c is not supported. The conditional indirect effects are insignificant for skills and ability-enhancing and motivation-enhancing bundle (95% CI: 0.000, 0.002 and 0.001, 0.003 respectively), but significant for opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of -0.003, -0.002 and -0.002, -0.001, respectively. Results in Table 6.7 suggest moderated mediation of job demands with managerial support on job satisfaction for opportunity and commitment-enhancing bundles.

The last column of Table 6.6 highlights that all HP-HR bundles directly affect organisational commitment significantly, other than the skills and ability-enhancing bundle. Additionally, both job demands ($\beta = 0.045, p < 0.001$) and managerial support ($\beta = 0.618, p < 0.001$) have a significant positive effect on organisational commitment. In contrast, interaction term for job demands with managerial support is not statistically significant, indicating no moderational effects of perceived managerial support on the relationship between perceived job demands and organisational commitment (Figure 6.7, Panel D). The figure illustrates that the relationship between perceived job demands and organisational commitment is almost flat (i.e. no relationship) at high, medium or low levels of managerial support. Thus, model T15d is not supported. The conditional indirect effects are insignificant for skills and ability-enhancing and motivation-enhancing bundle (95% CI: -0.001, 0.000 and -0.001, 0.000, respectively), but significant for opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.001, 0.002 and 0.001, 0.002, respectively. Moderated mediation for job demands with managerial support is not established, because the conditional indirect effects at low, moderate and high level of managerial support are not largely different from each other across the HP-HR bundles (Table 6.7).

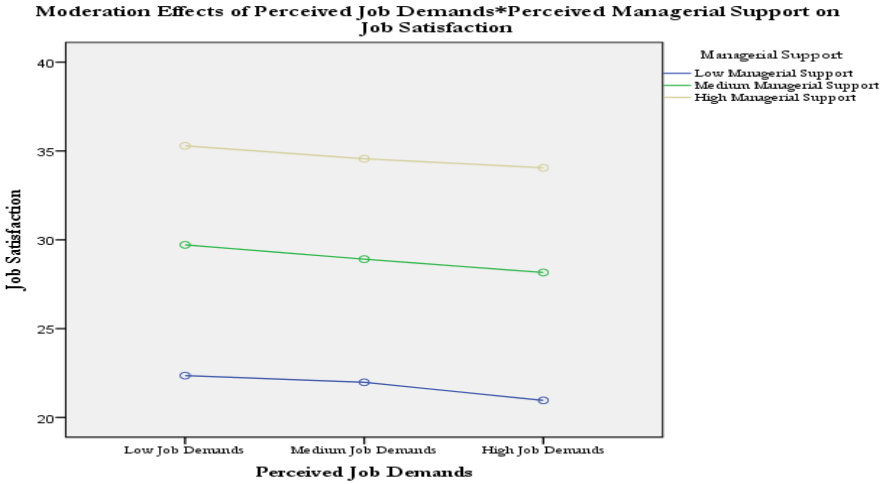
Figure 6.7: Moderation Effects of Perceived Managerial Support on Employee Well-being



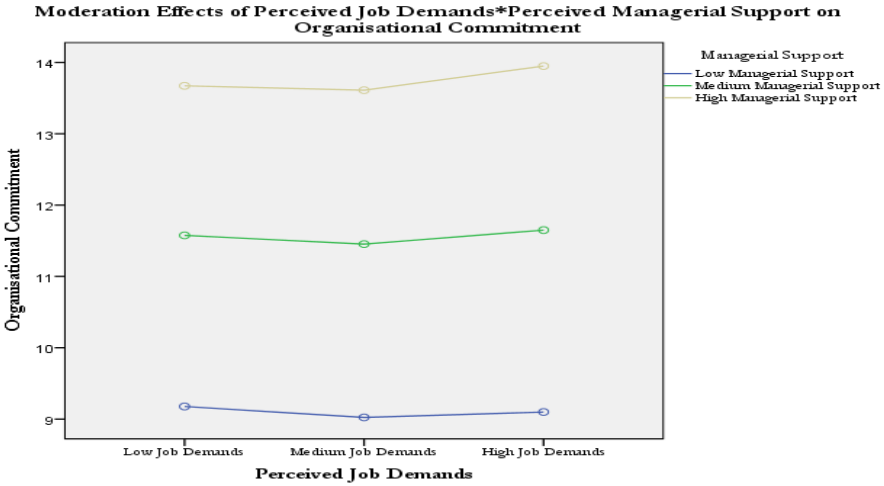
Panel A



Panel B



Panel C



Panel D

6.5.3 Moderating Effect of Perceived Family Support on the relationship between Perceived Job Demands and Employee Well-being

To examine the moderational effect of perceived family support on the relationship between the HP-HR bundles and employee well-being via perceived job demands, four models were estimated (T16a – T16d; see Figures 6.8a -6.8d). In each of the four models the interaction of job demands and family support was the moderator, and was created as explained in Table 6.3. The outcome and exogenous variables were selected in the manner similar to that described for moderated mediation models above. Table 6.8 presents the results of the moderational effects of family support on the relationship between perceived job demands and job-related anxiety, job-related depression, job satisfaction and organisational commitment. Table 6.9 presents the moderated mediation effects at different levels of family support. The overall fit of the moderated mediation models of perceived family presented in Table 6.8 remain somewhat below the recommended cut-offs. The low statistics, to a large extent, may be due to the nature of the measures of family support variables. Low uptake of family support practices within workplaces is reflected in the abnormal distribution of perceived availability of these measures, which ultimately reflects in the overall model fit statistics.

Second column of Table 6.8 shows that condition 1 for moderated mediation is supported for all HP-HR bundles, other than the motivation-enhancing bundle. Conditions 2 and 3 are also supported as job demands significantly positively predict job-related anxiety ($\beta = 0.472, p < 0.001$), and both family support ($\beta = -0.031, p < 0.001$) and the interaction of job demands and family support significantly reduces job-related anxiety ($\beta = -0.030, p < 0.001$). A significant interaction effect indicates moderational relationship of perceived family support between job demands and anxiety (Figure 6.9, Panel A). This figure shows that, with increasing perceptions of job demands, at high levels of family support, job-related anxiety is lower, while at medium and low levels of family support, job-related anxiety is significantly greater. Thus, model T16a is supported[17]. The conditional indirect effects are insignificant for skills and ability-enhancing bundle (95% CI: -0.007, 0.008), but are significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of -0.016, -0.005; 0.005, 0.018 and 0.010, 0.015, respectively.

[17] The results of the revised moderated mediation model involving the effects of perceived job demands on job-related anxiety moderated by perceived family support, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta \chi^2$ (5) between the original model and the revised model was 3.506, ΔCFI was 0.000, ΔTLI was 0.05 and ΔRMSEA was 0.006. Therefore, the original model was retained.

Figure 6.8a: Moderated Mediation of Perceived Family Support between the HP-HR Bundles and Job-related Anxiety via Job Demands

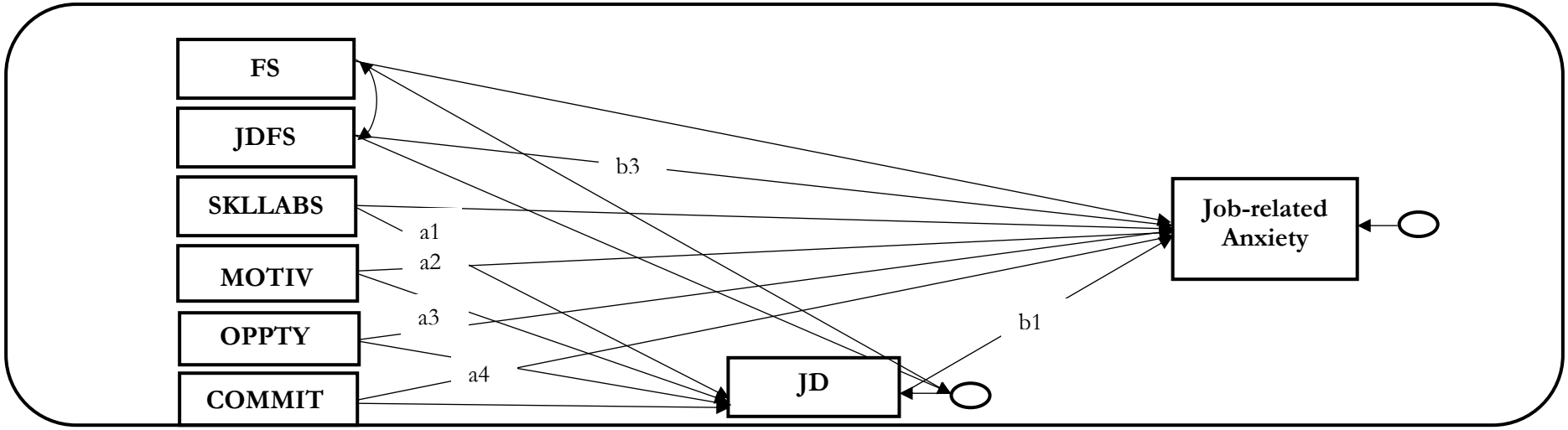
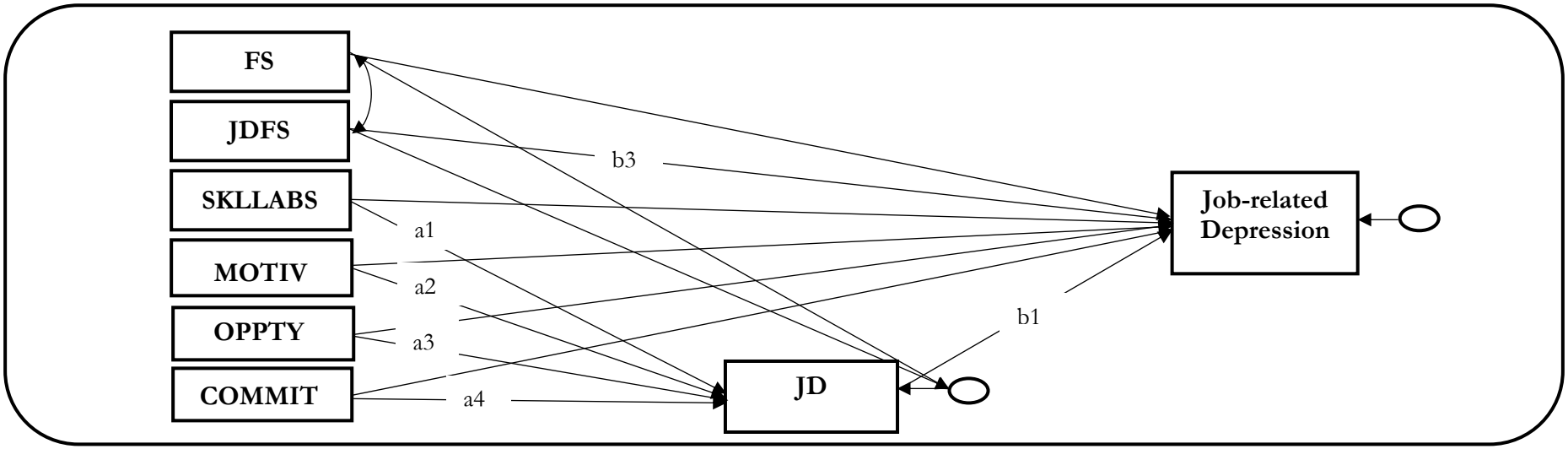


Figure 6.8b: Moderated Mediation of Perceived Family Support between the HP-HR Bundles and Job-related Depression via Job Demands



For simplification control variables and correlations between exogenous variables are omitted from the diagrams

Figure 6.8c: Moderated Mediation of Perceived Family Support between the HP-HR Bundles and Job Satisfaction via Job Demands

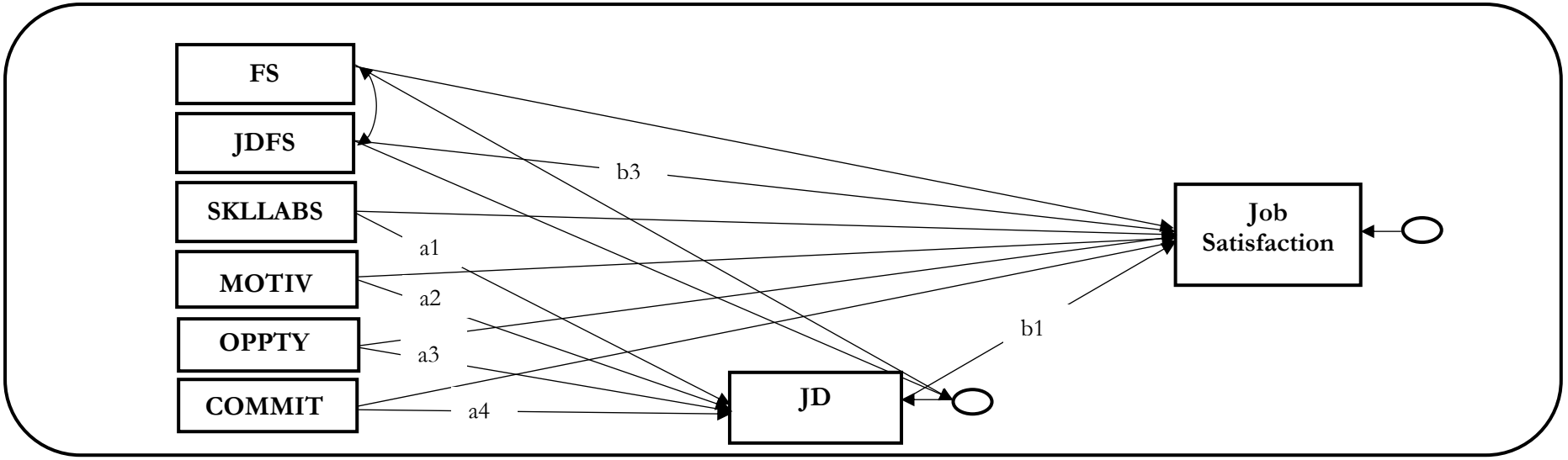
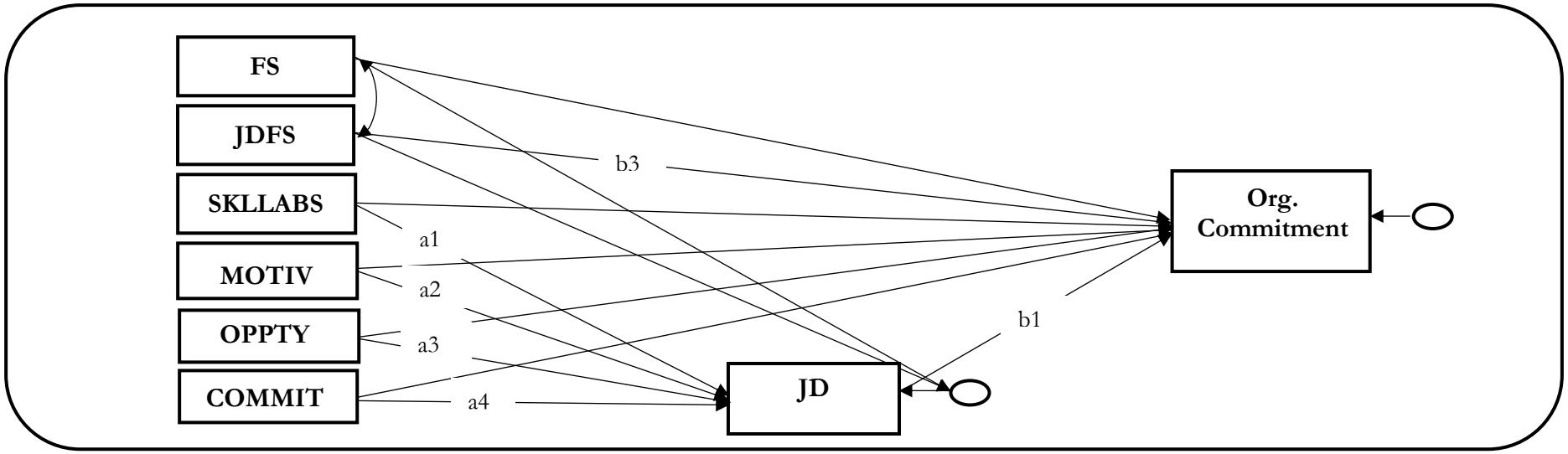


Figure 6.8d: Moderated Mediation of Perceived Family Support between the HP-HR Bundles and Org. Commitment via Job Demands



For simplification control variables and correlations between exogenous variables are omitted from the diagrams

Table 6.8: Conditional Indirect effects of Perceived Family Support on Well-being

Predictors	Outcomes			
	Anxiety	**Depression**	**Job Satisfaction**	**Org. Commitment**
Job demands (JD)	0.472(79.766***)	0.364(55.288***)	-0.209(-28.522***)	-0.097(-13.299***)
Family support (FS)	-0.031(-4.427***)	-0.067(-8.762***)	0.122(16.011***)	0.081(10.338***)
Job demands * family support (JDFS)	-0.030(-4.366***)	-0.042(-5.896***)	0.027(3.503***)	0.011(1.300)
HP-HR Bundles				
skills & ability	0.025(3.214**)	0.017(2.083*)	-0.009(-0.991)	-0.013(-1.489)
motivation	-0.005(0.482)	-0.015(-2.119*)	-0.001(-0.109)	0.001(0.109)
opportunity	-0.024(-3.170**)	-0.031(-3.814***)	0.064(7.543***)	0.069(7.237***)
commitment	0.060(8.092***)	0.035(4.421**)	-0.122(-14.852***)	-0.072(-8.637***)
Controls				
Gender	0.001(0.215)	0.060(8.526***)	-0.055(-7.270***)	-0.091(-12.035***)
Age	-0.034(-4.954***)	-0.064(-8.782***)	0.031(4.063***)	0.032(4.128***)
Marital Status	0.005(0.697)	-0.024(-3.320**)	0.035(4.579***)	0.037(4.779***)
Job Status	-0.027(-4.125***)	-0.045(-6.518***)	0.013(1.766)	0.036(4.756***)
Dependent Children	-0.012(-1.777)	-0.019(-2.750**)	0.011(1.536)	0.026(3.377**)
Predictors of Job Demands				
Skills & ability	0.002(0.181)	0.001(0.090)	0.001(0.057)	0.001(0.066)
Motivation	-0.022(-2.832**)	-0.023(-2.880**)	-0.022(-2.821**)	-0.022(-2.816**)
Opportunity	0.030(3.502***)	0.030(3.461**)	0.030(3.422**)	0.029(3.400**)
Commitment	0.072(8.570***)	0.072(8.565***)	0.072(8.626***)	0.072(8.615***)
Controls				
Gender	0.026(3.458**)	0.026(3.398**)	0.026(3.378**)	0.026(3.372**)
Age	0.016(2.052*)	0.018(2.259*)	0.018(2.253*)	0.018(2.278*)
Marital status	0.038(4.907***)	0.038(4.855***)	0.037(4.792***)	0.037(4.785***)
Job status	-0.060(-8.000***)	-0.060(-8.000***)	-0.060(-8.033***)	-0.060(-7.997***)
Dependent children	0.051(6.686***)	0.050(6.584***)	0.050(6.588***)	0.050(6.603***)
Model Fit				
χ^2 (df)	1125.811***(18)	1126.758***(18)	1124.831***(18)	1123.653***(18)
RMSEA	0.058	0.058	0.058	0.058
CFI	0.846	0.739	0.495	0.000
TLI	0.818	0.692	0.404	0.483
Result				
T16 *Perceived family support will buffer the negative effects of job demands on employee well-being*				
a	Supported			
b		Supported		
c			Supported	
d				Rejected (NS)

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Standardised coefficients are reported; t-values in parentheses

T = Tests

a,b,c & d refer to the conditions examined within a test.

NS = Not significant

Conditional indirect effects are produced at family support level = -1

Table 6.9: Significance of Conditional Indirect Effects of Perceived Family Support

Outcome		Predictor				
	FS Level		Skills & Ability Bundle	Motivation Bundle	Opportunity Bundle	Commitment Bundle
		b1+b3*FS	a1(b1+b3*FS)	a1(b1+b3*FS)	a1(b1+b3*FS)	a1(b1+b3*FS)
Anxiety	Low	0.475	0.000	-0.010	0.015	0.035
	Moderate	0.440	0.000	-0.009	0.013	0.032
	High	0.393	0.000	-0.008	0.011	0.028
Depression						
	Low	0.363	0.000	-0.008	0.010	0.026
	Moderate	0.310	0.000	-0.007	0.009	0.022
	High	0.253	0.000	-0.005	0.007	0.018
Job Satisfaction						
	Low	-0.211	0.000	0.005	-0.006	-0.015
	Moderate	-0.175	0.000	0.004	-0.005	-0.013
	High	-0.138	0.000	0.003	-0.004	-0.010
Org. Commitment						
	Low	-0.098	0.000	0.002	-0.002	-0.007
	Moderate	-0.083	0.000	0.002	-0.002	-0.006
	High	-0.068	0.000	0.002	-0.002	-0.005

Low = Mean – 1SD; Moderate = Mean; High = Mean + 1SD
Mean Family Support = 1.28 SD = 1.364
b1 = JD → Outcome (anxiety, depression, job satisfaction and org. commitment)
b3 = JDFS → Outcome (anxiety, depression, job satisfaction and org. commitment)
a1= path from predictor (skills & ability, motivation, opportunity and commitment bundles) → Job Demands
Estimates of conditional indirect effects are based on standardised co-efficients

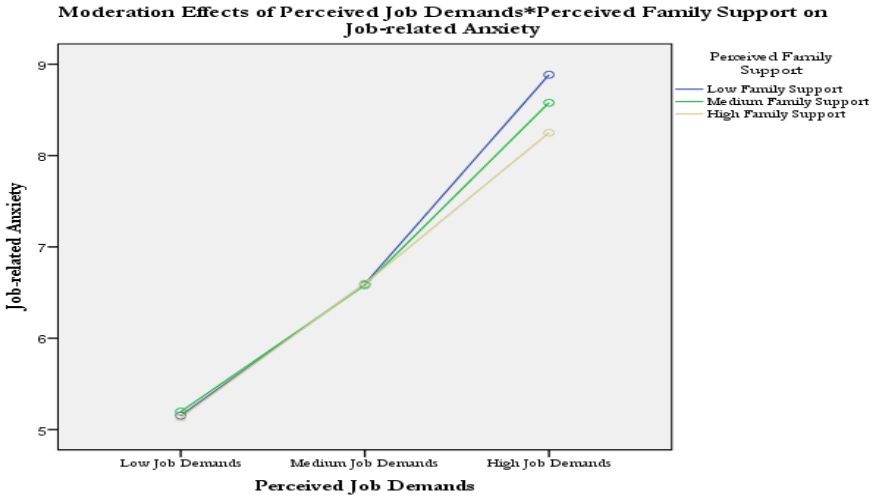
Results in Table 6.9 further demonstrate that the conditional indirect effects for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles are different from each other at different levels of family support conditions. Results also suggest that there was no moderated mediation for the skills and ability bundle as the conditional indirect effects are not different from each other at different levels of family support.

Third column of Table 6.8 illustrates that skills and ability-enhancing and commitment-enhancing practices have a direct positive impact on job-related depression, while motivation and opportunity practices reduce job-related depression significantly. Job demands affect job-related depression positively ($\beta = 0.364$, $p < 0.001$), but perceptions of family support reduces perceived job-related depression ($\beta = -0.067$, $p < 0.001$). Similarly, the interaction term of job demands with family support is significant in reducing job-related depression ($\beta = -0.042$, $p < 0.001$), indicating that perceived family support moderates the relationship between perceived job demands and job-related depression (Figure 6.9, Panel B). The figure illustrates that at high levels of family support, job-related depression is lower, while at medium and low levels of family support, job-related depression is significantly greater. Thus, model T16b is supported[18]. The conditional indirect effects are insignificant for skills and ability-enhancing (95% CI: -0.007, 0.007), but are significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of -0.014, -0.004; 0.005, 0.015 and 0.008, 0.012, respectively. Results in Table 6.9 further demonstrate that the conditional indirect effects for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles are different at varying levels of family support. Results also suggest that there was no moderated mediation for the skills and ability bundle as the conditional indirect effects are not different from each other at different family support conditions.

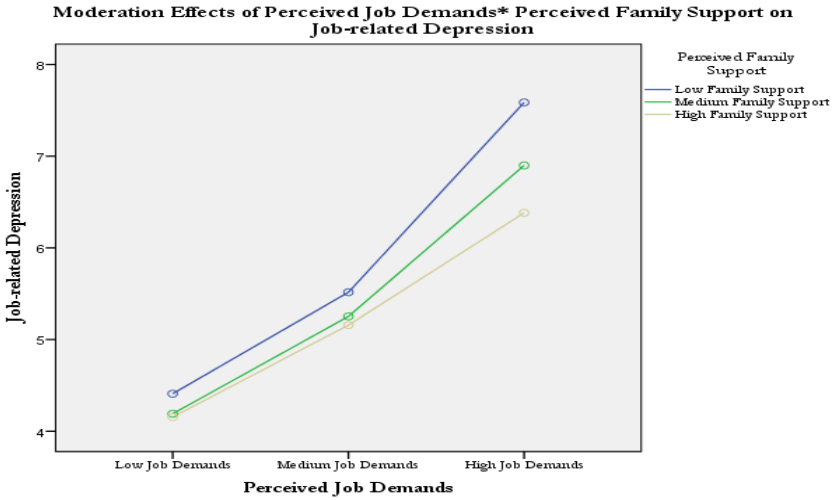
Fourth column of Table 6.8 shows that only opportunity-enhancing and commitment-enhancing practices directly impact job satisfaction. Job demands have a negative and statistically significant effect on job satisfaction ($\beta = -0.209$, $p < 0.001$), and both family support ($\beta = 0.122$, $p < 0.001$) and the interaction of job demands with family support positively predicts job satisfaction ($\beta =$

[18] The results of the revised moderated mediation model involving the effects of perceived job demands on job-related depression moderated by perceived family support, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta \chi^2$ (1) between the original model and the revised model was 0.008, ΔCFI was 0.000, ΔTLI was 0.023 and ΔRMSEA was 0.001. Therefore, the original model was retained.

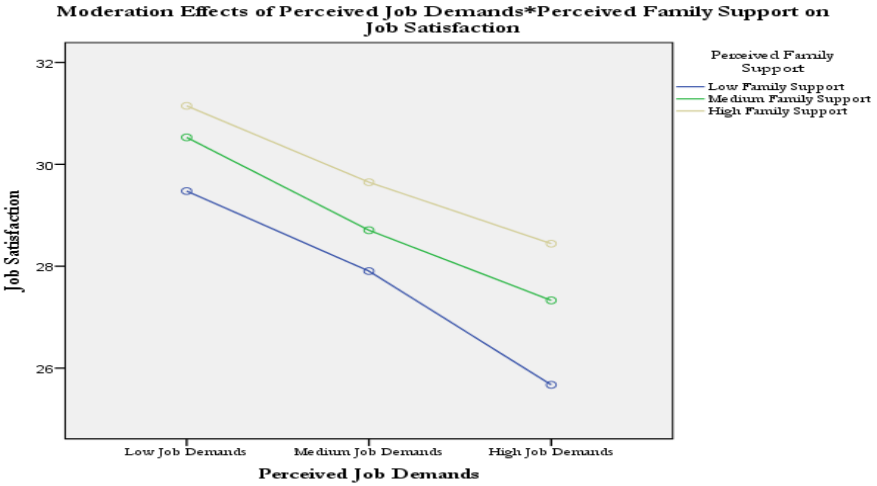
Figure 6.9: Moderation Effects of Perceived Family Support on Employee Well-being



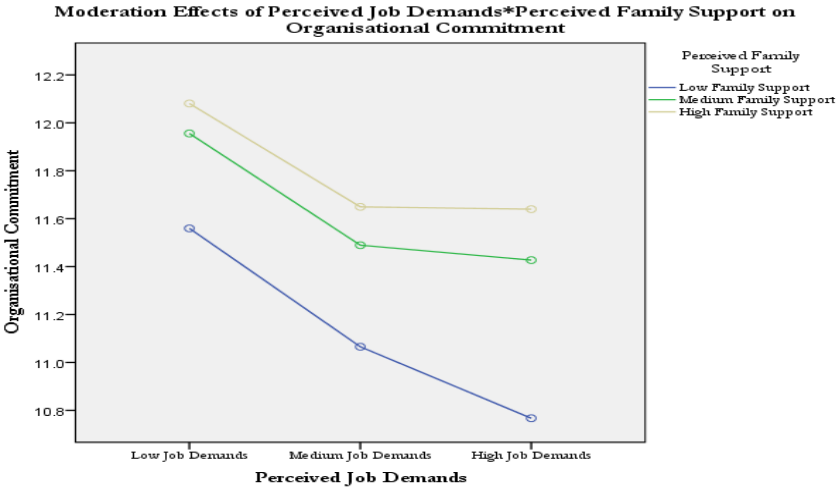
Panel A



Panel B



Panel C



Panel D

0.027, $p < 0.001$ – see Figure 6.9, Panel C. A moderating effect is established because at high levels of family support, job satisfaction is significantly higher as compared to medium and low levels of family support. Thus, model T16c is supported[19]. Results based on the first three conditions indicate that perceived family support moderates the mediation between the HP-HR bundles and job satisfaction via job demands. The conditional indirect effects are insignificant for skills and ability-enhancing (95% CI: -0.008, 0.008), but are significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.004, 0.017; -0.018, -0.006 and -0.015, -0.010, respectively. Results in Table 6.9 further demonstrate a lack of moderated mediation for the skills and ability bundle, and presence of conditional indirect effects for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles at different levels of family support.

The results in the last column in Table 6.8 show that the path from the interaction effect to organisational commitment is statistically insignificant, indicating no moderational effects of perceived family support on the relationship between perceived job demands and organisational commitment (Figure 6.9, Panel D). The figure illustrates that at medium to high levels of family support, the relationship between perceived job demands and organisational commitment is almost flat. Thus, model T16d is not supported. However, condition 1 is met partially for opportunity-enhancing and commitment- enhancing bundles, and condition 2 is established with job demands showing a significant negative association with organisational commitment ($\beta = -0.097, p < 0.001$). Conditional indirect effects are insignificant only for skills and ability-enhancing (95% CI: -0.001, 0.001), but are significant for motivation-enhancing, opportunity-enhancing and commitment-enhancing bundles with 95% CI bands of 0.001, 0.003; -0.003, -0.001 and -0.003, -0.002, respectively. Results in Table 6.9 demonstrate moderated mediation for commitment-enhancing bundles at different levels of family support.

[19] The results of the revised moderated mediation model involving the effects of perceived job demands on job satisfaction moderated by perceived family support, excluding the insignificant paths, revealed no significant improvement in the model fit: $\Delta \chi^2$ (1) between the original model and the revised model was 52.191, ΔCFI was 0.012, ΔTLI was 0.078 and ΔRMSEA was 0.001. Therefore, the original model was retained.

SECTION 5: Control Variables, Job Demands and Employee Well-being

6.6 Controls

Individual demographic differences are seen to affect the way an individual perceives stress, anxiety, or role overload (Jensen et al., 2013). Existing studies show that gender is related to stress (Sackey and Sandra, 2011) and job satisfaction (Danford et al., 2008; Gazioglu and Tansel, 2006). Marital status is related to job satisfaction (Gazioglu and Tansel, 2006) and organisational commitment (Qaio, Khilji and Wang, 2009; Bryson and White, 2008). Age is related to organisational commitment (Meyer et al., 2002) and job satisfaction (Nestor and Leary, 2000). Type of contract is related to job satisfaction (Wood and de Menezes, 2011; Bauer, 2004) and stress (Wood and de Menezes, 2011). Having dependent children is related to perceptions of negative job-to-home spill-over (White et al., 2003). Therefore, we controlled for these variables to avoid any secondary associations and confounding effects in our model. The results of the effects of control variables on perceived job demands and well-being measures are provided in Table 6.10.

Table 6.10: Assessment of Control Variables on Perceived Job Demands and Well-being

Control Variables	Standardised Coefficient	t-value	Relationship
Gender → Perceived Job Demands	0.032	4.241***	Positive
Gender → Job-related Anxiety	0.005	0.685	None
Gender → Job-related Depression	0.067	9.622***	Positive
Gender → Job Satisfaction	-0.070	-9.516***	Negative
Gender → Org. Commitment	-0.101	-13.352***	Negative
Age → Perceived Job Demands	0.017	2.111**	Positive
Age → Job-related Anxiety	-0.034	-4.920***	Negative
Age → Job-related Depression	-0.063	-8.691***	Negative
Age → Job Satisfaction	0.028	3.683***	Positive
Age → Org. Commitment	0.031	4.038***	Positive
Marital Status → Perceived Job Demands	0.039	4.929***	Positive
Marital Status → Job-related Anxiety	0.004	0.641	None
Marital Status → Job-related Depression	-0.024	-3.285**	Negative
Marital Status → Job Satisfaction	0.034	4.470***	Positive
Marital Status → Org. Commitment	0.038	4.873***	Positive
Job Status → Perceived Job Demands	-0.059	-7.942***	Negative
Job Status → Job-related Anxiety	-0.026	-3.949***	Negative
Job Status → Job-related Depression	-0.044	-6.314***	Negative
Job Status → Job Satisfaction	0.013	1.704	None
Job Status → Org. Commitment	0.034	4.591***	Positive
Dependent Children → Perceived Job Demands	0.048	6.360***	Positive
Dependent Children → Job-related Anxiety	-0.013	-1.980*	Negative
Dependent Children → Job-related Depression	-0.022	-3.150**	Negative
Dependent Children → Job Satisfaction	0.018	2.421*	Positive
Dependent Children → Org. Commitment	0.029	3.913***	Positive

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

ß & t-values based on the basic partial mediation path model

6.6.1 Gender

Findings of previous studies suggest that gender has mixed effects on employee outcomes. For instance, some studies report an insignificant effect of gender on job satisfaction (Takeuchi et al., 2009; Mohr and Zoghi, 2008; Bauer, 2004), while other studies found that females have lower job satisfaction (Wood et al., 2012; Wood and de Menezes, 2011; Macky and Boxall, 2008; Boon et al., 2011; Voydanoff, 1980) and work stress (Macky and Boxall, 2008). Studies also report higher anxiety in female employees (Wood and de Menezes, 2011; Bolino and Turnley, 2005; Lundberg and Frankenhaeuser, 1999). Similarly, female employees are suggested to be more committed to their organisation than their male counterparts (Boon et al., 2011; Singh, Finn and Goulet, 2004). Contrastingly, there is evidence of an insignificant relationship between gender and organisational commitment (Bashir et al., 2011; Takeuchi et al., 2009), gender and anxiety (Wood et al., 2012), and higher anxiety for men (Jensen et al., 2013). In terms of perceived job demands, Kroon et al. (2009) suggest that men perceive higher job demands, while other (Jensen et al., 2013; and Macky and Boxall, 2008; Harley et al., 2007) found no association between gender and role overload/burnout.

The results of the current study showed that gender has a significant positive relationship with perceived job demands ($p < 0.001$) and job-related depression ($p < 0.001$); a significant negative relationship with job satisfaction ($p < 0.001$) and organisational commitment ($p < 0.001$) and no significant relationship with job-related anxiety. Thus, male employees perceive higher job demands, are more depressed and less satisfied and committed to their organisation than female employees.

6.6.2 Age

Generally age is seen to have a positive relationship with job satisfaction (Wood et al., 2012; 2011; Harley et al., 2010; Guest, 2002; Nestor and Leary, 2000) and organisational commitment (Boon et al., 2011; Harley et al., 2010; Meyer et al., 2002) and job-related anxiety (Jensen et al., 2013; Wood et al., 2012; 2011; Macky and Boxall, 2008). However, Bauer (2004) suggest a U shaped effect between age and job satisfaction. In contrast, some studies report a negative relationship with age and job satisfaction (Boon et al., 2011; Macky and Boxall, 2008), and others find no relationship between age and job satisfaction (Takeuchi et al., 2009; Macky and Boxall, 2007; Scott, Swortzel and Taylor, 2005), and age and organisational commitment (Takeuchi et al., 2009; Macky and Boxall, 2007). Similarly, age is seen to have an insignificant effect (Jensen et al., 2013; Harley et al., 2007) and negative effect (Macky and Boxall, 2008) on role overload and fatigue.

The results of the current study show that age has significant positive relationship with perceived job demands ($p < 0.01$), job satisfaction ($p < 0.001$) and organisational commitment ($p < 0.001$); a significant negative relationship with job-related anxiety ($p < 0.001$) and job-related depression ($p < 0.001$). Thus, older employees perceive higher job demands, are more satisfied and committed to their organisation and are less anxious and depressed.

6.6.3 Marital Status

Research findings on the effects of marital status on the outcome variables of interest in this study have also been mixed. For instance, Mohr and Zoghi (2008) found that married employees have higher job satisfaction and Guest (2002) also reported lower job satisfaction for single, divorced and separated employees. Few studies found marital status to have an insignificant effect on anxiety and role overload (Jensen et al., 2013) and organisational commitment (Bashir et al., 2011).

The results of the current study showed that marital status has a significant positive relationship with perceived job demands ($p < 0.001$), job satisfaction ($p < 0.001$) and organisational commitment ($p < 0.001$); a significant negative relationship with job-related depression ($p < 0.01$) and no significant relationship with job-related anxiety. Thus, married employees perceive higher job demands, are more satisfied and committed to their organisation and are less depressed.

6.6.4 Job Status

Employees on fixed and temporary contracts are suggested to have lower job satisfaction (Wood and de Menezes, 2011; Mohr and Zoghi, 2008; Bauer, 2004), and lower anxiety (Jensen et al., 2013; Wood and de Menezes, 2011), but higher perceived role overload (Jensen et al., 2013). Other studies have reported an insignificant association between job status (type of contract) and organisational commitment (Bashir et al., 2011; Macky and Boxall, 2007) and job satisfaction (Macky and Boxall, 2007).

The current study revealed that type of contract has a significant negative relationship with perceived job demands ($p < 0.001$), job-related anxiety ($p < 0.001$), job-related depression ($p < 0.001$); and a significant positive relationship with organisational commitment ($p < 0.001$) and no significant relationship with job satisfaction. This shows that employees on fixed and temporary contracts have low perceived job demands and are less anxious and depressed, but, interestingly, are more committed to their organisations.

6.6.5 Dependent Children

Research findings on dependent children and employee outcomes have been mixed. For some dependent children has insignificant effect on job satisfaction (Bauer, 2004) and stress/fatigue (Macky and Boxall, 2008). Other studies found a positive association between dependent children and job satisfaction (Mohr and Zoghi, 2008), while others report a positive association between no dependent children and job satisfaction and negative association between dependent children and job satisfaction (Guest, 2002).

Findings of this study revealed that having dependent children is significantly positively related to perceived job demands ($p < 0.001$), job satisfaction ($p < 0.05$) and organisational commitment ($p < 0.001$); and has a negative relationship with job-related anxiety ($p < 0.05$) and depression ($p < 0.01$). Thus, employees with dependent children of any age reported higher perceived job demands as well as job satisfaction and commitment than employees with no dependent children.

6.7 Chapter Summary

This chapter presents the results of the study's hypotheses. Path analysis, in the SEM technique using maximum likelihood estimation method, was conducted to test the direct, indirect and conditional indirect relationships hypothesised in the study. A summary of the results of the hypothesised relationships in the study are provided in Table 6.11.

The results are of substantial interests because, to the best of my knowledge, no study has simultaneously evaluated the claims of the mutual gains perspective, the labour process perspective and the job-demands-resources model, for different dimensions of the HP-HR practices. The study evaluates the differential relationships of four dimensions of the HP-HR practices (i.e. skills and ability-enhancing, motivation-enhancing, opportunity-enhancing and commitment-enhancing bundle) on employee well-being, incorporating two competing HRM perspectives and a socio-psychological perspective, in order to discern the intermediary relationships of the HP-HR/well-being association. The next chapter presents the discussion of the results of hypotheses in light of the research questions of the study. Further, it evaluates how current findings relate to the extant literature and empirical evidence. Finally, the chapter presents the overall conclusions, practical implications, contributions of the research and highlights some potential future directions.

Table 6.11: Summary of Hypotheses Results

Research Question	Hypotheses	Tests	Path	Test Result	Hypothesis Result
RQ1	H1, H5 & H6				Partially Supported
		T1a	SKLLABS → Job-related Anxiety	SOD	
		T1b	MOTIV → Job-related Anxiety	NS	
		T1c	OPPTY → Job-related Anxiety	Supported	
		T1d	COMMIT → Job-related Anxiety	SOD	
		T2a	SKLLABS → Job-related Depression	SOD	
		T2b	MOTIV → Job-related Depression	NS	
		T2c	OPPTY → Job-related Depression	Supported	
		T2d	COMMIT → Job-related Depression	SOD	
		T3a	SKLLABS → Job Satisfaction	NS	
		T3b	MOTIV → Job Satisfaction	NS	
		T3c	OPPTY → Job Satisfaction	Supported	
		T3d	COMMIT → Job Satisfaction	SOD	
		T4a	SKLLABS → Org. Commitment	NS	
		T4b	MOTIV → Org. Commitment	NS	
		T4c	OPPTY → Org. Commitment	Supported	
		T4d	COMMIT → Org. Commitment	SOD	
RQ2	H2				Partially Supported
		T5a	SKLLABS → Perceived Job Demands	NS	
		T5b	MOTIV → Perceived Job Demands	SOD	
		T5c	OPPTY → Perceived Job Demands	Supported	
		T5d	COMMIT →Perceived Job Demands	Supported	
		T6	PJD → Job-related Anxiety	Supported	
		T7	PJD → Job-related Depression	Supported	
		T8	PJD → Job Satisfaction	Supported	
		T9	PJD → Org. Commitment	Supported	
RQ3	H3				Partially Supported
		T10a	SKLLABS → PJD → Job-related Anxiety	NS	
		T10b	MOTIV → PJD → Job-related Anxiety	*SOD	
		T10c	OPPTY → PJD → Job-related Anxiety	^Supported	
		T10d	COMMIT → PJD → Job-related Anxiety	^Supported	
		T11a	SKLLABS → PJD →Job Depression	NS	
		T11b	MOTIV → PJD → Job-related Depression	*SOD	
		T11c	OPPTY → PJD → Job-related Depression	^Supported	
		T11d	COMMIT → PJD → Job Depression	^Supported	
		T12a	SKLLABS → PJD → Job Satisfaction	NS	
		T12b	MOTIV → PJD → Job Satisfaction	*SOD	
		T12c	OPPTY → PJD → Job Satisfaction	^Supported	
		T12d	COMMIT → PJD → Job Satisfaction	^Supported	
		T13a	SKLLABS → PJD → Org. Commitment	NS	
		T13b	MOTIV → PJD → Org. Commitment	*SOD	
		T13c	OPPTY → PJD → Org. Commitment	^Supported	
		T13d	COMMIT → PJD → Org. Commitment	^Supported	
RQ4	H4				Partially Supported
		T14a	PJD*PJC → Job-related Anxiety	Supported	
		T14b	PJD*PJC → Job-related Depression	Supported	
		T14c	PJD*PJC → Job Satisfaction	Supported	
		T14d	PJD*PJC → Org. Commitment	Supported	
		T15a	PJD*PMS → Job-related Anxiety	Supported	
		T15b	PJD*PMS → Job-related Depression	Supported	
		T15c	PJD*PMS → Job Satisfaction	NS	
		T15d	PJD*PMS → Org. Commitment	NS	
		T16a	PJD*PFS → Job-related Anxiety	Supported	

T16b	PJD*PFS → Job-related Depression	Supported
T16c	PJD*PFS → Job Satisfaction	Supported
T16d	PJD*PFS → Org. Commitment	NS

NS = Not significant; SOD = Not supported (significant in opposite direction)
*SOD = Not supported (support full mediation, but in opposite direction)
^Supported = Partial mediation
SKLLABS = Skills & Ability-enhancing Bundle
MOTIV = Motivation-enhancing Bundle
OPPTY = Opportunity-enhancing Bundle
COMMIT = Commitment-enhancing Bundle
PJD = Perceived Job Demands
PJC = Perceived Job Control
PMS = Perceived Managerial Support
PFS = Perceived Family Support

Chapter 7

Discussion and Conclusions

7.1 Introduction

This chapter explains the results of this research and highlights what these imply for theory and practice. Further, it focuses on the contributions and the limitations of the study and outlines a few future research directions.

7.2 Key Findings

A brief summary of the main findings pertaining to each research questions are presented below.

7.2.1 How Do High Performance HR Bundles Impact Employee Well-Being?

The first research question addressed the relationship between HP-HR bundles and employee well-being. The results reveal that both mutual gains and labour process theories are applicable depending on the bundle of HP-HR practices in question and no one theory fully captures and explains the complexities involved in the HP-HR and employee well-being relationship. These findings reinforce the arguments made by Appelbaum et al. (2000) and Guest (2011) that the causal effect between HPWS and employee outcomes exhibit a contested domain in much extant theory (Heffernan and Dundon, 2012). Results of the direct relationship between each of the HP-HR bundle and different measures of employee well-being revealed mixed evidence, demonstrating that HP-HR practices can have different effects on employee well-being depending on the bundle in question. Thus, this study suggests both improved and compromised employee well-being as a consequence of high performance HR practices.

Out of the four HP-HR bundles only the opportunity-enhancing bundle produced positive direct effects on employee well-being as professed by the mutual gain theorists. The opportunity-enhancing bundle reduces both anxiety and depression and increases both job satisfaction and organisational commitment. Earlier findings also support that HR practices that facilitate employee involvement and opportunity to participate, reduce anxiety/stress (Vanhala et al., 2009; Macky and Boxall, 2008; Mohr and Zoghi, 2008; Orlitzky and Frenkel, 2005; Godard, 2001; Appelbaum et al., 2000) and promote job satisfaction and/or organisational commitment (Boxall

et al., 2015; Ramdania et al., 2014; Mostafa, 2013; Jiang et al., 2012; Mendelson et al., 2011; Wood and de Menezes, 2011; White and Bryson, 2011; Zatzick and Iverson, 2011b; Harley et al., 2010; Kaya et al., 2010; Wu and Chaturvedi, 2009; Bryson and White, 2008; Macky and Boxall, 2008; Mohr and Zoghi, 2008; Bauer, 2004; Barling et al., 2003; Appelbaum et al., 2000; Vandenberg et al., 1999). However, this finding is contradictory to Innocenti et al.'s 2011 study which shows that the opportunity bundle exerts a significant negative impact on employee attitudes (job satisfaction and organisational commitment). Similarly, Wood et al. (2012) also highlight that high involvement management reduces job satisfaction. Topcic et al. (2016) report that participation in decision making induces job-related stress.

The skill and ability-enhancing bundle is found to increase job-related anxiety and depression significantly and decrease both job satisfaction and organisational commitment, although the latter relationships are insignificant. The motivation-enhancing bundle is found to have an insignificant association with job-related anxiety and depression, and job satisfaction and organisational commitment. The commitment-enhancing bundle, on the other hand, has an overall negative direct relationship with well-being measures by increasing both job anxiety and depression and reducing both job satisfaction and organisational commitment. These results are contrary to Innocenti et al. (2011) but consistent with the findings of other studies (Heffernan and Dundon, 2012; De Joy et al., 2010; Bryson and White, 2008; Mohr and Zoghi, 2008; Guest and Conway, 2007; Green, 2006; Ramsay et al., 2000).

The logic of these findings are intuitive. The opportunity-enhancing bundle comprises HR practices that incorporate two-way communication, consultation, participation in decision making, quality circles, attitude surveys, formal team working, information sharing and enlarged job design. All of such HR practices create scope for the employees to use their skills and abilities and make them feel important and useful within the workplace. In particular, employees may feel that their contributions to the organisation are valued and appreciated by the employer. Consequently, the employees feel more engaged in their work. Engaged workers often experience positive emotions (Schaufeli and Van Rhenen, 2006), are more sensitive to opportunities at work (Cropanzano and Wright, 2001), have high perceived empowerment and voice in the workplace which translates into high activation and a sense of pleasure, organisational commitment and reduced feelings of stress, anxiety and depression (Bakker and Demerouti, 2008).

The skills and ability-enhancing bundle incorporates HR practices such as standard induction, sophisticated recruitment and selection practices including internal recruitment and formal training systems which promote interpersonal skills training, off the job training, functional flexibility and formal training need evaluation. Such HR practices, on the one hand, select the best candidates for the job in question and, on the other hand, further equip the selected employees with useful skills that may enhance their innate abilities to effectively tackle their work roles. Contemporary HRM research and practice recognises that organisations want employees who are energetic, dedicated, and focused on achieving organisational goals (Albrecht, Bakker, Gruman, Macey and Saks, 2015). Selection procedures are often touted as the key mechanism to appoint such candidates who are best suited to the job and the organisation's culture. Nonetheless, it has also been noted that greater use of skills may initiate more demanding work (Gallie, 2007, p. 6). Along similar lines, selective hiring practices have been associated with increase in employees' experience of work-related strain/anxiety due to employers' high expectations of employees to deliver high-quality services at work (Ogbonnaya, 2013). The burden of employer's high expectations to deliver quality services manifest itself in negative appraisal of employees' psychological well-being.

Employees, conversely, are increasingly looking for job roles that include opportunities for challenge, growth and engagement (Albrecht et al., 2015). Therefore, having selected employees on the basis of the extent they are likely to be committed, engaged and best aligned to organisation's culture, it becomes essential to protect this likelihood by effectively inducting and training employees to reduce their level of anxiety and uncertainty in the job. Induction and training programs are primarily seen to provide employees with the necessary knowledge and skills to perform their daily tasks, and to provide them with coping strategies for managing their job demands (Albrecht et al., 2015). Training is also seen to help maintain a better employee-employer relationship as employees believe that their organisation cares about them and so is investing in the enhancement of their skills (Snape and Redman, 2010). Nevertheless, perceived benefits of training offered and the extent of training undertaken by employees have also been questioned (Gould-Williams and Davies, 2005). It is argued that when employees perceive lack of congruence between the training offered to them and their specific work-related needs, then they are more likely to report negative perceived value of such training to cope with work-related issues (Gould-Williams and Davies, 2005). By contrast, individuals undergoing rigorous training, especially in functional flexibility, may also be argued to develop positive self-perceptions about their capacity to successfully control their job roles, and thus, may willingly introduce physical changes (i.e. enlarge scope or number of job tasks) and/or cognitive changes (i.e. attach higher meaning to what

their job roles entail) to their task or relational boundaries at work (Albrecht et al., 2015). This could be because employees either genuinely believe to have developed personal capabilities through training and development or, as Dysvik et al. (2014) argue, simply to act conscientiously to deliver quality performance to justify the investment in the selection, induction and training processes.

Positive self-perceptions about the ability to take on extended job responsibilities may prove to be effective in enhancing job meaningfulness, but remain less effectual when it comes to working flexibly to cover additional responsibilities. Labour process view supports that HP-HR practices are used to make employees willingly extend their job boundaries in order to reciprocate employer obligations (Legge, 1995). It is likely that employees' take on extended job roles based on the perceptions of undergoing formal selection and training procedures, but the perceptions of their levels of motivation and readiness to engage in those roles quickly declines, leaving them with work-related anxiety. Performing to one's extended job roles either willingly or to fulfil employer's expectations of selection and training initiatives may also trigger short-term negative appraisal of individual's psychological ability to carry out work-related tasks, resulting in their feeling gloomy and depressed at work.

The study also revealed that the skills and ability-enhancing bundle had no significant relationship with perceived job satisfaction and organisational commitment of employees. This finding is consistent with Van De Voorde et al. (2012) and reveals that the skills and ability-enhancing practices are not linked to either competitive advantage or the well-being of employees. These practices are necessary simply because organisations require practices and processes to facilitate employee selection, development, retention and record keeping. All such HR practices are thus considered hygiene factors, the presence of which mostly may not have significant tangible effects on employees or organisations but the absence of which may have serious detrimental effects (Van De Voorde et al., 2012).

The findings suggest that there is an inverse albeit non-significant direct association between motivation-enhancing HR practices and different dimensions of employee well-being. Overall, the lack of significant direct associations between the motivation-enhancing HR bundle and aspects of employee well-being seem to suggest that some meaningful confounding variables may be actively guiding the negative link found between the variables. This implies that we may need to look elsewhere to look for an explanation of what determines negative experience of workers from

motivation-enhancing HR practices - lower job-related anxiety, job-related depression, job satisfaction and organisational commitment - possibly to perceptions of job demands (Hughes, 2008; Ramsay et al., 2000), controlling aspects of compensatory pay systems and performance appraisals (Kohn, 1993; Lawler and Rhodes, 1976; Deci, 1972).

Similarly, the commitment-enhancing HR bundle also has a reducing effect on perceived job satisfaction and organisational commitment and positive direct effects on perceived job-related anxiety and depression of employees. The HR practices associated with the commitment-enhancing bundle comprise of equal opportunities to participate, grievance handling procedures, fringe-benefits, family friendly policies and family care arrangements. The HR practices signal to employees the caring nature of the employer towards employees. The provision of equal opportunities, grievance handling and resolution systems signal to employees that organisational justice systems are effectively incorporated in organisational processes and are easily accessible. Likewise, the provision of fringe benefits, flexible working and family care arrangements signal to employees that their employers have full intentions to promote work-life quality and balance. Puzzlingly, the results of commitment-enhancing HR bundle depict the practices included in this bundle in an unfavourable light and cast doubts on the efficacy of implementing such HP-HR practices to enhance positive employee experiences including gaining their commitment to the organisation. One could infer that, perhaps, employers may indeed offer a degree of supportiveness to employees to facilitate their work and harness their commitment towards the organisation. However, in return, employees may be expected to work harder towards achieving organisational goals, which, in turn, leads to higher levels of job-related anxiety, strain and poor employee attitudes. It has been argued that, for example, family-friendly work initiatives may lead to employee strain, stress and heightened work pressures (Kelliher and Anderson, 2010; Whittle and Mueller, 2009; Tietze and Musson, 2005), and reduced job attitudes (Igbaria and Guimaraes, 1999; Greenberger et al., 1989).

The finding may also question the veracity of the claims of provision of the practices included in the commitment-enhancing bundle such as equal opportunities and grievance handling procedures. Research in organisational justice shows that employees tend to develop unfavourable reactions towards the organisation when they perceive lack of justice and equality in organisational processes (Judge and Collquitt, 2004). It may well be that employees perceive that equal opportunities and grievance handling practices are not being provided objectively - inaccessible by all employees or administered unfairly - which illustrates employers' lack of full commitment

towards true implementation of the so-called commitment-enhancing HR practices. Consequently, employees respond through poor levels of well-being, job satisfaction and commitment towards the organisation.

The contrary to expectations reducing direct effects of commitment-enhancing bundle on both health- and happiness-related well-being of employees are in line with Guest and Conway (2007), which show that the practices comprising the commitment-enhancing bundle, such as flexible working and fringe benefits, exert a reducing effect on both employee well-being and job attitudes both individually and as a coherent bundle of practices. This finding seems contradictory to the Social Exchange Theory. Nevertheless, it can be interpreted using the labour process perspective which suggests that HP-HR practices put employees under pressure to perform to reciprocate the favourable and facilitating initiatives of their employers with quality performance, which increases their level of job-related anxiety and depression while compromising their sense of satisfaction with and commitment to their organisation.

In essence, examination of the direct relationships between HP-HR bundles and well-being measures support that, in the majority of situations, HP-HR bundles have a reducing effect on employee well-being as claimed by the labour process theorists. In particular, the adoption of motivation- and commitment-enhancing practices may not be seen as effective tools to improve employee well-being. This is because the motivation-enhancing bundle has no significant direct association with any of the aspects of well-being, while, somewhat puzzlingly, the commitment-enhancing bundle has a significantly negative direct association with all well-being dimensions. The skills and ability-enhancing bundle demonstrates mixed results, showing a significant positive direct association with health-related well-being, and an insignificant direct association with happiness-related well-being. This suggests that skills and ability-enhancing bundle can be seen as a set of supporting practices that an organisation may not omit. But the presence of such selection and training practices in fact adds to the anxiety and depression of employees, because they either perceive to be overly optimistic about their inherent and learnt abilities to deal with their assigned tasks due to rigorous selection and training initiatives or may perceive to be under obligation to take on more roles to justify the investment made in them by their organisations. On the other hand, only the provision of opportunity-enhancing practices may be seen as an effective strategy to enhance employee well-being directly, by reducing anxiety and depression and enhancing job satisfaction and organisational commitment of employees. Thus, the current study's findings add weight to the argument by labour process theorists.

7.2.2 Do High Performance HR Bundles Initiate Job Demands?

The second research question addressed the relationship between the individual HP-HR bundle and the perceived job demands of employees. Labour process theory suggests that the HP-HR practices/system is detrimental to employee well-being as it places excessive work demands on individuals (Kaya et al., 2010; Kalmi and Kauhanen, 2008; Green, 2006; 2004; Berg and Frost, 2005; White et al., 2003; Godard, 2001; Ramsay et al., 2000; Delbridge, 1998; Guest, 1999; Barker, 1993; Delbridge and Turnbull, 1992). The results of the examination of the direct relationships between each of the HP-HR bundles and perceived job demands revealed mixed evidence, suggesting that the effects of the HP-HR set of practices on perceived job demands depends upon the type of HP-HR practices in question.

Contrary to the labour process view, the skills and ability-enhancing bundle does not increase the perceptions of employees' job demands. Selection and recruitment practices are intended to influence and facilitate the compatibility of employees with their organisation (P-O fit) and training and development practices are intended to influence and protect the psychological contract between employees and their employer through professionally developing the employees. It may be argued that when employees have greater congruence with their organisation and when they feel obligated to reciprocate organisational favours, they exert more effort in their work due to which their work routines get intensified. However, an insignificant association between skills-enhancing practices and perceived job demands seems to suggest that these HR practices do not have any substantial influence on employees in relation to their work-related demands.

Contrary to the expected negative association of HP-HR practices of a motivational nature with the perception of employee job demands, the current study revealed that the motivation-enhancing bundle had an inverse relationship with perceived job demands. The effort reward imbalance (ERI) model (Siegrist, 1996) postulates that negative job attitudes and job strain occurs when a lack of reciprocity exists between efforts incurred by the workers and the rewards received in the workplace (i.e. high effort/low reward conditions). In other words, situations of imbalance between effort (extrinsic job demands and intrinsic motivation to fulfil these demands) and reward (such as salary, job security and promotion and status prospects) will lead to stressful imbalance (De Jonge et al., 2001). Similarly, having appropriate rewards may minimise the unfavourable effects of effort expenditure (Siegrist, 1996; Demerouti and Bakker, 2011). Similarly, when compensation is tied to performance or when a clear and objective performance appraisal system

is in place, employees do not perceive that there is an imbalance between effort and reward (Brown and Benson, 2005). The work load that the job role demands can be justified by the rewards it brings (Siegrist, 1966). Hence, the employee appraisal of these motivational workplace initiatives is also favourable towards the efforts demanded in the work roles.

The findings of a positive association between the opportunity- and commitment-enhancing bundle and perceived work demands is consistent with both the labour process view and the mutual gains view. Existing studies (Jensen et al., 2013; Ogbonnaya, 2013; Heffernan and Dundon, 2012; Wood and de Menezes, 2011; Kroon et al., 2009; Ramsay et al., 2000; Green, 2004; Guest, 1999) also exhibit a positive association between high performance HR practices/system and perceived intensification of work. Opportunity-enhancing practices increase the involvement of employees with the work process. HR practices such as information-sharing and enlarged job design make employees more engaged in the work process. However, an increase in employee engagement leads to more empowerment and thus to more responsibility. Subsequently, employees have more to handle on the job and are more responsible for their actions, leading to an increase in the burden of the job and the intensification of the work process.

Similarly, social exchange theory may offer an explanation for the mechanism through which commitment-enhancing practices translates into perceived work overload. According to social exchange theory, employees' interpretation of positive workplace policies and HR practices, such as flexible working, fringe benefits, equal opportunities and grievance systems, trigger a sense of reciprocal obligation. Subsequently, such obligatory behaviours increase both time and work pressure on employees to reciprocate with attitudes and behaviours beneficial to the organisation, including quality performance. The pressure to reciprocate, in turn, casts a doubt on the reasons and efficacy of offering such HR practices in the first place, and puts these in an unfavourable light. Guest and Conway (2007) also suggest that commitment-enhancing bundles exhibit an unexpected and consistent negative association with employee attitudes. The pressure to reciprocate might initiate a reducing effect on their job attitudes and a perception of an increase in their work load.

In essence, the examination of direct relationships between HP-HR bundles and perceived job demands supports that, for two of the HP-HR bundles (opportunity-enhancing and commitment-enhancing bundles) employees perceive an increase in the level of their job demands.

7.2.3 Do Perceived Job Demands Mediate the Relationship between High Performance HR Bundles and Perceived Employee Well-Being?

The third research question addressed whether the relationship between individual HP-HR bundles and perceived employee well-being is mediated by the perceived job demands of employees. Labour process theory suggests that HP-HR practices/system will lower the well-being of employees through intensifying the work process (White and Bryson, 2013; White et al., 2003; Godard, 2001; Ramsay et al., 2000). The results of this study revealed that, through perceived work demands, only two HP-HR bundles (opportunity and commitment-enhancing) had detrimental indirect associations with employee well-being. The motivation-enhancing bundle was found to have a positive indirect relationship and the skills and ability-enhancing bundle was found to have an insignificant indirect association with employee well-being measures via perceived work demands.

The results of the indirect associations of the skills and ability bundle on employee well-being cast a doubt on the assumption that selection, induction and training practices choose employees that fit better with their organisation and encourage them to demonstrate greater proficiency in dealing with work demands through appropriately training them, which in turn results in their improved well-being. Neither does it support the argument that ability-oriented HR practices exert job pressure on employees which compromise their well-being. In fact, selection, induction and training practices do not have any significant association with job satisfaction, organisational commitment or job demands of employees but do seem to increase their perceived job-related anxiety and depression. Therefore, the overall relationship of skills and ability-enhancing practices with employee well-being through perceived job demands is also not significant.

The study suggested positive indirect effects of the motivation-enhancing bundle of HR practices on perceived employee well-being through perceived job demands. The bundle produced a reducing indirect association with both perceived job-related anxiety and depression and a positive indirect association with both perceived job satisfaction and organisational commitment through corresponding reductions in perceived job demands. These findings contradict the critical perspective associated with the effects of HP-HR practices/system on employee well-being through intensification of the work process (White et al., 2003; Gallie et al., 1998). The results infer that the provision of compensatory pay and performance evaluation systems enhance staff morale and motivate them to accept the corresponding job requirements, and perform and align better with organisational objectives which translates into their improved well-being (Macky and Boxall,

2008; Bauer, 2004; Whitener, 2001; Adams, 1965; Vroom, 1964) through the indirect reduction of their perceived corresponding job demands. This could be because employees feel more aware of how to progress, more confident about the reason why certain practices are incorporated, have more operational control over high work demands and measures to cope with the pressures at work and perceive that they will receive the rewards that they feel they deserve.

The mediated relationships of sets of opportunity-enhancing and commitment-enhancing HR practices with employee well-being through perceived job demands align with the labour process view. Both opportunity and commitment bundles were found to increase both job-related anxiety and depression, and decrease both job satisfaction and organisational commitment with corresponding increases in job demands. There is evidence from previous research to support that HP-HR practices/system intensifies the work process of employees through shifting the burden of workplace responsibilities on to employees (Kalmi and Kauhanen, 2008; Sparham and Sung, 2007; White et al., 2003). Specifically, Innocenti et al. (2011) reports a negative relationship between the opportunity-enhancing bundle of HR practices and employee job attitudes. Wood et al. (2012) associate high involvement work systems with lower job satisfaction. Similarly, Guest and Conway (2007) provide support of the negative effects of HR practices that are, in fact, considered to be the antecedents of enhancing commitment of employees and their job attitudes.

The above results suggest that workplace practices introduced to increase employee involvement and enhance their commitment to the organisation are probably not fulfilling their perceived objectives. One could infer that such HR practices are not serving as valuable incentives for either diffusing employees' work-related distress or improving their job attitudes due to corresponding increases in the perceived workload. There may be a number of explanations for why the above results may be true. Specifically, team working and participative decision making activities, a significant aspect of opportunity-enhancing mechanism at the workplace, are linked with lower organisational commitment and employee well-being (Ogbonnaya, 2013). According to Tubré and Collins (2000), such activities cause discrepancies in the delegation of authority between employees which, in turn, creates interpersonal conflict, promotes role stress, expands work pressures, and contributes to an overall decrease in employee well-being. Similarly, information-sharing, on the one hand, psychologically empowers employees to contribute towards workplace decisions and help in diffusing their feelings of distress (Demerouti and Bakker, 2011), and, on the other hand, adds to the responsibilities and expectations of the employers which exerts greater work pressures. Similarly, it is believed that enriched jobs provide employees with skill variety, opportunities to do an identifiable piece of work and chances to make decisions about their work. Nevertheless, these

opportunities challenge employees to complete complex and demanding work and to take on full responsibility for their actions. These challenges provide short-term psychological well-being but lead to long term increase in overload, strain, fatigue and negative job attitudes (Grant et al., 2007). The results empirically substantiate that the opportunity bundle has a positive direct association with employee well-being but cause a negative direct appraisal of employee work demands, exerting an indirect reducing effect on the overall sense of well-being of employees.

Similar arguments may apply for the commitment-enhancing bundle. It seems that, in return for the support that the employees may be getting in the form of family-friendly, equality or procedural justice measures offered by the employer, they are expected to work harder and to serve organisational objectives. Our results suggest that the commitment bundle not only induces the work-related anxiety and depression of employees, but also that this set of practices has an adverse effect on employee job satisfaction, organisational commitment and job demands, which then translates into poor well-being.

In essence, examination of indirect relationships between HP-HR bundles and employee well-being through perceived job demands in the current study support that, for the opportunity-enhancing and commitment-enhancing bundles employees experience lower well-being due to corresponding increases in their perceived level of job demands, as claimed by the labour process theorists. Only motivation-oriented practices have a beneficial indirect effect on employee well-being through a corresponding reduction in work demands.

7.2.4 Do Perceived Job Resources Moderate the Relationship between High Performance HR Bundles, Perceived Job Demands and Employee Well-Being?

The fourth research question addressed the moderating effect of job resources on the relationship between individual HP-HR bundles, perceived job demands and perceived employee well-being. The results of the study revealed mixed results about the moderating effects of perceived job control, perceived managerial support and perceived family support on the HP-HR/well-being association. In line with the JD-R model, job control was found to lower anxiety, depression and enhance job satisfaction and organisational commitment. This result supports prior research (Jensen et al., 2013; Boxall and Macky, 2008; Brown et al., 2008; Orlitzky and Frenkel, 2005; Bakker et al., 2004; 2003b; Perrewe and Ganster, 1989). One could infer that workers who have job autonomy are able to regulate their work speed, decide on work methods, and determine when to pause or switch to less demanding tasks (Jackson et al., 1993), whereas workers who lack job

autonomy are also incapable of exercising these opportunities when they feel overworked in their jobs (Sonnentag and Zijlstra, 2006), leading to a sense of compromised well-being. Job control/autonomy thus evokes a pleasurable experience that generates a sense of personal space for individuals (Wood et al., 2012), that remedies their feelings of a pressured work environment. Hence, having the autonomy to regulate one's work and its corresponding demands seems to lead to lower anxiety and depression and improved satisfaction with work and commitment to the organisation for granting these opportunities.

The results of the buffering relationship of perceived managerial support on job demands and employee well-being offer mixed evidence. Perceived managerial support buffers the influence of job demands on both job-related anxiety and depression. This is in line with the evidence of previous research indicating that managerial support alleviates the influence of job demands on employee anxiety/well-being (Yu, 2015; Sacky and Sanda, 2011; Humphrey et al., 2007; Demerouti et al., 2001; Janssen et al., 1999; Van der Doef and Maes, 1999; Moyle, 1998; Johnson and Hall, 1988). Aspects of perceived communication, consultation, managerial trust and appreciation that constitute the construct of managerial support facilitate employees to cope with the demands at work which, in turn, facilitates performance and guards against ill-health and negative job attitudes (Bakker et al., 2007). The results support the JD-R model by empirically demonstrating that employees facing demanding work conditions may be helped by offering them the appropriate job resources, one of which is managerial support in the workplace.

However, the moderating influence of perceived managerial support on job satisfaction and organisational commitment suggests an alternative perspective on employee level effects of managerial support. This alternative outcome indicates that, although, managerial support is a significant resource in the workplace, such supportive measures may not automatically eliminate the potential of employees' dissatisfaction with the work and/or low commitment towards the organisations. The obligation to return employer's supportiveness with a greater level of congruence with organisational objectives and higher efficiency at work may lower employees' level of satisfaction with the job and commitment towards the organisation. This suggests that organisations should not over-burden their employees with either too many work demands or reciprocal obligatory expectations.

The moderating influence of the perceived availability of family support measures in the workplace also showed mixed results in this study. In terms of job-related anxiety, job-related depression and

job satisfaction, having family support in the workplace had beneficial associations in line with the prediction of the JD-R model. When employees perceived that the option of flexible working and other family care arrangements was available to them in time of need, the potential detrimental influence of any excessive work demands was alleviated, enhancing their sense of psychological well-being and satisfaction with work. This finding suggests that workplace support to meet family responsibilities may act like a psychological buffer which brings about positive appraisal of any challenging work situation/responsibility and facilitates employees' active participation in the work role to enhance their psychological well-being and satisfaction with work (McNall et al., 2010; Amah, 2010; Barney and Elias, 2010; Rao et al., 2003; Dex and Smith, 2002; Allen, 2001; Baltes et al., 1999). Nevertheless, family support does not seem to have any significant association with employee commitment to the organisation. This finding suggests that family support measures may be effective job resources to guard against employee distress or dissatisfaction in the short run but may not be a useful resource to inculcate long term commitment to the organisation.

7.3 Conclusion

Overall, the results suggest that the employers must be cognizant of the effects of HP-HR practices on employees, for not all types of HP-HR practices make a positive impact on employee outcomes. Adoption of high performance HR practices is associated with lower employee well-being when such practices are seen to increase work demands. More importantly, simply adopting effective bundles of HR practices may not reduce employee anxiety, stress and strain and yield job satisfaction and organisational commitment unless it is coupled with appropriate increases in job control/autonomy, managerial and family support to individual employees. Two organisations can adopt identical HP-HR practices, but employees can derive very different experiences from them depending on the subtle differences in which their workplaces offer appropriate supporting resources at work. Therefore, organisations may endeavour to relegate job control and offer managerial and family support initiatives to their employees. This, according to this study, should enhance perceptions of well-being of their employees by effectively tackling the associated work demands of employees.

The impact of the four HP-HR bundles on perceived job demands and different dimension of well-being tends, on the whole, to be more negative than positive. Of the four bundles examined, two, for example, have a significant positive direct effect on job demands, while one has a significant negative and one has no significant direct association with perceived job demands. Likewise, two out of the four bundles have worsening direct effects on different measures of well-

being used in the analysis (i.e. six direct relationships undermined well-being), four direct effects improved well-being and six direct effects had no significant association with any dimension of well-being. Eight out of the sixteen possible total effects between the four HP-HR bundles and four dimensions of well-being through perceived job demands have a negative impact, four have positive effects and four of the sixteen total effects have no significant effect at all, either positive or negative. On balance, therefore, the results, provide stronger support for pessimistic than for either neutral or optimistic interpretations of the impact of HP-HR practices on perceived job demands and employee well-being.

The foregoing indicates that the mutual gains well-being perspective is confirmed only in relation to the direct effect of the opportunity-enhancing bundle on employee well-being, direct effect of motivation-enhancing bundle on perceived job demands and the indirect effect of the motivation-enhancing bundle on employee well-being through perceived job demands. Labour process perspective is established in relation to the direct effects of skills and ability-enhancing bundle on both job-related anxiety and depression, direct relationship between commitment-enhancing bundle on all dimensions of employee well-being and perceived job demands, direct relationship between opportunity-enhancing bundle and perceived job demands and the indirect effects of the opportunity- and commitment-enhancing bundles on employee well-being through perceived job demands. Therefore, largely, in this research the notion that HP-HR practices add to employee work demands and contribute to their lower well-being, seems to hold more than the optimistic view. Thus, the study offers an important corrective to the overly managerial interpretations of HP-HR, bringing the employee to the centre of the analysis in the high performance domain, and strengthens the importance of a more balanced or critical approach to this paradigm (Kroon et al., 2009; Peccei, 2004; Paauwe, 2004; Legge, 1995).

In particular, the study reveals that HP-HR practices can have varying associations with employee outcomes, including their perceptions of job demands, depending on the type of HP-HR bundle. Majority of the significant direct relationships between HP-HR bundles and employee well-being are partially or fully mediated by perceived job demands, exceptions include the direct effect between skills and ability-enhancing bundle and both job-related anxiety and depression. This suggests that job demands serve as an underlying link between HP-HR practices and perceptions of employee well-being, and can hamper the sense of well-being of employees. Specifically, perceived job demands associated with HR practices designed to increase employee opportunities to participate and deemed antecedents of commitment to the organisation reduce well-being of

employees. In combination, careful designing and implementation of HP-HR practices and appropriate job resources will benefit organisations through lower dysfunctional job demands, decreased anxiety and depression and greater employee satisfaction and commitment.

7.4 Practical Implications

The study supports the view that working environments are related to the health and happiness well-being of its employees and that workplace resources are prime instigators of this association. These findings have several practical implications which inform policy makers, HR managers and organisations in terms of developing a work environment that aims at maximising the well-being of employees by reducing the inappropriate effects of the perceived work demands in contemporary workplaces. Because the HRM measures used in this study are defined from the managerial viewpoint, their influence on employee outcomes show how the implemented HR policy/practices form employee experiences of HPWS, and, thus, can be interpreted in terms of implications for future employer policy choices.

HR managers need to be wary of overly relying on the assumptions of the mutual gains well-being perspective and should consider that HP-HR practices are not always favourable for employees. This implication draws on two types of evidence. First, the majority of HP-HR bundles, examined in this study, have been shown to influence employee well-being and perceptions of work demands negatively. Second, work demands have been shown to mediate the indirect effects of most sets of HP-HR practices on employee well-being. This suggests that a number of HP-HR practices risk overloading employees with additional work responsibilities and time pressures (Sparham and Sung, 2007; White et al., 2003; Godard, 2001; Ramsay et al., 2000) which manifest themselves in feelings of work-related anxiety and depression, wearing away employees' satisfaction from work and commitment towards the organisation.

The finding that job-related resources can buffer the negative impact of perceived job demands on employee well-being has important implications for organisational policy and is of particular use in organisational settings where reducing or redesigning job demands is practically difficult. This result provides support for encouraging policy makers and HR managers to release adequate job control and implement managerial and family support mechanisms for their employees. Job control conveys to employees that they are in control of their task schedules, work speed and work methods. Similarly, managerial support and family support signals to employees that their organisation values and cares about their well-being, the quality of their work and home life and

their family needs respectively. These positive signals to employees ease the dysfunctional pressures of work and trigger a sense of positive well-being and beneficial workplace attitudes (Edwards and Peccei, 2010). That is to say that HP-HR practices are not perceived to be exploitative when they are implemented with an adequate and appropriate range of job resources. In such a situation, HP-HR practices may still prompt employees to expend more effort, but without compromising their sense of well-being. The results highlighting insignificant association between perceptions of managerial and family support and organisational commitment entail a further scope of empirical exploration. Hence, organisations and policy makers should work with managers and employees to explore additional workplace resources and/or other ways of improving organisational commitment of employees in a high performance work environment.

The study also points out that organisations should still try to avoid overwhelming job demands, since these are the main predictors of employee *un*-well-being. In this context the over-zealous adoption of opportunity-enhancing and commitment-enhancing practices may be implemented with caution. Employees expect not to have too many, too taxing, overwhelming, stressful or demanding job responsibilities. Neither do they expect to be over-burdened with a sense of obligation to repay the organisational favours extended to them. On the contrary, employees expect that their efforts should be rewarded fairly and generously. In the light of these observations, organisations and managers can benefit in three ways. First, by designing and implementing HR practices that do not over-emphasise opportunity-enhancing and commitment-enhancing notions or stretch employee skills excessively to completing complex and demanding work. Second, by designing and implementing HR practices that signal to employees that they will be rewarded generously and fairly for their efforts. Third, by focusing on selection, inductions and training practices as a useful recruitment and retention strategy. Overall, in practical terms, the results illuminate that it is not sufficient to merely implement high performance HR practices. Rather, organisations need to create a positive work environment for their employees in order to fully benefit from the high performance work environment.

7.5 Theoretical Implications and Contributions

This thesis has contributed to existing knowledge on two levels. First, the study makes a significant contribution to the theoretical development of the high performance paradigm by simultaneously examining the major debates within it with empirical evidence. It did so through the development and testing of a moderated mediation model. It provided an extension to the current understanding of the mechanisms through which the high performance paradigm may exhibit positive influence

on employees. Second, the study added to the previous research on employee well-being and highlighted significant implications for theoretical/academic contexts. Generally, the current research added to a growing trend in the strategic HRM literature in emphasising the role of the human element in human resource management (Gerhart, 2005). The study emphasised the importance of having positive employee experiences of implemented HP-HR practices. Relatively few studies have included multiple source data, i.e. both implemented HRM practices and the individual experiences of those practices, in one study. Accordingly, the study has demonstrated how employees' positive perceptions of the implemented HRM practices are instrumental in determining favourable employee outcomes.

The study extends the current HRM/HPWS literature by showing both direct and indirect relationships between sets of HP-HR practices and various aspects of employee well-being. It has expanded the conceptual models within the HRM literature, by specifying the significance of the way an organisation implements its HP-HR practices - incorporating various job resources within its framework. Academics and managers alike have long tried to ascertain how to ensure employee well-being in organisations and to detect how to avoid and/or balance excessive job demands and its associated impact on employees and organisations. Furthermore, occupational health psychologists have tried to examine the effects of job resources like job control and social support on the amelioration of the effects of job demands on burnout (Van der Doef and Maes, 1999). Benefiting from the conceptual developments and empirical research in the concerned fields, this study has provided support for a number of unique relationships, and accordingly, has contributed to the literature in a number of ways. Although causal inferences from the cross-sectional model tested in this study may be taken with caution, the results of the study do lend credence to current debates in the literature regarding the role of HPWS in developing valuable bundles of less anxious, satisfied and committed human resources (Messersmith et al., 2011; Messersmith and Guthrie, 2010; Delery, 1998).

The study has identified considerable overlapping elements in the literature on HPWS, occupational stress and employee well-being, and has encouraged researchers and academics to use insights from the occupational stress and employee well-being disciplines to strengthen research propositions in the HPWS domain. The findings of the study provide clear support of the buffering hypothesis of the JD-R model studied in the literature and informs managers, organisations and policy-makers of the benefits of offering the appropriate workplace resources to their workforces.

The second contribution of the study is to the current high performance HR literature. Overall, the findings of the study revealed that neither the mutual gains view nor the labour process view is in itself sufficient to explain the complex relationship between HP-HR and employee well-being. In addition, it has also been argued that more research is essential to unveil the hidden mechanism that link HP-HR practices to employee outcomes (Boon et al., 2011; Innocenti et al., 2011; Macky and Boxall, 2008; Messersmith et al., 2011). It has been maintained that current research is lacking in fully identifying the underlying mechanism that justifies the theoretical connections through which HP-HR practices affect employee outcomes. The third contribution of this thesis addressed this aspect and has identified perceived job demands as a nexus between HP-HR practices and employee well-being. This study is amongst the earliest to quantitatively examine if HP-HR increase perceptions of job demands amongst employees (Ogbonnaya, 2013; Heffernan and Dundon, 2012; Kroon et al., 2009) and also is amongst the first ones to examine the potential mediating role of perceived job demands in the relationship between HP-HR bundles and employee outcomes. The findings of the current study revealed that perceived job demands partially or fully mediate the relationship between HP-HR sets of practices, anxiety, depression, job satisfaction and organisational commitment.

The fourth contribution of the study is to evaluate the additive influence of four bundles of HP-HR practices individually on four types of employee well-being. This is an important aspect because it informs the reader about the specific individual additive influence of different components of HP-HR system on the perceived well-being of employees and therefore holds promising policy utility. As there is no single fixed set of HR practices that may reflect a HP-HR system, a set/bundle of HP-HR practices that may serve as antecedents of enhancing employee ability, employee motivation, employee opportunity to perform and employee commitment towards the organisation are taken as proxy sets of HP-HR practices. This is insightful because previously the influence of bundles of HP-HR practices based on the AMOC model on various aspects of employee well-being and perceptions of job demands is less studied.

In addition, examining the distinct associations of these four bundles in this way, as opposed to the multiplicative interaction between bundles or a total number of practices to form a coherent system of HP-HR practices, is beneficial because of three reasons. First, it may be possible to highlight which set of HP-HR practices are responsible for the established positive, negative or no relationship. Second, individual set of HP-HR practices might exhibit different relationships with the outcome variables of job-related anxiety, job-related depression, job satisfaction and

organisational commitment. Hence, it was possible to highlight the influences of these HP-HR bundles individually on both health and happiness aspects of employees and evaluate the likely trade-offs between them. The differential relationship of HP-HR bundles of practices with employee well-being are also particularly important for practical policy implications as stated above. Third, discerning the additive effects of the individual bundles identifies if the concerned practices are achieving their specific identified goals and whether these really propel the workforce in the prescribed way. The extant literature does not make a clear distinction in terms of whether all the HR practices are equally important for employee outcomes and competitive advantage or is it only particular types of HR practices that have substantial affects. The current study thus, highlighted that the skills and ability-enhancing set of practices increases employees' job-related anxiety and depression, but otherwise, has no significant influence on employees' perceptions of job demands and well-being either directly or indirectly through perceived job demands, whereas motivation-enhancing, opportunity-enhancing and commitment-enhancing practices have a substantial association with employee well-being either directly or indirectly through perceived job demands.

7.6 Strengths and Limitations of the Study

Using multiple source data from a nationally representative survey (WERS 2011) allowed generalisability of the findings and eliminated the possibility of common method in the study. Nevertheless, some of the largest path coefficients (i.e. association between perceived job demands and aspects of employee well-being) were observed between variables from the same survey source, and should be interpreted with caution. In addition, the following limitations to the present study should also be noted.

The first limitation pertains to the use of cross-sectional design data in this study. Caution is generally advised in interpreting findings from cross sectional design, because conclusive statements about causality between variables cannot be established. Longitudinal research design is required to establish causality between the concerned variables (Dex and Smith, 2002). Thus, we believe that replicating our study using longitudinal data would be beneficial. A longitudinal study may bring about more reliable results and prove to be more beneficial to further an understanding of the complex and dynamic interplay between HP-HR bundles and employee outcomes including well-being attributes. Specifically, it would be interesting to find out if employee perceptions of work demands change over time, with subsequent effects on anxiety, depression, job satisfaction, or organisational commitment. Similarly, a diary study testing between-person variation could also

prove to be very beneficial to understand the day to day variation of the perceptions of workers about their work demands and well-being in a high performance workplace environment (Demerouti and Bakker, 2011; Simbula, 2010). Such studies would highlight if the assumption of the JD-R model hold on a day level in a high performance work environment.

The HR items selected for this study were mostly measured on a binary scale or were converted into a binary scale to retain consistency in the measurement scale (see Appendix C, Tables C–4 to C–9). Binary items have a restricted range compared to ordinal, interval, or ratio scales, and this may bias estimates conservatively toward zero (White and Bryson, 2011). Various binary scale items relating to a practice were then combined into a composite measure for that practice. The construction of specific bundles of HR practices, in line with the AMOC approach, also followed a normative approach based on previous literature and thus, may be considered somewhat arbitrary. Therefore, the way HR variables are constructed in this study may be argued a potential limitation which may have affected the subsequent analysis (Guest and Conway, 2007). However, a lot of the extant literature in HRM research is based on normative and/or binary source items. For Britain, using the WERS 1998 and 2004 surveys see: Wood and de Menezes (2012; 2011), White and Bryson (2011), Brown et al. (2008), Guest and Conway (2007), Cox et al. (2006), Kinnie et al. (2006), Forth and Millward (2004) and Ramsay et al. (2000). For equivalent US studies using descriptive or binary source items see: Cappelli and Neumark (2001), Collins and Smith (2006), Wright et al. (2005) and Osterman (1994; 2000; 2006) and for Canada see: Zatzick and Iverson (2006) and Godard (2001). These studies have not suffered from inadequate precision due to using binary scales. Therefore, we may safely infer that using binary scale variables may not be a substantial issue in this study. In addition, the process of variable construction is not dissimilar to that used in other studies using WERS 1999 (Guest et al., 2000 Cully et al., 1999) and WERS 2004 (Guest and Conway, 2007). Also we have included a sufficiently large set of practices in each bundle. The bundles could have been designed on the principle of ensuring a minimum number or level of practices in each bundle to allow substitutability. This avenue has not been explored in this thesis and future studies could explore if construction of bundles that allow substitutability impact employee level outcomes differently.

A similar caveat relates to the measurement of perceived family support. The original items measuring perceived family support (3-point scale) have been dichotomised to reflect whether the options have been made available to employees or not, and subsequently combined into a composite variable reflecting perceived family support. Collapsing the scale in this way limited its'

variability, which may have backfired making the scale less reliable and discriminating than the original one. Since, a wider scale variability is associated with more accuracy, future research could examine if using the original scale had any significant change to the results.

Furthermore, the study used aggregated data to assess the conceptual model at the workplace level. Although the literature supports that aggregating individual level phenomena would reflect group level phenomena (Klein et al., 2001; Schneider, 1990), there is still the risk of wrongly assuming that employee level phenomena would reflect perfectly at the workplace level. Considering that the intra-class correlation (ICC) values for some of the study variables showed border line results, there may be some risk that the study suffers from atomistic fallacy. The multilevel modelling techniques can be used to overcome such problems in future research. New multilevel techniques are designed to predict individual level outcomes from workplace level data and vice versa (Croon and Van Veldhoven, 2007).

Another potential limitation of the study is related to the measurement of organisational commitment in the current study. The extant literature (Allen and Meyer, 1990; Mowday et al., 1979) specifies that organisational commitment is of three kinds, i.e. affective commitment (i.e. psychological attachment with being part of the organisation), continuance commitment (i.e. costs associated for employees with leaving the organisation) and normative commitment (i.e. perceived obligation of employees to stay connected to the organisation). In this study organisational commitment reflects only the affective commitment of employees with their organisation. This is partly because measures of normative and continuance commitment are not available in WERS 2011. However, it would be interesting to explore in future studies if there is a link between perceived job demands and normative and/or continuance commitment, and if so, are they any different from the relationship between perceived job demands and affective commitment.

7.7 Directions for Future Research

The findings, conclusions and limitations of the present study provide several opportunities for future research. This study provided useful insights to the intermediary mechanism through which the HRM practices may prove to be favourable for employees through quantitative analysis. Future research could employ qualitative methods to validate the findings of the study and explore the topic in much more detail for an enriched understanding of the underlying mechanisms. Doing so will help to identify in depth; a) how employees tend to form an overall positive assessment of HP-HR practices; b) is what is best for the employee also best for the organisation, only when HP-HR practices are implemented in proper ways.

Replication of the study in other country/institutional contexts could be particularly beneficial given the emphasis that academics like Wood et al. (2012) and Godard (2010) place on the institutional context of HPWS. Therefore, future studies should also consider comparative studies based on study's conceptual model. This will shed useful insights on whether the perceived employee outcomes of the HP-HR practices are dependent upon the country/institutional context, and subsequently, will contribute in the debates of convergence and divergence in the HRM literature (Batt et al., 2009; Guthrie, Liu, Flood and MacCurtain, 2009). Such research will have significant practical implications for multinational organisations.

The current study limited employee well-being to health-related and happiness-related well-being. Grant et al. (2007) have distinguished a third dimension to well-being namely the social (relationship) well-being, which notes the interactions that occur within the organisations – quality of relationships between employees and between employees and their supervisors, and is manifested through items such as trust, morale and co-operation. Although this dimension is frequently used in conceptual models based on social exchange literature, HRM process models and competing values model of organisational culture/climate (Van De Voorde, 2009), we could not incorporate this dimension as an employee outcome in our study for two practical reasons. First, the study incorporated perceptions of managerial trust as an indicator of perceived managerial support, which was one of the moderators in the study. Second, there are no measures available in WERS 2011 for employee morale and co-operation. Future research is encouraged to expand the current research model by incorporating the measure of social well-being as a separate indicator of employee well-being. So far only Orlitzky and Frenkel (2005) have tested the mutual gains and conflicting claims arguments incorporating all three types of well-being in separate analyses conducted in their study, but no integrated model was tested. The expanded version of the current study's model, including three well-being types, would thus make a promising future enquiry.

This thesis examined the buffering effects of three organisational level job resources (i.e. perceived job control, managerial and family support) on employee well-being. The extant literature highlights several other important job resources located at the organisational level (such as salary/wages, career opportunities, job security), interpersonal level (such as co-worker support and team climate), specific job level (such as role clarity and participation in decision making) and the level of task (such as skill variety, task significance, and performance feedback; Demerouti and

Bakker, 2011, p. 2). Future research may examine the buffering role of these important job resources on employee well-being in high performance work environments.

The current study has empirically explored the additive effects of four bundles of HP-HR practices on employee well-being directly and indirectly through perceived job demands. But the logic of systems approach in HRM, posits that the combinations between individual bundles is more important because the sum of the HR components is more than its parts (Guest and Conway, 2007). It is argued that some 'bundles' are synergistic in the sense that they are mutually reinforcing (Appelbaum et al., 2000). Therefore, based on the configurational or contingency theories different combinations of HR practices may exert a positive impact (Gould-Williams, 2003; Delery and Doty, 1996; MacDuffie, 1995). Accordingly, future research can empirically explore how the multiplicative interaction between bundles affect the perceptions of employees about their well-being and job demands.

REFERENCES

Adams, J. S. 1965. Inequity in social exchange. In Berkowitz, L. (Ed.) *Advances in Experimental Social Psychology*. New York: Academic Press, Vol: 2, pp. 267-299.

Ahmad, S. & Schroeder, R. G. 2003. The impact of human resource management practices on operational performance: Recognizing country and industry differences. *Journal of Operations Management*, 21(1), pp. 19-43.

Akdere, M. 2009. A multi-level examination of quality-focused human resource practices and firm performance: Evidence from the US healthcare industry. *The International Journal of Human Resource Management*, 20(9), pp. 1945-1964.

Albrecht, S. L., Bakker, A. B., Gruman, J. A., Macey, W. H., & Saks, A. M. 2015. Employee engagement, human resource management practices and competitive advantage: An integrated approach. *Journal of Organizational Effectiveness: People and Performance*, 2(1), pp. 7-35.

Alfes, K., Shantz, D., & Truss, C. 2013. The link between perceived human resource management practices, engagement and employee behaviour: a moderated mediation model. *The International Journal of Human Resource Management*, 24(2), pp. 330-351.

Allen, T. D. 2001. Family-supportive work environments: the role of organizational perceptions. *Journal of Vocational Behavior*, 58(3), pp. 414-435.

Allen, N. J. & Meyer, J. P. 1990. The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63(1), pp. 1-18.

Allen, J., & Van der Velden, R. 2001. Educational mismatches versus skill mismatches: Effects on wages, job satisfaction, and on-the-job search. *Oxford Economic Papers*, 53(1), pp. 434-452.

Allen, D. G., Shore, L. M., & Griffeth, R. W. 2003. The role of perceived organizational support and supportive human resource practices in the turnover process. *Journal of Management*, 29(1), pp. 99-118

Allen, T. D., & Shockley, K. 2009. Flexible work arrangements: Help or hype. In: Crane, D. R., & Hill, J. E. (Eds.) *Handbook of families and work: Interdisciplinary perspectives*. University Press of America, pp. 265-284.

Allison, P, D. 1999. *Multiple regression: A primer*. Sage Publications: California.

Amah, O. E. 2010. Family-work conflict and the availability of work-family friendly policy relationships in married employees: The moderating role of work centrality and career consequence. *Research and Practice in Human Resource Management*, 18(2), pp. 35-46.

Anderson, J. C., & Gerbing, D. D. 1988. Structural equation modelling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), pp. 411-423.

Ang, S. H., Bartram, T., McNeil, N., Leggat, S. G., & Stanton, P. 2013. The effects of high-performance work systems on hospital employees' work attitudes and intention to leave: a multi-level and occupational group analysis. *The International Journal of Human Resource Management*, 24(16), pp. 3086-3114.

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. 2000. *Manufacturing advantage: Why high-performance work systems pay* off. Ithaca, NY: ILR Press.

Arthur, J. 1994. Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal*, 37(3), pp. 670-687.

Aryee, S., Srinivas, E. S., & Tan, H. H. 2005. Rhythms of life: Antecedents and outcomes of work-family balance in employed parents. *Journal of Applied Psychology*, 90(1), pp. 132-146.

Ashford, S. J., Lee, C., & Bobko, P. 1989. Content, causes, and consequences of job insecurity: a theory-based measure and substantive test. *Academy of Management Journal*, 32, pp. 803-829.

Ashton, D., & Sung, J. 2002. Supporting workplace learning for high performance working. Geneva: ILO

Ashton, D., & Sung, J. 2006. *How competitive strategy matters? Understanding the drivers of training, learning and performance at the firm level*. CLMS Research Paper 66. Leicester: Centre for Labour Market Studies, University of Leicester.

Askenazy, P., Vincent. M. C., & Caroli, È. 2002. New organizational practices and working conditions: Evidence for France in the 1990s. *Louvain Economics Re-view*, 68(1), pp. 91-110.

Atkinson, C., & Hall, L. 2011. Flexible working and happiness in the NHS. *Employee Relations*, 33(2), pp. 88-105.

Awan, W. A. 2013. Determinants of shift work impacting job satisfaction : A study on service sector organizations in Pakistan. *International Journal of Research in Business and Social Science*, 2(4), pp. 49-59.

Bagger, J., & Li, A. 2014. How does supervisory family support influence employees' attitudes and behaviors? A social exchange perspective. *Journal of Management*, 40(4), pp. 1123-1150.

Bagozzi, R. P., & Yi, Y. 1988. On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*. 16(1), pp. 74-94.

Bailey, T. 1993. *Discretionary effort and the organization of work: Employment participation and work reform since Hawthorne*. Unpublished Doctoral Thesis: Teachers College and Conservation of Human Resources. Columbia University, New York, USA.

Bailey, T., Berg, P., & Sandy, C. 2001. The effect of high-performance work practices on employee earnings in the steel, apparel, and medical electronics and imaging industries. *Industrial & Labor Relations Review*, 54(2), pp. 525-543.

Bainbridge, S. 1998. Privately ordered participatory management: An organizational failures analysis. *Delaware Journal of Corporate Law*, 23(3), pp. 979-1076.

Bakker, A. B., Demerouti, E., De Boer, E., & Schaufeli, W. B. 2003a. Job demand and job resources as predictors of absence duration and frequency. *Journal of Vocational Behavior*, 62(2), pp. 341-356.

Bakker, A., Demerouti, E., & Schaufeli, W. 2003b. Dual processes at work in a call centre: An application of the job demands – resources model. *European Journal of Work and Organizational Psychology*, 12(February 2015), pp. 393-417.

Bakker, A. B., Demerouti, E., Taris, T., Schaufeli, W. B., & Schreurs, P. 2003c. A multi-group analysis of the job demands-resources model in four home care organizations. *International Journal of Stress Management*, 10(1), pp. 16-38.

Bakker, A. B., Demerouti, E., & Verbeke, W. 2004. Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, 43(1), pp. 83-104.

Bakker, A. B., Demerouti, E., & Euwema, M. C. 2005. Job resources buffer the impact of job demands on burnout. *Journal of Occupational Health Psychology*, 10(2), pp. 170-180.

Bakker, A. B., & Demerouti, E. 2007. The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), pp. 309-328.

Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. 2007. Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology*, 99(2), pp. 274-284.

Bakker, A. B., & Demerouti, E. 2008. Towards a model of work engagement. *Career Development International*, 13(3), pp. 209-223.

Bakker, A. B., & Bal, M. P. 2010. Weekly work engagement and performance: a study among starting teachers. *Journal of Occupational and Organizational Psychology*, 83(1), pp. 189-206.

Bakker, A. B., Boyd, C. M., Dollard, M., Gillespie, N., Winefield, A. H., & Stough, C. 2010. The role of personality in the job demands-resources model: A study of Australian academic staff. *Career Development International*, 15(7), pp. 622-636.

Bakker, A., & Demerouti, E. 2012. Dual processes at work in a call centre: An application of the job demands–resources model. *European Journal of Work and Organizational Psychology*, (January), pp. 37-41.

Baltes, B. B., Briggs, T. E., Huff, J. W., & Wright, J. A. 1999. Flexible and Compressed Work Week Schedules: A meta-analysis of their effects on work-related criteria. *Journal of Applied Psychology*, 84, pp. 496-513.

Baltes, B. B., Clark, M. A., & Chakrabarti, M. 2009. Work-Life Balance: The roles of work-family conflict and work-family facilitation. In Linley, P. A., Harrington, S., & Garcea, N. (Eds.) *Oxford handbook of positive psychology and work*. Oxford: Oxford University Press, pp. 1-14.

Baptiste, N. R. 2008. Tightening the link between employee wellbeing at work and performance. A new dimension for HRM [Human Resource Management]. *Management Decision*, 46(2), pp. 284-309.

Barker, J. R. 1993. Tightening the iron cage: Concertive control in self-managing teams. *Administrative Science Quarterly*, 38(3), pp. 408-437.

Barling, J., Kelloway, E. K., & Iverson, R. D. 2003. High-quality work, job satisfaction, and occupational injuries. *Journal of Applied Psychology*, 88(2), pp. 276-283.

Barney, C. E., & Elias, S. M. 2010. Flex-time as a moderator of the job stress-work motivation relationship: A three nation investigation. *Personnel Review*, 39(4), pp. 487-502.

Baron, R. M., & Kenny, D. A. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), pp. 1173-1182.

Bartlett, K. R. 2001. The relationship between training and organizational commitment : A study in the health care field. *Human Resource Development Quarterly*, 12, pp. 335-352.

Bashir, M., Jianqiao, L., Zhang, Y., Ghazzanfar, F., Abrar, M., & Khan, M. M. 2011. The relationship between high performance work system, organizational commitment and demographic factors in public sector universities of Pakistan. *Interdisciplinary Journal of Research in Business*, 1(8), pp. 62-71.

Batt, R. 2002. Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal*, 45(3), pp. 587-597.

Batt, R., Holman, D., & Holtgrewe, U. 2009. The Globalization of service work: Comparative institutional perspectives on call centers: Introduction to a Special Issue of ILRR. *Industrial & Labor Relations Review*, 62(4), pp. 453-488.

Bauer, T. K. 2004. High performance workplace practices and job satisfaction: Evidence from Europe. Bonn: IZA discussion paper No. 1265 (August).

Beauregard, T. A., & Henry, L. C. 2009. Making the link between work-life balance practices and organizational performance. *Human Resource Management Review*, 19(1), pp. 9-22.

Becker, B., & Gerhart, B. 1996. The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal*, 39(4), pp. 779-801.

Becker, B., & Huselid, M. 1998. High performance work systems and work performance: A synthesis of research and managerial implications. In: Ferris, G. (Ed.) *Research in personnel and human resources management*. Stamford, Comm: JAI Press, pp. 53-101.

Becker, B. E., Huselid, M. A., Pickus, P. S., & Spratt, M. F. 1997. HR as a source of shareholder value: Research and recommendations. *Human Resource Management*, 36(1), pp. 39-47.

Beehr, T. A., King, L. A., & King, D. W. 1990. Social support and occupational stress: Talking to supervisors. *Journal of Vocational Behavior*, 36, pp. 61-81.

Beehr, T. A., & McGrath, J. E. 1992. Social support, occupational stress and anxiety. *Anxiety, Stress, and Coping*, 5(1), pp. 7-19.

Beer, M., Spector, B., Lawrence, P.R., Mills, Q.D., & Walton, R.E. 1986. *Managing human assets*. New York: Free Press.

Bélanger, J., Giles, A., & Murray, G. 2002. Towards a new production model: Potentialities, tensions and contradictions. In: Murray, G., Bélanger, J., Giles, A., & Lapointe, P-A. (Eds.) *Work employment relations in the high-performance workplace*. London and New York: Continuum.

Bello-Pintado, A. 2015. Bundles of HRM practices and performance: empirical evidence from a Latin American context. *Human Resource Management Journal*, 25(3), pp. 311-330.

Belt, V., & Giles, L. 2009. High performance working: A synthesis of the key literature, evidence report 4, London, UK Commission for Employment and Skills.
Berg, P., & Frost, A. 2005. Dignity at work for low wage, low skill service workers. *Industrial Relations*, 60(1), pp. 657-682.
Bingham, J. B., Boswell, W. R., & Boudreau, J. W. 2005. Job demands and job search among high-level managers in the United States and Europe. *Group & Organization Management*, 30(6), pp. 53-681.
Birdi, K., Allan, C., & Warr, P. 1997. Correlates and perceived outcomes of four types of employee development activity. *Journal of Applied Psychology*, 82(6), pp. 845-857.
Black, C. 2008. *Working for a healthier tomorrow* [online]. London: Stationery Office. Available at: www.workingforhealth.gov.uk/Carol-Blacks-Review/ [Accessed: October 31st 2014].
Black, D. C., & Frost. D. 2011. Health at work – An independent review of sickness absence Health at work. [Online]. London: The Stationery Office. (Vol. 8205). [Accessed: October 31st 2014].
Black, D. C. 2008. *Summary of evidence submitted*. [Online]. London: Stationery Office. Available at: www.workingforhealth.gov.uk/Carol-Blacks-Review/ [Accessed: October 31st 2014].
Blaikie, N. 2000. *Designing Social Research*. Cambridge: Polity Press.
Blau, P. M. 1964. *Exchange and power in social life*: New York: Wiley.
Bliese, P. D. 2000. Within group agreement, non-independence, and reliability: Implications for data aggregation and analysis. In: Klein, K. J., & Kozlowski, S. W. J. (Eds.). *Multilevel theory, research, and methods in organizations: Foundations, extensions and new directions*. San Francisco: Jossey-Bass, pp. 349-381.
Bolino, M. C., & Turnley, W. H. 2005. The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work-family conflict. *Journal of Applied Psychology*, 90(4), pp. 740-748.
Bonias, D., Bartram, T., Leggat, S. G., & Stanton, P. 2010. Does psychological empowerment mediate the relationship between high performance work systems and patient care quality in hospitals? *Asia Pacific Journal of Human Resources*, 48(3), pp. 319-337.
Boon, C., Den Hartog, D., Boselie, P., & Paauwe, J. 2011. The relationship between perceptions of hr practices and employee outcomes: Examining the role of person–organisation and person–job fit. *The International Journal of Human Resource Management*, 22(1), pp. 138-162.
Boselie, P. 2010. High performance work practices in the health care sector: A Dutch case study. *International Journal of Manpower*, 31(1), pp. 42-58.
Boselie, P., Brewster, C., & Paauwe, J. 2009. In search of balance - managing the dualities of HRM: An overview of the issues. *Personnel Review*, 38(5), pp. 461-471.
Boselie, P., Dietz, G., & Boon, C. 2005. Commonalities and contradictions in HRM and performance research. *Human Resource Management Journal*, 15(3), pp. 67-94.
Bowen, D. E., & Ostroff, C. 2004. Understanding HRM–firm performance linkages: The role of the 'strength' of the HRM system. *Academy of Management Review*, 29(2), pp. 203-221.
Boxall, P. 2012. High-performance work systems: What, why, how and for whom? *Asia Pacific Journal of Human Resources*, 50(2), pp. 169-186.
Boxall, P., Hutchison, A., & Wassenaar, B. 2015. How do high-involvement work processes influence employee outcomes? An examination of the mediating roles of skill utilisation and intrinsic motivation. *The International Journal of Human Resource Management*, 26(13), pp. 1737-1752.
Boxall, P., & Macky, K. 2009. Research and theory on high-performance work systems: Progressing the high-involvement stream. *Human Resource Management Journal*, 19(1), pp. 3-23.
Boxall, P., & Macky, K. 2014. High-involvement work processes, work intensification and employee well-being. *Work, Employment & Society*, 28(6), pp. 963-984.
Boxall, P., & Purcell, J. 2000. Strategic human resource management: Where have we come from and where should we be going? *International Journal of Management Reviews*, 2(2), pp. 183-203.

Boxall, P., & Purcell, J. 2003. *Strategy and human resource management*, Basingstoke: Palgrave Macmillan.
Boxall, P., & Purcell, P. 2008. *Strategy and human resource management*, 2nd edition. Basingstoke: Palgrave Macmillan.
Briggs, S. R., & Cheek, J. M. 1986. The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, 54(1), pp. 106-148.
Brödner, P., & Forslin, J. 2002. O Tempora, O Mores! Work intensity–why again an issue? In: Docherty, P., Forslin, J., & Shani, A. B. (Eds.) Creating sustainable work system: Emerging perspectives and practice. London: Routledge, pp. 15-26.
Brown, M., & Benson, J. 2005. Managing to overload? Work overload and performance appraisal processes. *Group & Organization Management*, 30(1), pp. 99-124.
Brown, A., Forde, C., Spencer, D., & Charlwood, A. 2008. Changes in HRM and job satisfaction, 1998–2004: Evidence from the Workplace Employment Relations Survey. *Human Resource Management Journal*, 18(3), pp. 237-256.
Bryman, A. 2008. *Social research methods*. 3rd Edition. Oxford: Oxford University Press.
Bryman, A. 2012. *Social research methods*. 4th Edition. Oxford: Oxford University Press.
Bryman, A., & Bell, E. 2003. *Business research methods*. New York: Oxford University Press.
Bryson, A., & White, M., 2008. *Organizational commitment: Do workplace practices matter?* CEP Discussion Paper No 881 July.
Bryson, A., Forth, J., & Stokes, L. 2014. *Does worker wellbeing affect workplace performance?* Department of Business Innovation and Skills NIESR, (October).
Buchko, A. A. 1992. Employee ownership, attitudes, and turnover: An empirical assessment. *Human Relations*, 45(7), pp. 711-733.
Burke, M. J., Borucki, C. C., & Hurley, A. E. 1992. Reconceptualizing psychological climate in a retail service environment: A multiple stakeholder perspective. *Journal of Applied Psychology*, 77(5), pp. 717-729.
Butts, M. M., Vandenberg, R. J., De Joy, D. M., Schaffer, B. S., & Wilson, M. G. 2009. Individual reactions to high involvement work processes: Investigating the role of empowerment and perceived organizational support. *Journal of Occupational Health Psychology*, 14(2), pp. 122-136.
Butts, M. M., Casper, W. J., & Yang, T. S. 2012. How important are work–family support policies? A meta-analytic investigation of their effects on employee outcomes. *Journal of Applied Psychology*, 98(1), pp. 1-25.
Byrne, B. M. 1994. *Structural Equation Modeling with EQS and EQS/windows*. Thousand Oaks, CA: Sage.
Byrne, B. M. 2010. S*tructural equation modeling with AMOS: Basic concepts, applications, and programming.* 2nd Edition. Lawrence Erlbaum Associates, Incorporated: New Jersey.
Caison, A. L., Bulman, D., Pai, S., & Neville, D. 2008. Exploring the technology readiness of nursing and medical students at a Canadian University. *Journal of Inter-professional Care*, 22(3), pp. 283-294.
Campbell, M., & Garrett, R. 2004. The evidence base for the SSDA strategic plan 2005-2008, SSDA Research Series Report Number 6, Sector Skills Development Agency, Wath Upon Dearne: Available at: http://www.ukces.org.uk/the-uk-skills-and-productivity- agenda-the-evidence-base-for-the-ssda's-strategic-plan-2005-2008-research-report-6. [Accessed: October 12th 2013].
Campion, M. A. 1988. Interdisciplinary approach to job design. *Journal of Applied Psychology*. 53(3), pp. 467-481.
Campion, M. A., & Thayer, P. W. 1987. Job design approaches, outcomes, and trade-offs. *Organizational Dynamics*, 15(3), pp. 66-79.
Campion, M. A., & McClelland, C. L. 1993. Follow-up and extension of the interdisciplinary costs and benefits of enlarged jobs. *Journal of Applied Psychology*, 78(3), pp. 339-351.
Cantarello, S., Filippini, R., & Nosella, A. 2012. The intellectual structure of organizational ambi-

dexterity: A bibliographic investigation into the state of the art. *Strategic Organization*, 10(4), pp. 450-465.
Cappelli, P., & Nuemark, D. 1999. Do 'high performance' work practices improve establishment-level outcomes? *NBER Working Paper Series*.
Carr, M. D., & Mellizo, P. 2013. The relative effect of voice, autonomy, and the wage on satisfaction with work. *The International Journal of Human Resource Management*, 24(6), pp. 1186-1201.
Carter, B., Danford, A., Howcroft, D., Richardson, H., Smith, A., & Taylor, P. 2011. All they lack is a chain: Lean and the new performance management in the British civil service. *New Technology, Work and Employment*, 26(2), pp. 83-97.
Castro, S. L. 2002. Data analytic methods for the analysis of multilevel questions: A comparison of Intra-class correlation coefficients, Rwg.j, hierarchical linear modeling, within-and between -analysis and random group resampling. *The Leadership Quarterly*, 13(1), pp. 69-93.
Chan, D. 1998. Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, 83(2), pp. 234-246.
Chau, P. 1997. Re-examining a model evaluation information center success using a structural equation modeling approach. *Decision Sciences*. 28(2), pp. 309-334.
Chaudhuri, K. 2009. An empirical quest for linkages between HPWS and employee behaviors-a perspective from the non-managerial employees in Japanese organizations. *International Journal of Social Sciences*, 4(2), pp. 117-131.
Chew, J., & Chan, C. 2008. Human resource practices, organizational commitment and intention to stay. *International Journal of Manpower*, 29(6), pp. 503-522.
Chi, N. W., & Lin, C. Y. Y. 2011. Beyond the high-performance paradigm: Exploring the curvilinear relationship between high-performance work systems and organizational performance in Taiwanese manufacturing firms. *British Journal of Industrial Relations*, 49(3), pp. 486-514.
Chi, N. W., Huang, Y. M., & Lin, S. C. 2009. A double-edged sword? Exploring the curvilinear relationship between organizational tenure diversity and team innovation: The moderating role of team-oriented HR practices. *Group & Organization Management*, 34(6), pp. 698-726.
Chin, W. 1998. The partial least square approach for structural equation modelling. In: Marcoulides, G. A. (Ed.), *Modern methods for business research.* Hillsdale, N.J: Lawrence Erlbaum Associates, pp. 295-336.
Cho, Y. J., & Poister, T. H. 2013. Human resource management practices and trust in public organizations. *Public Management Review*, 15(6), pp. 816-838.
Churchill, G. A. 1979. A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*. 16 (February), pp. 64-73.
Churchill, G. 1999. *Marketing research*. Hinsdale, IL: The Dryden Press.
CIPD. 2015. Absence management survey report, pp.1–53. Available at: http://www.cipd.co.uk/research/absence-management-survey.aspx [Accessed: November 29th 2015].
Clark, S. C. 2001. Work cultures and work/family balance. *Journal of Vocational Behavior*, 58, pp. 348-365.
Clarke, M. A., & Hill, S. R. 2012. Promoting employee wellbeing and quality service outcomes: The role of HRM practices. *Journal of Management and Organization*, 18(5), pp. 702-713.
Cohen, J., & Cohen, P. 1983. *Applied multiple regression/correlation analysis for the behavioral sciences.* New York: Lawrence Erlbaum Associates, Inc.
Cohen, S., & Wills, T. A. 1985. Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98(2), pp. 310-357.

Collins, C. J., & Smith, K. G. 2006. Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal*. 49(3), pp. 544-560.

Combs, J., Liu, Y., Hall, A., & Ketchen, D. 2006. How much do high-performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology*, 59(3), pp. 501-528.

Comrey, A. L., & Lee, H. B. 1992. *A first course in factor analysis*. 2nd Edition. East Sussex: Lawrence Erlbaum Associates, Inc.

Cook, D., & Swayne, D. F. 2007. *Interactive and dynamic graphics for data analysis with R and GGobi*. New York: Springer.

Cortina, J. M. 1993. What is co-efficient alpha? An examination of theory and applications. *Journal of Applied Psychology*. 78, pp. 98-104.

Cotton, J. L., & Tuttle, J. M. 1986. Employee turnover: A meta-analysis and review with implications for research. *Academy of Management Review*, 11(1), pp. 55-70.

Cox, A., Zagelmeyer, S., & Marchington, M. 2006. Embedding employee involvement and participation at work. *Human Resource Management Journal*, 16(3), pp. 250-267.

Cropanzano, R., & Wright, T. A. 2001. When a happy worker is really a 'productive' worker: A review and further refinement of the happy-productive worker thesis. *Consulting Psychology Journal: Practice and Research*, 53 (3), pp. 182-199.

Croon, M. A., & van Veldhoven, M. J. P. M. 2007. Predicting group-level outcome variables from variables measured at the individual level: A latent variable multilevel model. *Psychological Methods*, 12(1), pp. 45-57.

Cully, M., Woodland, S., O'Reilly, A., & Dix, G. 1999. *Britain at Wor*k. London: Routledge.

Curran, P. J., West, S. G., & Finch, J. F. 1996. The robustness of test statistics to non-normality and specification error in confirmatory factor analysis. *Psychological Methods*. 1(1), pp. 16-29.

Danna, K., & Griffin, R.W. 1999. Health and well-being in the workplace: A review and synthesis of the literature. *Journal of Management*, 25(3), pp. 357-384.

Danermark, B., Ekstrom, M., Jakobsen, L., & Karlsson, J. 2002. *Explaining society: critical realism in the social sciences*. London: Routledge.

Danford, A. 1999. Japanese *management techniques and British workers*. London: Routledge.

Danford, A., Richardson, M., Stewart, P., Tailby, S., & Upchurch, M. 2004. High performance work systems and workplace partnership: A case study of aerospace workers. *New Technology, Work and Employment*, 19(1), pp. 14-29.

Danford, A., Richardson, M., Stewart, P., Tailby, S., & Upchurch, M. 2008. Partnership, high performance work systems and quality of working life. *New Technology, Work and Employment*, 23(3), pp. 151–166.

Danford, A., Durbin, S., Richardson, M., Tailby, S., & Stewart, P. 2009. Everybody's talking at me: The dynamics of information disclosure and consultation in high-skill workplaces in the UK. *Human Resource Management Journal*, 19(4), pp. 337-354.

Daniels, K., Beesley, N., Cheyne, A., & Wimalasiri, V. 2008. Coping processes linking the demands-control-support model, affect and risky decisions at work. *Human Relations*, 61(6), pp. 845-874.

Datta, D. K., Guthrie, J. P., & Wright, P. M. 2005. Human Resource Management and Labor Productivity: Does Industry Matter? *Academy of Management Journal*, 48(1), pp. 135-145.

Deci, E. L. 1972. The effects of contingent and non-contingent rewards and controls on intrinsic motivation. *Organizational Behavior and Human Performance*, 8(2), pp. 217-229.

De Janasz, S., Behson, S. J., Jonsen, K., & Lankau, M. J. 2013. Dual sources of support for dual roles: how mentoring and work–family culture influence work–family conflict and job attitudes. *The International Journal of Human Resource Management*, 24(7), pp. 1435-1453

De Jong, J., Dormann, C., Janssen, P. P. M., Dollard, M. F., Landerweerd, J. A., & Nijhuis, F. J. N. 2001. Testing reciprocal relationships between job characteristics and psychological well-

being: A cross-lagged structural equation model. *Journal of Occupational and Organizational Psychology*, 74(1), pp. 29-46.
De Joy, D. M., Wilson, M. G., Vandenberg, R. J., McGrath-Higgins, A. L., & Griffin-Blake, C. S. 2010. Assessing the impact of healthy work organization intervention. *Journal of Occupational and Organizational Psychology*, 83(1), pp. 139-165.
De Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. 2003. The very best of the millennium: Longitudinal research on the Job Demands-Control model. *Journal of Occupational Health Psychology*, 8(4), pp. 282-305.
De Menezes, L. M., & Wood, S. 2006. The reality of flexible work systems in Britain. *The International Journal of Human Resource Management*, 17(1), pp.106-138.
De Vaus, D. 2002. *Analyzing social science data: 50 key problems in data analysis*. London: Sage Publications.
Delbridge, R. 1998. *Life on the line in contemporary manufacturing*. Oxford: Oxford University Press.
Delbridge, R. 2007. HRM and contemporary manufacturing, In: P. Boxall, J. Purcell and P. Wright (Eds.), *The Oxford handbook of human resource management*, Oxford: Oxford University Press.
Delbridge, R., & Lowe, J. 1997. Managing human resources for business success: A review of the issues. *International Journal of Human Resource Management*, 8(6), pp. 857-873.
Delbridge, R., & Keenoy, T. 2010. Beyond managerialism? *The International Journal of Human Resource Management*, 21(6), pp. 799-817.
Delbridge, R., & Turnbull, P. 1992. Human resource maximization: The management of labour under just-in-time manufacturing systems. In: Blyton, P. & Turnbull, P. (Eds.) *Reassessing human resource management*. London: Sage.
Delery, J. E., & Shaw, J. D. 2001. The strategic management of people in work organizations: review, synthesis, and extension, In: Ferris, G. R. (Ed.) *Research in personnel and human resources management*, New York: JAI Press, Vol: 20, pp. 165-197.
Delery, J. E., & Doty, D. H. 1996. Modes of theorizing in strategic human resource management : Tests of universalistic, contingency, and configurational performance predictions. *Academy of Management Journal*, 39(4), pp. 802-835.
Delery. J. E. 1998. Issues of fit in strategic human resource management: Implications for research. *Human Resource Management Review*, 8(3), pp. 289-309.
Demerouti, E., & Bakker, A. B. 2011. The job demands–resources model: Challenges for future research. *SA Journal of Industrial Psychology*, 37(2), pp. 1-10.
Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. 2001. The job-demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), pp. 499-512.
Den Hartog, D. N., & Verburg, R. M. 2004. High performance work systems, organisational culture and HRM effectiveness. *Human Resource Management Journal*, 14(1), pp. 55-78.
Den Hartog, D. N., Boon, C., Verburg, R. M., & Croon, M. A. 2013. HRM, communication, satisfaction, and perceived performance: A cross-level test. *Journal of Management*, 39(6), pp. 1637-1665.
Dex, S., & Smith, C. 2002. The nature and patterns of family-friendly employment policies in Britain [Online]. Available at: http://www.jrf.org.uk/publications/nature-and-pattern-family-friendly-employment-policies-britain. [Accessed: October 14th 2014].
Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. 1999. Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125 (2), pp. 276-302.
Dorenbosch, L. 2009. *Management by vitality: Examining the "Active" well-being and performance outcomes of high performance work practices at the work unit level*. Ph.D. dissertation, Tilburg: Tilburg University.
Dweck, C. S. 1999. *Self-theories: Their role in motivation, personality, and development*. Philadelphia: Psychology Press.
Dysvik, A., Kuvaas, B., & Buch, R. 2014. Perceived training intensity and work effort: The moderating role of perceived supervisor support. *European Journal of Work and Organizational*

Psychology, 23(5), pp. 729-738.
Eaton, C., Plaisant, C., & Drizd, T. 2005. Visualizing missing data: Graph interpretation user study. In: Human-Computer Interaction-INTERACT 2005, Lecture Notes in Computer Sciences, Springer, pp. 861-872.
Edwards, M., & Peccei, R. 2010. Perceived organizational support, organizational identification, and employee outcomes: Testing a simultaneous multi-foci model. *Journal of Personnel Psychology*, 9(1), pp. 17-26.
EEF/CIPD. 2003. *Maximising employee potential and business performance: The role of high performance working*, November, EEF, London.
Ehrnrooth, M., & Björkman, I. 2012. An integrative HRM process theorisation – beyond signalling effects and mutual gains'. *Journal of Management Studies*, 49(6), pp. 1109-1135.
Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. 1990. Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75(1), pp. 51-59.
Estes, S. B., & Michael, J. 2005. Work-family policies and gender inequality at work: A Sloan work and family encyclopaedia entry. [Online]. Available at: http://wfnetwork.bc.edu/encyclopedia_entry.php?id=1230&area=All. [Accessed: March 20th 2012]
Ettner, S. L., & Grzywacz, J. G. 2001. Workers' perceptions of how jobs affect health: A social ecological perspective. *Journal of Occupational Health Psychology,* 6(2), pp. 101-113.
Evans, W. R., & Davis, W. D. 2005. High-performance work systems and organizational performance: The mediating role of internal social structure. *Journal of Management*, 31(5), pp. 758-775.
Fan, D., Cui, L., Zhang, M. M., Zhu, C. J., Härtel, C. E., & Nyland, C. 2014. Influence of high performance work systems on employee subjective well-being and job burnout: Empirical evidence from the Chinese healthcare sector. *International Journal of Human Resource Management*, 25(7), pp. 931-950.
Farndale, E., Hope-Hailey, V., & Kelliher, C. 2011. High commitment performance management: the roles of justice and trust. *Personnel Review*, 40(1), pp. 5-23.
Farrell, A. M., & Rudd, J. M. 2009. Factor analysis and discriminant validity: A brief review of some practical issues. In: *ANZMAC*. (Conference paper), pp. 1-9.
Feldt, L. S., & Qualls, A. L. 1996. Bias in coefficient alpha arising from heterogeneity of test content. *Applied Measurement in Education*. 9(3), pp. 277-286.
Field, A. 2000. *Discovering statistics using SPSS for windows*. London: Thousand Oaks.
Field, A. 2005. *Discovering statistics using SPSS for windows*. 2nd Edition. London: Sage.
Fiksenbaum, L. M. 2014. Supportive work–family environments: Implications for work-family conflict and well-being. *The International Journal of Human Resource Management*, 25(5), pp. 653-672.
Findlay, P., McKinlay, A., Marks, A., & Thompson, P. 2000. Flexible When It Suits Them: The Use and Abuse of Teamwork Skills. In: Procter, S. & Mueller, F. (Eds.). *Teamworking*. London: Macmillan, pp. 222-243.
Finn, D. R. 1992. The meanings of money: A view from economics. *American Behavioral Scientist*, 35(6), pp. 658-668.
Fischer, R., Redford, P., Ferreira, M. C., Harb, C., & Assmar, E. M. L. 2005. Organizational behaviour across cultures. *International Journal of Cross Cultural Management*. 5(1), pp. 27-48.
Fisher, C. D. 2010. Happiness at Work. *International Journal of Management Reviews*, 12(4), pp. 384-412.
Fleetwood, S., & Hesketh, A. 2008. Theorising under-theorisation in research on the HRM-performance link. *Personnel Review*, 37(2), 126-144.
Fleetwood, S., & Hesketh, A. 2006. HRM-Performance Research: Under-theorised and lacking explanatory power. *International Journal of Human Resource Management*, 17(12), pp. 1977-1993.
Fornell, C., & Larcker, D. 1981. Evaluating structural equation models with unobservable variables

and measurement error: Algebra and statistics. *Journal of Marketing Research*, 18(1), pp. 39-50.
Forth, J., & Millward, N. 2004. High-involvement management and pay in Britain. *Industrial Relations*, 43(1), pp. 98-119.
Freeman, R. B., & Kleiner, M. M. 2000. Who benefits most from employee involvement: firms or workers? *American Economic Review*, 90(2), pp. 219-223.
Freeman, R. B., Kleiner, M. M., & Ostroff, C. 2000. *The anatomy of employee involvement and its effects on firms and workers* (No. w8050). National Bureau of Economic Research.
Freud, S. 1936. *The Problem of Anxiety*, New York: Norton.
Gaffney, P. V. 1997. A test reliability analysis of an abbreviated version of the pupil control ideology form. *Reports-Evaluative*. ED, pp. 407-422.
Gajendran, R. S., & Harrison, D. A. 2007. The good, the bad, and the unknown about telecommuting: Meta-analysis of psychological mediators and individual consequences. *Journal of Applied Psychology*, 92(6), pp. 1524-1541.
Galea, C., Houkes, I., & De Rijk, A. 2014. An insider's point of view: How a system of flexible working hours helps employees to strike a proper balance between work and personal life. *The International Journal of Human Resource Management*, 25(8), pp. 1090-1111.
Gallie, D. 2007. *Employment regimes and the quality of work*. Oxford: Oxford University Press.
Gallie. D., White. M., Cheng, Y., & Tomlinson. M. 1998. *Restructuring the employment relationship*. Oxford: Clarendon Press.
García-Chas, R., Neira-Fontela, E., & Castro-Casal, C. 2014. High-performance work system and intention to leave: A mediation model. *The International Journal of Human Resource Management*, 25(3), pp. 367-389.
Gardner, T. M., Moynihan, L. M., & Wright, P. M. 2007.The influence of human resource practices and collective affective organizational commitment on aggregate voluntary turnover. Available at SSRN 1089190.
Gardner, T. M., Wright, P. M., & Moynihan, L. M. 2011. The impact of motivation, empowerment, and skill-enhancing practices on aggregate voluntary turnover: The mediating effect of collective affective commitment. *Personnel Psychology*, 64(2), pp. 315-350.
Garrick, A., Mak, A. S., Cathcart, S., Winwood, P. C., Bakker, A. B., & Lushington, K. 2014. Psychosocial safety climate moderating the effects of daily job demands and recovery on fatigue and work engagement. *Journal of occupational and organizational psychology*, 87(4), pp. 694-714.
Gazioglu, S., & Tansel, A. 2006. Job satisfaction in Britain: Individual and job related factors. *Applied Economics*, 38(10), pp. 1163-1171.
Gellatly, I. R., Hunter, K. H., Currie, L. G., & Irving, P. G. 2009. HRM practices and organizational commitment profiles. *The International Journal of Human Resource Management*, 20(4), pp. 869-884.
Gerhart, B. 2005. Human resources and business performance: findings, unanswered questions, and an alternative approach. *Management Revue*, 16(2), pp. 174-85.
Ghauri, P., & Grønhaug, K. 2002. *Research methods in business studies: A practical guide*. 2nd Edition. Harlow: Prentice Hall.
Giles, A., Murray, G., & Bélanger, J. 2002. Introduction: Assessing the prospects for the high performance workplace. In: Murray, G., Belanger, J., Giles, A., & Lapointe, P. *Work and employment relations in the high performance workplace, employment and work*. London: Continuum.
Gill, J., & Johnson, P. 2002. *Research methods for managers*. 3rd Edition. London: Sage Publications.
Gittell, J. H., Seidner, R. & Wimbush, J. 2010. A relational model of how high-performance work systems work. *Organization Science*, 21(2), pp. 490-506.
Glaser, G. 1992. *Basis of grounded theory analysis*. Mill Valley, CA: Sociology Press.
Godard, J. 1998. Workplace reforms, managerial objectives and managerial outcomes: The perceptions of Canadian IR/HRM managers. *International Journal of Human Resource Management* , 9(1), pp. 18-40.

Godard, J. 2001. High performance and the transformation of work ? The implications of alternative work practices for the experience and outcomes of work. *Industrial & Labor Relations Review*, 54(4), pp. 776-805.
Godard, J. 2004. A critical assessment of the high-performance paradigm. *British Journal of Industrial Relations*, 42(2), pp. 349-378.
Godard, J. 2010. What's best for workers? The implications of work and human resource practices revisited. *Industrial Relations*, 49(3), pp. 465-487.
Gouldner, A. 1960. The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25(2), pp. 161-178.
Gould-Williams, J. 2003. The importance of HR practices and workplace trust in achieving superior performance: A study of public-sector organizations. *International Journal of Human Resource Management*, 14(1), pp. 28-54.
Gould-Williams, J. 2004. The effects of 'high commitment' HRM practices on employee attitude: the views of public sector workers. *Public Administration*, 82(1), pp.63-81.
Gould-Williams, J., & Davies, F. 2005. Using social exchange theory to predict the effects of HRM practice on employee outcomes: An analysis of public sector workers. *Public Management Review*, 7(1), pp. 1-24
Gould-Williams, J. S., & Gatenby, M. 2010. The effects of organizational context and teamworking activities on performance outcomes: A study conducted in England local government. *Public Management Review*, 12(6), pp. 759-787.
Gould-Williams, J. S., & Mohamed, R. B. 2010. A comparative study of the effects of 'best practice' HRM on worker outcomes in Malaysia and England local government. *The International Journal of Human Resource Management*, 21(5), pp. 653-675.
Grant, A. M., Christianson, M. K., & Price, R. H. 2007. Happiness, health, or relationships? Managerial practices and employee well-being trade-offs. *Academy of Management Perspectives*, 21(3), pp. 51-63.
Grant, D., & Shields, J. 2002. In search of the subject: Researching employee reactions to human resource management. *Journal of Industrial Relations*, 44(1), pp. 313-334.
Grebner, S., Semmer, N., Faso, L. L., Gut, S., Kälin, W., & Elfering, A. 2003. Working conditions, well-being, and job-related attitudes among call centre agents. *European Journal of Work and Organizational Psychology*, 12(4), pp. 341-365.
Green, F. 2001. It's been a hard day's night: The concentration and intensification of work in late twentieth-century Britain. *British Journal of Industrial Relations*, 39(1), pp. 53-80.
Green, F. 2004. Why has work effort become more intense? *Industrial Relations*, 43(4), pp. 709-41.
Green, F. 2006. *Demanding work: The paradox of job quality in the affluent economy*. Princeton, NJ: Princeton University Press.
Green, F., & Whitfield, K. 2009. Employee experiences of work. In: Brown, W., Bryson, A., Forth, J., and Whitfield, W. (Eds.) *The Evolution of the modern workplace*. Cambridge: Cambridge University Press.
Greenberger, E., Goldberg, W. A., Hamill, S., O'Neil, R., & Payne, C. K. 1989. Contributions of a supportive work environment to parents' well-being and orientation to work. *American Journal of Community Psychology*, 17(6), pp. 755-783.
Greenhaus, J. H., & Powell, G. N. 2006. When work and family are allies: A theory of work–family enrichment. *Academy of Management Review*, 31(1), pp. 72-92.
Griesmaier, F. P. 2006. Causality, explanatoriness and understanding as modeling. *Journal of General Philosophy of Science*. 37(1), pp. 41-59.
Griffin, J. M., Fuhrer, R., Stansfeld, S. A., & Marmot, M. 2003. The importance of how control at work and home on depression and anxiety: Do these effects very by gender and social class? *SocSci Med*, 54(5), pp. 783-98.
Grix, J. 2001. *Demystifying postgraduate research: From MA to Ph.D*. University of Birmingham Press. Birmingham.

Grix, J. 2002. Introducing Students to the Generic Terminology of Social Research. *Politics*. 22(3), pp. 175-186.
Grix, J. 2004. *The foundations of research*. Palgrave. Basingstoke.
Grover, S. L., & Crooker, K. J. 1995. Who appreciates family-responsive human resource policies: The impact of family-friendly policies on the organizational attachment of parents and non-parents. *Personnel Psychology*. 48(2), pp. 271-288.
Guest, D. E. 1997. Human resource management and performance: A review and research agenda. *International Journal of Human Resource Management*, 8(3), pp. 263-276.
Guest, D. 1998. Is the psychological contract worth taking seriously? *Journal of Organizational Behavior*, 19, pp. 649-664.
Guest, D. E. 1999. Human resource management - the workers verdict. *Human Resource Management Journal*, 9(3), pp. 5-25.
Guest, D. E. 2001. Human resource management: when research confronts theory. *The International Journal of Human Resource Management*, 12(7), pp. 1092-1106.
Guest, D. E. 2002. Human resource management, corporate performance and employee wellbeing: Building the worker into HRM. *The Journal of Industrial Relations*, 44(3), pp. 335-358.
Guest, D. E. 2004. The psychology of the employment relationship: An analysis based on the psychological contract. *Applied Psychology*, 53(4), pp. 541-555.
Guest, D. E. 2006. Smarter ways of working, In Catalyst, Issue 3. Sector Skills Development Agency,Wath-Upon-Dearne. Available at: http://www.ukces.org.uk/PDF/061106%20R%20SSDA%20Catalyst%203%20Smarter%20Working%20for%20web.pdf. [Accessed 22nd October 2014].
Guest, D. 2007. HRM and the worker: Towards a new psychological contract. In: Boxall P, Purcell J. & Wright, P. (Eds.) *The Oxford Handbook of Human Resource Management*. Oxford: Oxford University Press, pp. 128-146.
Guest, D. E. 2007a. *Human resource management: Towards a new psychological contract*. Oxford: Oxford University Press.
Guest, D. E. 2011. Human resource management and performance: Still searching for some answers. *Human Resource Management Journal*, 21(1), pp. 3-13.
Guest, D. E., & Conway, N. 1999. Peering into the black hole: the downside of the new employment relations in the UK. *British Journal of Industrial Relations*, 37(3), pp. 367-389.
Guest, D. E., & Conway, N. 1999. *How dissatisfied are British Workers? A Survey of Surveys*. London: IPD.
Guest, D. E., Michie, J., Sheehan, M., Conway, N., & Metochi, M. 2000. *Effective People Management*. London: CIPD.
Guest, D. E., & Peccei, R. 2001. Partnership at work: Mutuality and the balance of advantage. *British Journal of Industrial Relations*, 39(2), pp. 207-236.
Guest, D. E., Michie, J., Sheehan, M., & Conway, N. 2003. Human resource management and corporate performance in the UK. *British Journal of Industrial Relations*, 41(2), pp. 291-314.
Guest, D. E., & Conway, N. 2007. Human resource management, employee attitudes and workplace performance : An examination of the linkages using the 2004 Workplace Employment Relations Survey. Department for Business, Enterprise & Regulatory Reform (BERR).URN 08/626.
Guthrie, J. P. 2001. High-involvement work practices, turnover, and productivity: evidence from New Zealand. *Academy of Management Journal*, 44(1), pp. 180-192.
Guthrie, J. P., Flood, P. C., Liu, W., & MacCurtain, S. 2009. High performance work systems in Ireland: Employee and organizational outcomes. *International Journal of Human Resource Management*, 20(1), pp. 112-125.
Hackman, J. R., & Oldham, G. R. 1975. Development of the job diagnostic survey. *Journal of Applied Psychology*, 60(2), pp. 159-170

Hackman, J. R., & Oldham, G.R. 1976. Motivation through the design of work : Test of a theory. *Organizational Behavior and Human Performance*, 16(2), pp. 250-279.
Hackman, J. R., & Oldham, G.R. 1980. *Work redesign.* Reading, MA: Addison-Wesley.
Hair, J. F. Jr., Black, W. C., Babin, B. J., & Anderson, R. E. 2010. M*ultivariate data analysis: A global perspective.* 7th Edition. USA: Pearson Prentice Hall
Halpern, D. F., 2005. How time-flexible work policies can reduce stress, improve health, and save money. *Stress and Health*, 21(3), pp. 157-168.
Hancock, G. R., & Mueller, R. O. 2006. *Structural Equation Modeling: A Second Course.* Information Age Publishing: USA.
Handel, M., & Levine, D. I. 2004. 'Editors' introduction: The effects of new work practices on workers. *Industrial Relations*, 43(1), pp. 1-43.
Harley, B. 1995. *Labour flexibility and workplace industrial relations: The Australian evidence.* Australian Centre for Industrial Relations Research and Teaching.
Harley, B. 2002. Employee responses to high performance work systems: An analysis of the AWIR95 Data. *The Journal of Industrial Relations*, 44(3), pp. 418-434.
Harley, B., Allen, B.C., & Sargent, L. D. 2007. High performance work systems and employee experience of work in the service sector: The case of aged care. *British Journal of Industrial Relations*, 45(3), pp. 607-633.
Harley, B., Sargent, L., & Allen, B. 2010. Employee responses to 'high performance work system' practices: an empirical test of the disciplined worker thesis. *Work, Employment & Society*, 24(4), pp.740-760.
Hart, P. M., Wearing, A. J., & Headey, B. 1995. Police stress and wellbeing: Integrating personality, coping and daily work experiences. *Journal of Occupational & Organizational Psychology*, 68(2), pp. 133-56.
Harvey, S. B., Henderson, M., Lelliott, P., & Hotopf, M. 2009. Mental health and employment: Much work still to be done. *British Journal of Psychiatry*, 194(3), pp. 201-203.
Hatcher, L. 1994. *A step by step approach to using the SAS system for factor analysis and structural equation modeling.* Cary, NC: SAS Institute, Inc.
Häusser, J. A., Mojzisch, A., Niesel, M., & Schulz-Hardt, S. 2010. Ten years on: A review of recent research on the job demand-control (-support) model and psychological well-being. *Work & Stress*, 24(1), pp. 1-35.
Hay, C. 2002. *Political Analysis*. Basingstoke: Palgrave Macmillan.
Hayes, A. F. 2009. Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium. *Communication Monographs*, 76(4), pp. 408-420.
Hayes, A. F. 2013. *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.
Heffernan, M., & Dundon, T. 2012. Researching employee reactions to high performance work systems in the service sector : The role of organisational justice theory. *16th ILERA (IIRA) World Congress 2012*. Philadelphia, USA, (July), pp. 1-24.
Heffernan, M. 2012. *Employee reactions to high performance work systems in the service sector: Assessing the role of organisational justice theory*. PhD Thesis. National University of Ireland.
Hegan, S. 2006. Employees' responses to high performance work systems: Assessing HPWS effectiveness. *Otago Management Graduate Review*, 4(1), pp. 25-36.
Hobfoll, S. E. 2001. The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, 50(3), pp. 337-421.
Holman, D. J., & Wall, T. D. 2002. Work characteristics, learning-related outcomes, and strain: A test of competing direct effects, mediated, and moderated models. *Journal of Occupational Health Psychology*, 7(4), pp. 283-301.
Hoque, K. 1999a. Human resource management and performance in the UK hotel industry. *British Journal of Industrial Relations*, 37(3), pp. 419-443.

Hoque, K. 1999b. New approaches to HRM in the UK hotel industry. *Human Resource Management Journal*, 9(2), pp. 64-76.

Hoyle, R. H. 1995. *Structural equation modeling: concepts, issues and applications*. London: Sage Publications

Hu, L., & Bentler, P. M. 1999. Cut-off criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), pp. 1-55.

Hu, Q., Schaufeli, W. B., & Taris, T. W. 2011. The job demands-resources model: An analysis of additive and joint effects of demands and resources. *Journal of Vocational Behavior*, 79(1), pp. 181-190.

Hughes, J. 2008. *The high performance work paradigm: A review and evaluation*. Learning as Work Research Paper No 16, March. Cardiff School of Social Sciences. Cardiff University.

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. 2007. Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *The Journal of Applied Psychology*, 92(5), pp. 1332-1356.

Huselid, M. 1995. The impact of human resource management practices on turnover, productivity and corporate financial performance. *Academy of Management Journal*, 38(3), pp. 635-672.

Huselid, M. A., & Becker, B. E. 2000. Comment on 'measurement error in research on human resources and firm performance: How much error is there and how does it influence effect size estimates? by Gerhart, Wright, McMahan, and Snell. *Personnel Psychology*, 53(4), pp. 835-854.

Hutchinson, S., & Purcell, J. 2010. Managing ward managers for roles in HRM in the NHS: Overworked and under-resourced. *Human Resource Management Journal*, 20(4), pp. 357-374.

Hyman, J., & Mason, B. 1995. *Managing employee involvement and participation*. London: Sage.

Iacobucci, D. 2009. Structural equation modeling: Fit indices, sample size, and advances topics. *Journal of Consumer Psychology*, 20(1), pp. 90-98.

Ibrahim, R. Z. A. R., & Ohtsuka, K. 2014. Review of the job demand-control and job demand-control-support models: Elusive moderating predictor effects and cultural implications. *Southeast Asia Psychology Journal*, 1(1), pp. 10-21.

Ichniowski, C., Shaw, K., & Prennushi, G. 1997. The effects of human resource management practices on productivity: A Study of steel finishing lines. *American Economic Review*, 87(3), pp. 291–313.

Igbaria, M., & Guimaraes, T. 1999. Exploring differences in employee turnover intentions and its determinants among telecommuters and non-telecommuters. *Journal of Management Information Systems*, 16(1), pp. 147-164.

Innocenti, L., Pilati, M., & Peluso, A. M. 2011. Trust as moderator in the relationship between HRM practices and employee attitudes. *Human Resource Management Journal*, 21(3), pp. 303-317.

Jackson, S. E. 1989. Does job control control job stress. In: Sauter, S. L., Hurrell, J. J., & Cooper, C. L. (Eds.). *Job control and worker health*. Wiley, pp. 25-53.

Jackson, S. E., Schuler, R. S., & Rivero, J. C. 1989. Organizational characteristics as predictors of personnel practices. *Personnel Psychology*, 42(4), pp. 727-786.

Jackson, P. R., Wall, T. D., Martin, R. & Davids, K. 1993. New measures of job control, cognitive demand and production responsibility. *Journal of Applied Psychology*, 78(5), pp. 753-762.

James, L. R., Demaree, R. G., & Wolf, G. 1984. Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69(1), pp. 85-98.

James, L. A., & James, L. R. 1989. Integrating work environment perceptions: Explorations into the measurement of meaning. *Journal of Applied Psychology*, 74(5), pp. 739-751.

Janssen, P. P. M., De Jonge, J., & Bakker, A. B. 1999. Specific determinants of intrinsic work motivation, burnout and turnover intentions: A study among nurses. *Journal of Advanced Nursing*, 29(6), pp. 1360-1369.

Javed, U. 2010. *The impact of perceived work environment on employee wellbeing, attitudes and turnover*. PhD Thesis. Cardiff University.
Jelfgroup, 2015. Sickness absence survey 2015. Available at: http://www.eef.org.uk/resources-and-knowledge/research-and-intelligence/industry-reports/sickness-absence-survey-2015-sponsored-by-jelf. [Accessed November 29, 2015].
Jensen, J. M., Patel, P. C., & Messersmith, J. G. 2013. High-performance work systems and job control: Consequences for anxiety, role overload, and turnover intentions. *Journal of Management*, 39(6), pp. 1699-1724.
Jiang, K., Lepak, D., & Baer, J. 2012. How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), pp. 1264-1294.
Johnson, J. V., & Hall, E. M. 1988. Job strain, work place social support, and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population. *American Journal of Public Health*, 78(10), pp. 1336-1342.
Johnson, P., & Duberley, J. 2000. *Understanding management research*. Sage Publications: London.
Jones, M. K., Latreille, P. L., Sloane, P. J., & Staneva, A. 2011. Work-related health in Europe: Are older workers more at risk? IZA Discussion Paper No. 6044
Jonge, J., Dormann, C., Janssen, P. P., Dollard, M. F., Landerweerd, J. A., & Nijhuis, F. J. 2001. Testing reciprocal relationships between job characteristics and psychological well-being: A cross-lagged structural equation model. *Journal of Occupational and Organizational Psychology*, 74(1), pp. 29-46.
Joreskog, K. G. 1971. Statistical analysis of sets of congeneric tests. *Psychometrika*, 36(2), pp. 109-133.
Joreskog, K. G., & Sorbom, D. 1993. *LISREL-8: User's reference guide*. Chicago: Scientific Software.
Jørgensen, F., & Becker, K. 2015. Balancing organizational and professional commitments in professional service firms: The HR practices that matter. *The International Journal of Human Resource Management*, 26(1), pp. 23-41.
Judge, T., & Colquitt, J. 2004. Organizational justice and stress: The mediating role of work–family conflict. *Journal of Applied Psychology*, 89(3), pp. 395-404
Jungblut, J. M., & Storrie, D. 2011. *HRM practices and establishment performance: An analysis using the European Company Survey 2009*. Second European Company Survey and Links between quality of work and performance. Dublin: Eurofound.
Kahn, R. L., & Byosiere, P. 1991. Consulting psychologists press. In: Dunnette, M. D., & Hough, L. M. (Eds.) *Handbook of industrial and organizational psychology*. Palo Alto, CA: Consulting Psychologists Press, pp. 571-650.
Kahn, R. L., & Byosiere, P. 1992. Stress in organizations. In: Dunnette, M. D., & Hough, L. M. (Eds.) *Handbook of industrial and organizational psychology*. 2nd Edition. Palo Alto, CA: Consulting Psychologists Press, pp. 571-650.
Kaiser, H. F. 1974. An index of factorial simplicity. *Psychometrika*, 39(1), pp. 31-36.
Kaldenberg, D. O., & Becker, B. W. 1992. Workload and psychological strain: A test of the French, Rodgers, and Cobb hypothesis. *Journal of Organizational Behavior*, 13(6), pp. 617-624.
Kalleberg, A. L. 2009. Precarious work, insecure workers: Employment relations in transition. *American Sociological Review*, 74(1), pp. 1-22.
Kalleberg, A. L., & Berg, I. 1987. *Work and industry: Structures, markets and processes*. New York: Plenum.
Kalliath, T., & Kalliath, P. 2012. Changing work environments and employee wellbeing: An introduction. *International Journal of Manpower*, 33(7), pp. 729-737.
Kalmi, P., & Kauhanen, A. 2008. Workplace innovations and employee outcomes: Evidence from Finland. *Industrial Relations*, 47(3), pp. 430-459.
Kamerāde, D., & McKay, S. 2015. Is there a subjective well-being premium in voluntary sector employment? *Voluntas*. 26, pp. 2733-2754.

Kaplan, D. 2000. *Structural equation modeling: Foundations and extensions*. Thousand Oaks London New Delhi: Sage Publications.

Karasek, R. A, 1979. Job demands, job decisions latitude and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24(2), pp. 285-308.

Karasek, R. A. 1989. Control in the workplace and its health-related aspects. In: Sauter, S. L., Hurrell, J. J., & Cooper, C. L. (Eds.). *Job Control and Worker Health*. Chichester: Wiley, pp. 129-160.

Karasek, R. A., & Theorell, T. 1990. *Healthy Work*. New York: Basic Books.

Katou, A., & Budhwar, P. S. 2006. Human resource management systems and organizational performance: A test of a mediating model in the Greek manufacturing context. *International Journal of Human Resource Management*, 17(7), pp. 1223-1253.

Katou, A., & Budhwar, P. S. 2010. Causal relationship between HRM policies and organisational performance: Evidence from the Greek manufacturing sector. *European Management Journal*, 28(1), pp. 25-39.

Kaufman, B. E. 2010. SHRM theory in the post-Huselid era: Why it is fundamentally miss-specified. *Industrial Relations*, 49(2), pp. 286-313.

Kaya, N. 2006. The impact of human resource management practices and corporate entrepreneurship on firm performance: Evidence from Turkish firms. *International Journal of Human Resource Management*, 17(12), pp. 2074-2090.

Kaya, N., Koc, E., & Topcu, D. 2010. An exploratory analysis of the influence of human resource management activities and organizational climate on job satisfaction in Turkish banks. *The International Journal of Human Resource Management*, 21(11), pp. 2031-2051.

Keenoy, T. 1997. HRMism and the Languages of Re-presentation. *Journal of Management Studies,* 34(5), pp. 825-841.

Kehoe, R. R., & Wright, P. M. 2013. The impact of high-performance human resource practices on employees' attitudes and behaviors. *Journal of Management*, 39(2), pp. 366-391.

Kelliher, C., & Anderson, D. 2008. For better or for worse? An analysis of how flexible working practices influence employees' perceptions of job quality. *Journal of Human Resource Management*, 19(3), pp. 419-431.

Kelliher, C., & Anderson, D. 2010. Doing more with less? Flexible working practices and the intensification of work. *Human Relations*, 63(1), pp. 83-106.

Khilji, S. E., & Wang, X. 2006. Intended' and 'implemented' HRM: The missing linchpin in strategic human resource management research. *The International Journal of Human Resource Management*, 17(7), pp. 1171-1189.

Kinman, G. 2014. Doing more with less? Work and wellbeing in Academics. *Somatechnics*, 4(2), pp. 219-235.

Kinnie, N., Hutchison, S., Purcell, J., Rayton, B., & Swart, J. 2006. Satisfaction with HR practices and commitment to the organisation: Why one size does not fit all. *Human Resource Management Journal*, 15(4), pp. 9-29.

Kline, R. B. 2011. *Principles and practice of structural equation modeling*. 3rd Edition. New York: Guilford Publications, Incorporated.

Klein, K. J., Conn, A. B., Smith, D. B., & Sorra, J. S. 2001. Is everyone in agreement? An exploration of within-group agreement in employee perceptions of the work environment. *Journal of Applied Psychology*, 86(1), pp. 3-16.

Klein, K. J., & Kozlowski, S. W. J. 2000. *Multilevel theory, research and methods in organizations: foundations, extensions, and new directions*. San Francisco, CA: Jossey-Bass

Klein, K. J., Bliese, P. D., Kozlowski, S. W. J, Dansereau, F., Gavin, M. B., Griffin, M. A. et al. (2000). In: Klein, K. J., & Kozlowski, S. (Eds.) *Multilevel theory, research, and methods in organizations*. San Francisco, CA: Jossey-Bass, pp. 512-551.

Klein, K. J., Dansereau, F., & Hall, R. J. 1994. Levels issues in theory development, data collection, and analysis. *Academy of Management Review*, 19(2), pp. 195-229.

Knies, E., & Leisink, P. 2014. Linking people management and extra-role behaviour: results of a longitudinal study. *Human Resource Management Journal*, 24(1), pp. 57-76.
Kochan T., Osterman P. 1995. *The mutual gains enterprise*. Cambridge, Massachusetts: Harvard University Press.
Kohn, A. 1993. Why incentive plans cannot work. *Harvard Business Review*. 71, pp. 54-60.
Kooij, D. T., Jansen, P. G., Dikkers, J. S., & De Lange, A. H. 2010. The influence of age on the associations between HR practices and both affective commitment and job satisfaction: A meta-analysis. *Journal of Organizational Behavior*, 31(8), pp. 1111-1136.
Kossek, E. E., & Nichol, V. 1992. The effects of on-site child-care on employee attitudes and performance. *Personnel Psychology*, 45(3), pp. 485-509.
Kossek, E. E., & Michel, J. S. 2011. Flexible Work Scheduling. In: Zedeck, S. (Ed.) *Handbook of industrial organizational psychology*. Washington, DC: American Psychological Association, pp. 535-572.
Koufteros, X. A. 1999. Testing a model of pull production: A paradigm for manufacturing research using structural equation modeling. *Journal of Operations Management*, 17(4), pp. 467-488.
Kozlowski, S. W. J., & Hattrup, K. 1992. A disagreement about within-group agreement: Disentangling issues of consistency versus consensus. *Journal of Applied Psychology*. 77(2), pp. 161-167.
Kozlowski, S. W. J., & Klein, K. J. 2000. A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In: Klein, K. J., & Kozlowski, S. W. J. (Eds.) *Multilevel theory, research and methods in organizations: foundations, extensions, and new directions*. San Francisco, CA: Jossey-Bass, pp. 3-90.
Kramar, R. 2014. Beyond strategic human resource management: is sustainable human resource management the next approach? *The International Journal of Human Resource Management*, 25(8), pp. 1069-1089.
Kroon, B., Voorde, K. Van De., & Veldhoven, M. Van. 2009. Cross-level effects of high-performance work practices on burnout: Two counteracting mediating mechanisms compared. *Personnel Review*, 38(5), pp. 509-525.
Lam, W., Chen, Z., & Takeuchi, N. 2009. Perceived human resource management practices and intention to leave of employees: The mediating role of organizational citizenship behaviour in a Sino-Japanese joint venture. *The International Journal of Human Resource Management*, 20(11), pp. 2250-2270.
Lambert, A. D., Marler, J. H., & Gueutal, H. G. 2008. Individual differences: Factors affecting employee utilization of flexible work arrangements. *Journal of Vocational Behavior*, 73(1), pp. 107-117.
Landman, T. 2000. *Issues and methods in comparative politics: An introduction*. London: Routledge
Lawler, E. E. 1986. *High-involvement management*. Jossey-Bass, San Francisco, CA.
Lawler, E. E. 1988. Choosing an involvement strategy. *The Academy of Management Executive*, 2(3), pp. 197-204.
Lawler, E. E. 1994. From job-based to competency-based organizations. *Journal of Organizational Behavior*, 15(1), pp. 3-15.
Lawler, E. E., & Rhode, J. G. 1976. *Information and control in organizations*. Goodyear Publications.
Lazarus, R. S., & Folkman, S. 1984. *Stress, appraisal and coping*. New York: Springer.
LeBreton, J. M., & Senter, J. L. 2008. Answers to 20 Questions about interrater reliability and interrater agreement. *Organizational Research Methods*, 11(4), pp. 815-852.
Lee, N., & Lings, I. 2008. *Doing business and research: a guide to theory and practice*. London: Sage Publications.
Legge, K. 1995. *Human resource management: Rhetorics and realities*. 2nd Edition. Hampshire: Palgrave Macmillan.
Legge, K. 2001. Silver bullet or spent round? Assessing the meaning of the 'high commitment management'/performance relationship. In: Storey, J. (Ed.) *Human Resource Management: A Critical Text*. 2nd Edition. London: Thomson Learning.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. 2006. A conceptual review of human resource management systems in strategic human resource management systems. *Research in Personnel and Human Resource Management,* 25(1), pp. 217-271.

Lepak, D. P., Taylor, M. S., Tekleab, A. G., Marrone, J. A., & Cohen, D. J. 2007. An examination of the use of high-investment human resource systems for core and support employees. *Human Resource Management*, 46(1), pp. 223-246.

Lewchuk, W., & Robertson, D. 1997. Production without empowerment: Work reorganization from the perspective of motor vehicle workers. *Capital & Class*, 21(3), pp. 37-64.

Li, X., Frenkel, S. J., & Sanders, K. 2011. Strategic HRM as process: How HR system and organizational climate strength influence Chinese employee attitudes. *The International Journal of Human Resource Management*, 22(9), pp. 1825-1842.

Liao, H., Toya, K., Lepak, D. P., & Hong, Y. 2009. Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *The Journal of Applied Psychology*, 94(2), pp. 371-391.

Lindell, M. K., & Brandt, C. J. 1999. Assessing interrater agreement on the job relevance of a test: A comparison of the CVI, T, rwg(j), and r*wg(j) Indexes. *Journal of Applied Psychology*, 84(4), pp. 640-647.

Lindell, M. K., Brandt, C. J., & Whitney, D. J. 1999. A revised index of interrater agreement for multi-item ratings of a single target. *Applied Psychological Measurement*, 23, pp. 127-135.

Linfords, P. M., Meretoja, O. A., Toyry, S. M., Luukkonen, R. A., Elovainio, M. J., & Leino, T. J., 2007. Job satisfaction, work ability and life satisfaction among Finnish anaesthesiologists. *Acta Anaesthesiol Scand*, 51(7), pp. 815-822.

Little, R. J. A., & Rubin, D. B. 1987. *Statistical analysis with missing data*. New York: Wiley.

Lobel, S. 1999. *Impacts of diversity and work-life initiatives in organizations*. Newbury Park, CA: Sage Publications

Locke, E. A. 1976. The nature and causes of job satisfaction. In: Dunnette, M. D. (Ed.) *Handbook of industrial and organizational psychology*. Chicago, IL: Rand McNally College, pp. 1297-1343.

Lovibond, P. F., & Lovibond, S. H. 1995. The structure of negative emotional states: Comparison of the depression anxiety stress scales (DASS) with the beck depression and anxiety inventories. *Behaviour Research and Therapy*, 33(3), pp. 335-343.

Lundberg, U., & Frankenhaeuser, M. 1999. Stress and workload of men and women in high-ranking positions. *Journal of Occupational Health Psychology*, 4(2), pp. 142-151.

MacDuffie, J. P. 1995. Human resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial and Labor Relations Review*, 48(2), pp. 197-221.

Mackie, K. S., Holahan, C. K., & Gottlieb, N. H. 2001. Employee involvement management practices, work stress, and depression in employees of a human services residential care facility. *Human Relations*, 54(8), pp. 1065-1092.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. 2004. Confidence limits for the indirect effect: Distribution of the produce and resampling methods. *Multivariate Behavioral Research*, 39(1), pp. 99-128.

MacKinnon, D. P., Warsi, G., & Dwyer, J. 1995. A simulation study of mediated effect measures. *Multivariate Behavioral Research*, 30(1), pp. 41-62.

Macky, K., & Boxall, P. 2007. The relationship between 'high performance work practices' and employee attitudes and investigation of additive and interaction effects. *International Journal of Human Resource Management*, 18(4), pp. 537-567.

Macky, K., & Boxall, P. 2008. High-performance work systems and employee well-being: Does employee involvement really intensify work? *Asia Pacific Journal of Human Resources*, 46(1), pp. 38-55.

Macky, K., & Boxall, P. 2009. Research and theory on high-performance work systems: progressing the high involvement stream. *Human Resource Management Journal*, 19(1), pp. 3-23.

Major, D. A., Kozlowski, S. W. J., Chao, G. T., & Gardner, P. D. 1995. A longitudinal investigation of newcomer expectations, early socialization outcomes, and the moderating effects of role development factors. *Journal of Applied Psychology*, 80(3), pp. 418-432.

Marchington, M., & Grugulis, I. 2000. 'Best practice' human resource management: perfect opportunity or dangerous illusion? *International Journal of Human Resource Management*, 11(6), pp. 1104-1124.

Marchington, M., Wilkinson, A., Ackers, P., & Goodman, J. 1994. Understanding the meaning of participation: Views from the workplace. *Human Relations*, 47(8), pp. 867-894.

Marchington, M., & Wilkinson, A. 2005. *Human Resource Management at Work*. 3rd Edition, London: CIPD.

Mason, C. M., & Griffin, M. A. 2002. Group task satisfaction: Applying the construct of job satisfaction to groups. *Small Group Research*, 33(3), pp. 271-311.

Mason, J. 1998. *Qualitative researching*. London, Thousand Oaks: CA and New Delhi, Sage.

Masuda, A. D., Poelmans, S. A., Allen, T. D., Spector, P. E., Lapierre, L. M., Cooper, C. L., Abarca, N., Brough, P., Ferreiro, P., Fraile, G., & Lu, L. 2012. Flexible work arrangements availability and their relationship with work-to-family conflict, job satisfaction, and turnover intentions: A comparison of three country clusters. *Applied Psychology*, 61(1), pp. 1-29.

May, T. 2001. *Social research: issues, methods and process*. Buckingham: Open University Press.

McCarthy, A., Cleveland, J. N., Hunter, S., Darcy, C., & Grady, G. 2013. Employee work–life balance outcomes in Ireland: A multilevel investigation of supervisory support and perceived organizational support. *The International Journal of Human Resource Management*, 24(6), pp. 1257-1276.

McNall, L. A, Masuda, A. D., & Nicklin, J. M. 2010. Flexible work arrangements, job satisfaction, and turnover intentions: The mediating role of work-to-family enrichment. *The Journal of Psychology*, 144(1), pp. 61-81.

Meijman, T. F., & Mulder, G. 1998. Psychological aspects of workload. In: Drenth, P. J. D., & Thierry. H. (Eds.), *Handbook of work and organizational psychology.* Hove, England: Psychology Press, Vol. 2, pp. 5-33.

Mendelson, M. B., Turner, N., & Barling, J. 2011. Perceptions of the presence and effectiveness of high involvement work systems and their relationship to employee attitudes: A test of competing models. *Personnel Review*, 40(1), pp. 45-69.

Messersmith, J. G., Patel, P. C., Lepak, D. P., & Gould-Williams, J. S. 2011. Unlocking the black box: Exploring the link between high-performance work systems and performance. *The Journal of Applied psychology*, 96(6), pp. 1105-1118.

Messersmith, J. G., & Guthrie, J. P. 2010. High performance work systems in emergent organizations: Implications for firm performance. *Human Resource Management*, 49(2), pp. 241-264.

Meyer, J. P., & Allen, N. J. 1991. A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1(1), pp. 61-89.

Meyer, J. P., & Allen, N. J. 1997. Commitment in the workplace: Theory, research, and application. London: Sage.

Meyer, J. P., & Allen, N. J. 1984. Testing the 'side-bet theory' of organizational commitment: Influences of work positions and family roles. *Journal of Applied Psychology*, 69(3), pp. 372-378.

Meyer, J. P., & Herscovitch, L. 2001. Commitment in the workplace: Toward a general model. *Human Resource Management Review*, 11(3), pp. 299-326.

Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. 2002. Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, 61(1), pp. 20-52.

Michie, J., & Sheehan, M. 2005. Business strategy, human resources, labour market flexibility and competitive advantage. *The International Journal of Human Resource Management*, 16(3), pp. 445-464.

Michie, J., Zubanov, N., & Sheehan, M. 2008. *Human resource management practices, organisational outcomes and performance: An analysis of the WERS 2004 data*. Employment relations occasional papers. Department for Business Enterprise & Regulatory Reform, BERR.

Miller, D. C., & Salkind, N. J. 2002. *Handbook of research design and social measurement*. 6th Edition. Thousand Oaks, London and New Delhi: Sage Publications.

Miller, M. B. 1995. Co-efficient alpha: A basic introduction from the perspectives of classical test theory and structural equation modeling. *Structural Equation Modeling*. 2 (3), pp. 255-273.

Mohr, R. D., & Zoghi, C. 2008. High involvement management work design and job satisfaction. *Industrial and Labor Relations Review*, 61(3), pp. 275-296.

Mowday, R. T., Steers, R. M., & Porter, L. W. 1979. The measurement of organizational commitment. *Journal of Vocational Behavior*, 14(2), pp. 224-247.

Mostafa, A. M. S., & Gould-Williams, J. S. 2014. Testing the mediation effect of person-organization fit on the relationship between high performance HR practices and employee outcomes in the Egyptian public sector. *The International Journal of Human Resource Management*, 25(2), pp. 276-292.

Mostafa, A. M. S. 2013. *The relationship between high performance HR practices and employee attitudes : the mediating role of public service motivation and person-organization fit*. PhD Thesis. Cardiff University.

Moyle, P. 1998. Longitudinal influences of managerial support on employee well-being. *Work & Stress*, 12(1), pp. 29-49.

Mukhtar, A., Sial, M. A., Imran, A., & Jilani, A. 2012. Impact of HR practices on organizational citizenship behavior and mediating effect of organizational commitment in NGOs of Pakistan. *World Applied Sciences Journal*, 18(7), pp. 901-908.

Muthen, L. K., & Muthen, B. O. 2010. *Mplus user's guide: Statistical analysis with latent variables: User's guide*. Los Angeles, CA: Muthen & Muthen.

Narayanan, L., Menon, S., & Spector, P. E. 1999. Stress in the workplace: A comparison of gender and occupations. *Journal of Organizational Behavior*, 20(1), pp. 63-74.

Nestor, P. I., & Leary, P. 2000. The relationship between tenure and non-tenure track status of extension faculty and job satisfaction. *Journal of Extension*, 38(4), pp. 8-13.

Neuman, W. L. 2000. *Social research methods. Qualitative and quantitative approaches*. 4th Edition. Boston, MA: Allyn & Bacon.

Ng, T. W., & Sorensen, K. L. 2008. Toward a further understanding of the relationships between perceptions of support and work attitudes: A meta-analysis. *Group & Organization Management*, 3(3), pp. 243-268.

NIESR. 2005. [Online]. Available at: http://www.niesr.ac.uk. [Accessed: March 12th 2013].

Nishii, L. H., Lepak, D. P., & Schneider, B. 2008. Employee attributions of the 'why' of HR practices: Their effects on employee attitudes and behaviors, and customer satisfaction. *Personnel Psychology*, 61(3), pp. 503-545.

Nunnally, J. C. 1978. *Psychometric theory*. 2nd Edition. New York: McGraw-Hill.

Nunnally, J. C., & Bernstein, I. H. 1994. *Psychometric Theory*. 3rd Edition. McGraw-Hill: New York.

Nusair, K., & Hua, N. 2010. Comparative assessment of structural equation modeling and multiple regression research methodologies: E-commerce context. *Tourism Management*. 31(3), pp. 314-324.

Ogbonnaya, C. 2013. *High Performance work practices : Investigating four perspectives on their employee - level impacts simultaneously*. PhD Thesis. Norwich Business School

Ogbonnaya, C., Daniels, K., Connolly, S., & Van Veldhoven, M. 2013. Do high performance work practices promote positive employee attitudes or do they intensify work? In: BAM Proceedings.

Ogilvie, J. R. 1986. The role of human resource management practices in predicting organizational commitment. *Group and Organization Studies*, 11(4), pp. 335-359.

Ohlott, P. J., Ruderman, M. N., & McCauley, C. D. 1994. Gender differences in managers' developmental job experiences. *Academy of Management Journal*, 37(1), p. 46-67.

Olsson, U. 1979. Maximum likelihood estimation of the polychoric correlation coefficient. *Psychometrika*, 44(4), pp. 443-460.
Oppenheim, A. N. 2000. *Questionnaire design, interviewing and attitude measurement*. New Edition. London: Continuum International.
O'Reilly, C., & Chatman, J. 1986. Organizational commitment and psychology attachment: the effects of compliance, identification, and internalization on prosocial behavior. *Journal of Applied Psychology*, 71(3), pp. 492-499.
Orlitzky, M., & Frenkel, S.J. 2005. Alternative pathways to high-performance workplaces. *The International Journal of Human Resource Management*, 16(8), pp. 1325-1348.
Örtqvist, D., & Wincent, J. 2006. A conceptualization of entrepreneur´s role stress. Paper presented at the 14th Nordic Conference on Small Business Research. Stockholm: Nordic
Osborne, J. W., & Overbay, A. 2004. The power of outliers (and why researchers should always check for them). Practical assessment, research & evaluation. 9(6). [Online] Available at: http://pareonline.net/getvn.asp?v=9&n=6 [Accessed: August 19th 2014].
Osterman, P. 1999. How common is workplace transformation and who adopts it? *Industrial and Labor Relations Review*, 47(2), pp. 173-188.
Osterman, P. 2000. Work reorganization in an era of restructuring: Trends in diffusion and effects on employee welfare. *Industrial and Labor Relations Review,* 53(2), pp. 179-196.
Osterman, P. 2006. The wage effects of high performance work organization in manufacturing. *Industrial and Labor Relations Review*, 59(2), pp. 187-204.
Paauwe, J. 2004. *HRM and performance: achieving long-term viability*. Oxford: Oxford University Press.
Paauwe, J. 2009. HRM and performance: Achievements, methodological issues and prospects. *Journal of Management Studies*, 46(1), pp. 129-42.
Paauwe, J., & Boselie, P. 2005. HRM and performance: What next? *Human Resource Management Journal*, 15(4), pp. 68-83.
Paillé, P., Grima, F., & Dufour, M. È. 2015. Contribution to social exchange in public organisations : Examining how support, trust, satisfaction, commitment and work outcomes are related. *The International Journal of Human Resource Management*, 26(4), pp. 520-546.
Pallant, J. 2007. *A step by step guide to data analysis using SPSS for windows*. 3rd Edition. Berkshire: Open University Press.
Panatik, S. A., O'Driscoll, M. P., & Anderson, M. H. 2011. Job demands and work-related psychological responses among Malaysian technical workers: The moderating effects of self-efficacy. *Work & Stress*, 25(4), pp. 355-370.
Parasuraman, A., Zeithaml, V. A., & Berry, L. L. 1985. A conceptual model of service quality and its implications for future research. *Journal of Marketing*, 49, pp. 41-50.
Paré, G., & Tremblay, M. 2007. The influence of high-involvement human resources practices, procedural justice, organizational commitment, and citizenship behaviors on information technology professionals' turnover intentions. *Group & Organization Management*, 32(3), pp. 326-357.
Park, H. J., Mitsuhashi, H., Fey, C. F., & Bjorkman, I. 2003. The effect of human resource management practices on Japanese MNC subsidiary performance: A partial mediating model. *International Journal of Human Resource Management*, 14(8), pp. 1391-1406.
Parker, M., & Slaughter, J. 1988. *Choosing sides: Unions and the team concept*. Boston: South End Press
Parkes, K. R. 1994. Personality and coping as moderators of work stress processes: Models, methods and measures. *Work & Stress*, 8(2), pp. 110-129.
Paul, A. K., & Anantharaman, R. N. 2003. Impact of people management practices on organizational performance: Analysis of a causal model. *International Journal of Human Resource Management*, 14(7), pp. 1246-1266.
Payne, G., & Payne, J. 2004. *Key concepts in social research*. Sage Publications. London.
Peccei, R. 2004. Human resource management and the happy worker. Inaugural address to the Erasmus Research Institute of Management, Erasmus University, Rotterdam, 15 January.

Peccei, R., & Rosenthal, P. 2001. Delivering customer-oriented behaviour through empowerment: An empirical test of HRM assumptions. *Journal of Management Studies*, 38(6), pp. 831-857.
Peccei, R., Van De Voorde, K., & Van Veldhoven, M. 2013. HRM, well-being and performance: A theoretical and empirical review. In Guest, D. E., Paauwe, J., & Wright, P. M. (Eds.) *Human resource management and performance: Achievements and challenges*, Oxford: Wiley-Blackwell, pp. 15-46.
Perrewe, P. L., & Ganster, D. C. 1989. The impact of job demands and behavioral control on experienced job stress. *Journal of Organizational Behavior*, 10(3), pp. 213-229.
Petrescu, A. I., & Simmons, R. 2008. Human resource management practices and workers' job satisfaction. *International Journal of Manpower*, 29(7), pp. 651-667.
Philpott, A. 2015. Wellbeing: A business imperative. *Occupational Health & Wellbeing*. 67, p. 11.
Philpott, J. 2006. Raising productivity: from skills to high-performance working. In: Porter, S., & Campbell, M. (Eds.) *Skills and Economic Performance, Caspian Publishing for the Sector Skills Development Agency*. London, pp. 158-172.
Pil, F. K., & MacDuffie, J. P. 1996. The adoption of high-involvement work practices. *Industrial Relations*, 35(3), pp. 423-455.
Popper, K. 2000. *The logic of scientific discovery*. London & New York: Routledge.
Porter, L. W., Steers, R. M., Mowday, R. T., & Boulian, P. V. 1974. Organizational commitment, job satisfaction, and turnover among psychiatric nurses. *Journal of Applied Psychology*, 59(5), pp. 603-609.
Prantner, B. 2011. Visualization of imputed values using the R-package VIM. [Online]. Available at: http://cran.r-project.org/web/packages/VIMGUI/vignettes/VIM-Imputation.pdf [Accessed: 25 August 2014].
Preacher, K. J., & Hayes, A. F. 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36(4), pp. 717-731.
Preacher, K. J., & MacCallum, R. C. 2003. Repairing Tom Swift's electric factor analysis machine. *Understanding statistics: Statistical Issues in Psychology. Education, and the Social Sciences*. 2(1), pp. 13-43.
Preacher, K. J., Rucker, D. D., & Hayes, A. F. 2007. Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate behavioral research*, 42(1), pp. 185-227.
Prowse, M. 2010. Integrating reflexivity into livelihoods research. *Progress in Development Studies*, 10 (3), pp. 211-231.
Qiao, K., Khilji, S., & Wang, X., 2009. High-performance work systems, organizational commitment, and the role of demographic features in the People's Republic of China. *The International Journal of Human Resource Management*, 20(11), pp. 2311-2330.
Rahimnia, F., & Sharifirad, M. S. 2015. Authentic leadership and employee well-being: The mediating role of attachment insecurity. *Journal of Business Ethics*, 132(1), pp. 363-377.
Ramdani, B., Mellahi, K., Guermat, C., & Kechad, R. 2014. The efficacy of high performance work practices in the Middle East: Evidence from Algerian firms. *The International Journal of Human Resource Management*, 25(2), pp. 252-275.
Ramsay, H., Scholarios, D., & Harley, B. 2000. Employees and high performance work systems: Testing inside the black box. *British Journal of Industrial Relations*, 41(2), pp. 501-531.
Rao, K., Apte, M., & Subbakrishna, D. K. 2003. Coping and subjective wellbeing in women with multiple roles. *The International Journal of Social Psychiatry*, 49(3), pp. 175-184.
Rau, B. L. 2003. Flexible work arrangements. Available at: Sloan Online Work and Family Encyclopaedia. [Online]. Available at: http://wfnetwork.bc.edu/encyclopedia_entry.php?id=240&area=Al. [Accessed: March 22nd 2012].
Raykov, T. 1997. Scale reliability, Cronbach's coefficient alpha, and violation of essential tau-

equivalence with fixed congeneric components. *Multivariate Behavioral Research*, 32(4), pp. 329-353.
Rhoades, L., & Eisenberger, R. 2002. Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87(4), pp. 698-714.
Rhoades, L., Eisenberger, R., & Armeli, S. 2001. Affective commitment to the organization: The contribution of perceived organizational support. *Journal of Applied Psychology*, 86(5), pp. 825-836.
Richter, P., & Hacker, W. 1998. *Belastung und Beanspruchung: Stress, Ermudung und Burnout im Arbeitsleben [Workload and strain: Stress, fatigue and burnout in working life*]. Heidelberg, Germany: Asagner.
Rietveld, T., & Van Hout, R. 1993. *Statistical Techniques for the Study of Language and Language Behaviour*. Berlin-New York: Mouton de Gruyter.
Riordan, C. M., Vandenberg, J., & Richardson, H. A. 2005. Employee involvement climate and organizational effectiveness. *Human Resource Management*, 44(4), pp. 471-488.
Robinson, A., & Smallman, C. 2006. The Contemporary British Workplace: A safer and healthier place?. *Work, Employment and Society*, 20(1), pp. 80-107.
Robson, C. 1993. *Real world research: A research for social scientist and practitioner-research*. Oxford: Blackwell.
Robson, C. 2002. *Real world research*. 2nd Edition. Oxford: Blackwell.
Rodriguez, I., Bravo, J, M., & Schaufeli, W. 2001. The demands-control-support model, locus of control and job dissatisfaction: A longitudinal study. *Work & Stress*, 15(2), pp. 97-114.
Roehling, P. V., Roehling, M. V., & Moen, P. 2001. The Relationship between work-life policies and practices and employee loyalty : A life course perspective. *Journal of Family and Economic Issues*, 22(2), pp. 141-170.
Rose, E., & Wright, G. 2005. Satisfaction and dimensions of control among call centre customer service representatives. 2950(January), pp.136–161.
R-package VIM. [Online]. Available at: http://cran.r-project.org/web/packages/VIMGUI/vignettes/VIM-Imputation.pdf [Accessed: 25 August 2014].
Ryan, A. M., & Kossek, E. E. 2008. Work–life policy implementation: Breaking down or creating barriers to inclusiveness? *Human Resource Management*, 47(2), pp. 295-310.
Ryan, R. M., & Deci, E. L. 2001. On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52(1), pp. 141-166.
Sackey, J., & Sanda, M. A. 2011. Sustenance of human capital: Social support as a managerial stress reliever for women in developing economies. *Research and Practice in Human Resource Management*, 19(2), pp. 1-23.
Sainsbury Centre for Mental Health. 2007. Mental health at work: Developing the business case [online]. London. Sainsbury Centre for Mental Health. Available at: http://www.scmh.org.uk/publications/MH_at_work.aspx?ID=575. [Accessed October 13th 2014].
Salancik, G. R., & Pfeffer, J. 1978. A social information processing approach to job attitudes and task design. *Administrative Science Quarterly*, 23, pp. 224-253.
Salanova, M., Agut, S., & Peiró, J. M. 2005. Linking organizational resources and work engagement to employee performance and customer loyalty: The mediation of service climate. *Journal of Applied Psychology*, 90(6), pp. 1217-1227.
Sarantinos, V. 2007. An evaluation of the nature and purpose of psychological contact: Recommendations for appropriate HR Practices to ensure a healthy psychological contract is developed and maintained. *Journal of Business and Public Affairs*, 1(1), pp. 1-9.
Sattar, T., Ahmad, K., & Hassan, S. M., 2015. Role of human resource practices in employee performance and job satisfaction with mediating effect of employee engagement. *Pakistan Economic and Social Review*, 53(1), pp. 81-96

Saunders, M., Lewis, P., & Thornhill, A. 2007. *Research methods for business students*. 4th Edition. Harlow: Pearson Education Limited.
Saunders, M., Lewis, P., & Thornhill, A. 2009. *Research methods for business students*. 5th Edition. Harlow: Pearson Education Limited.
Sawang, S. 2010. Moderation or mediation? An examination of the role perceived managerial support has on job satisfaction and psychological strain. *Current Psychology*, 29(3), pp. 247-256.
Şeref, T. A. N. 2009. Misuses of KR20 and Cronbach's alpha reliability *Education and Science,* 34(152) , pp. 101-112.
Schafer, J. L., & Graham, J. W. 2002. Missing data: Our view of the state of the art. *Psychological Methods*, 7(2), pp. 147-177.
Schafer, J. L. 1997. *Analysis of incomplete multivariate data*. USA: Chapman and Hall.
Schaufeli, W. B., & Van Rhenen, W. 2006. About the role of positive and negative emotions in managers' well-being: A study using the job-related affective well-being scale (JAWS). *Work and Organization*, 19, pp. 244-323.
Schaufeli, W. B., Taris, T. W., & Van Rhenen, W. 2008. Workaholism, burnout, and work engagement: Three of a kind or three different kinds of employee well-being? *Applied Psychology*, 57(2), pp. 173-203.
Scheible, A. C. F., & Bastos, A.V.B. 2013. An Examination of human resource management practices' influence on organizational commitment and entrenchment. *Brazilian Administration Review*, 10(1), pp. 57-76.
Schneider, B. 1990. *Organizational climate and culture*. San Francisco: Jossey-Bass.
Schreiber, J., Stage, F., King, J., Nora, A., & Barlow, E. 2006. Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*. 99(6), pp. 323-337.
Schumacker, R. E., & Lomax, R. G. 2004. A *beginner's guide to structural equation modeling*. New Jersey: Lawrence Erlbaum Associate.
Scott, M., Swortzel, K. A., & Taylor, W. N. 2005. The relationships between selected demographic factors and the level of job satisfaction of extension agents. *Journal of Southern Agricultural Education Research*, 55(1), pp. 102-115.
Sewell, G., & Wilkinson, B. 1992. Someone to watch over me: Surveillance, discipline and the just-in-time labour process. *Sociology*, 26(2), pp. 271-289.
Shaw, J. D., Dineen B. R., Fang, R., & Vellella, R. F. 2009. Employee-organization exchange relationships, HRM practices, and quit rates of good and poor performers. *Academy of Management Journal*, 52(5), pp. 1016-1033.
Shockley, K. M., & Allen, T. D. 2007. When flexibility helps: Another look at the availability of flexible work arrangements and work-family conflict. *Journal of Vocational Behavior*, 71(3), pp. 479-493.
Shrout, P. E., & Bolger, N. 2002. Mediation in experimental and nonexperimental studies: new procedures and recommendations. *Psychological Methods*, 7(4), pp. 422-445.
Shrout, P. E., & Fleiss, J. L. 1979. Intraclass correlations: Uses in assessing rater reliability. *Psychological Bulletin*, 86(2), pp. 420-428.
Siegrist, J. 1996. Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology*, 1(1), pp. 27-41.
Siegrist, J., Starke, D., Chandola, T., Godin, I., Marmot, M., & Niedhammer, I. P. R. 2004. The measurement of effort and reward imbalance at work: European comparisons. *SocSci Med.* 58(8), pp. 1483–1499.
Silverman, D. 2000. *Doing qualitative research: A practical handbook*. London: Thousand Oaks.
Simbula, S. 2010. Daily functions in teacher's wellbeing: A diary study using the job demands-resources model. *Anxiety, Stress & Coping*, 23(5), pp. 563–584.

Simbula, S., Panari, C., Guglielmi, D., & Fraccaroli, F. 2012. Teachers' well-being and effectiveness: The role of the interplay between job demands and job resources. *Procedia - Social and Behavioral Sciences*, 69, pp. 729-738.

Simmons, B. L., & Nelson, D. L. 2007. Eustress at work: Extending the holistic stress model. In: Nelson, D., & Cooper, C. L. (Eds.) *Positive organizational behavior*. London: SAGE Publications, pp. 40-53.

Singh, P., Finn, D., & Goulet, L. 2004. Gender and job attitudes: A re-examination and extension. *Women in Management Review*, 19(7), pp. 345-355.

Sonnentag, S., & Zijlstra, F. R. H. 2006. Job characteristics and off-job time activities as predictors of need for recovery, well-being, and fatigue. *Journal of Applied Psychology*, 91(2), pp. 330-350.

Sung, J., & Ashton, D. 2005. Achieving *best practice in your business. High performance work practices: Linking strategy and skills to performance outcomes*. DTI in association with CIPD, London.

Sparham, E., & Sung, J. 2007. High performance work practices: Work intensification or "win-win? Working Paper Series 50. Center for Labor Market Studies. University of Leicester.

Spector, P. 1997. Job satisfaction: *Applications, assessment, causes, and consequences*. Thousand Oaks, CA: Sage Publications.

Spence, A. 1973. Job market signalling. *Quarterly Journal of Economics*, 87(3), pp. 355-379.

Steenkamp, J. B. E. M., & van Trijp, H.C. M. 1991. The use of LISREL in validating marketing constructs. *International Journal of Research in Marketing*. 8(4), pp. 283-299.

Stewart, P., Richardson, M., Danford, A., Murphy, K., Richardson, T., & Wass, V. 2009. *We sell our time no more. Workers' struggles against lean production in the British car industry*. London: Pluto Press.

Storey, J. 1995. Human resource management: Still marching on, or marching out? In Storey. J (Ed.), *Human resource management: A critical text*. London: Thomson Learning, Vol. 1, pp. 3-32.

Street, H., Sheeran, P., & Orbell, S. 2001. Exploring the relationships between different psychosocial determinants of depression: A multidimensional scaling analysis. *Journal of Affective Disorders*, 64(5), pp. 3-67.

Su, S., Baird, K., & Blair, B., 2013. Employee organizational commitment in the Australian public sector. *The International Journal of Human Resource Management*, 24(2), pp. 243-264.

Subramony, M. 2009. A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management*, 48(5), pp. 745-768.

Sun, L., Aryee, S., & Law, K. S. 2007. High-performance human resource practices, citizenship behavior, and organizational performance: A relational perspective. *Academy of Management,* 50(3), pp. 558-577.

Syed, N., & Yan. L. X. 2012. Impact of high performance human resource management practices on employee job satisfaction: Empirical analysis. *Interdisciplinary Journal of Contemporary Research in Business*, 4(2), pp. 318-342.

Tabachnick, B. G., & Fidell, L. S. 2001. *Using multivariate statistics*. 4th Edition. Boston, MA; London: Allyn and Bacon.

Tadić, M., Bakker, A. B., & Oerlemans, W. G. 2015. Challenge versus hindrance job demands and well-being: A diary study on the moderating role of job resources. *Journal of Occupational and Organizational Psychology*, 88(4), pp. 702-725.

Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. 2007. An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *The Journal of Applied Psychology*, 92(4), pp. 1069-1083.

Takeuchi, R., Chen, G., & Lepak, D. P. 2009. Through the looking glass of a social system: cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology*, 62(1), pp. 1-29.

Takeuchi, N., & Takeuchi, T. 2013. Committed to the organization or the job? Effects of perceived HRM practices on employees' behavioral outcomes in the Japanese healthcare industry. *International Journal of Human Resource Management*, 24(11), pp. 2089-2106.

Tamkin, P. 2004. High performance work practices. Brighton: Institute for Employment Studies.
Tamkin, P. 2005. The contribution of skills to business performance. Institute for Employment Studies Brighton: Available at: http://www.ukces.org.uk/PDF/050825%20R%20Final%20IiP%20skills%20performance.pdf. [Accessed: September 19th 2014].
Tamkin P, L., Giles, M., Campbell, M., & Hillage, J. 2004. Skills pay: The contribution of skills to business success, SSDA Research Report 5, Sector Skills Development Agency. Wath upon Dearne: Available at: http://www.ukces.org.uk/upload/pdf/report5.pdf. [Accessed: September 19th 2014].
Tang, Shu-wen., Siu, Oi-Ling., & Cheung, F. 2014. A Study of work-family enrichment among Chinese employees: The mediating role between work support and job satisfaction. *Applied Psychology: An International Review*, 63(1), pp. 13-150.
Taris, T. W., & Feij, J. A. 2004. Learning and strain among newcomers: A three-wave study on the effects of job demands and job control. *The Journal of Psychology*, 138(6), pp. 543-563.
Taris, T. W., & Schreurs, P. J. G. 2009. Well-being and organizational performance: An organizational-level test of the happy-productive worker hypothesis. *Work & Stress*, 23(2), pp. 120-136.
Tietze, S., & Musson, G. 2005. Recasting the home-work relationship: A case of mutual adjustment ? *Organization Studies*, 26(9), pp. 1331-1352.
Tietze, S., & Nadin, S. 2011. The psychological contract and the transition from office-based to home-based work. *Human Resource Management Journal*, 21(3), pp. 318-334.
Templ, M., & Filzmoser, P. 2008. Visualization of missing values using the R-package VIM. Research report cs-2008-1. Department of Statistics and Probability Theory. Vienna University of Technology.
Thomas, L. T., & Ganster, D. C. 1995. Impact of family-supportive work variables on work–family conflict and strain: A control perspective. *Journal of Applied Psychology*, 80, pp. 6-15.
Thompson, C. A., Beauvais, L. L., & Lyness, K. S. 1999. When work–family benefits are not enough: The influence of work–family culture on benefit utilization, organizational attachment, and work-family conflict. *Journal of Vocational Behavior*, 54, pp. 392-415.
Thompson, P., & Hartley, B. 2007. HRM and the worker: Labor process perspectives. In: Boxall, P., Purcell, J., & Wright, P. *Oxford international handbook of human resource management,* Oxford: Oxford University Press, pp. 147-65.
Thoresen, C. J., Kaplan, S. A., Barsky, A. P., Warren, C. R., & de Chermont, K. 2003. The affective underpinnings of job perceptions and attitudes: A meta-analytic review and integration. *Psychological Bulletin*, 129(6), pp. 914-945.
Topcic, M., Baum, M., & Kabst, R. 2016. Are high-performance work practices related to individually perceived stress? A job demands-resources perspective. *The International Journal of Human Resource Management*, 27(1), pp. 45-66.
Truss, C. 2001. Complexities and controversies in linking HRM with organizational outcomes. *Journal of Management Studies*, 38(8), pp. 1121-1149.
Truss, C., Shantz, A., Soane, E., Alfes, K., & Delbridge, R. 2013. Employee engagement, organisational performance and individual well-being: Exploring the evidence, developing the theory. *The International Journal of Human Resource Management*, 24(14), pp. 2657-2669.
Tsai, C. J. 2006. High performance work systems and organizational performance: An empirical study of Taiwan's semiconductor design firms. *International Journal of Human Resource Management*, 17(9), pp. 1512-1530.
Tsikriktsis, N. 2005. A review of techniques for reviewing missing data in OM survey research. *Journal of Operations Management*, 24(1), pp. 53-62.
Tubré, T., & Collins, J. 2000. Jackson and Schuler (1985) revisited: A meta-analysis of the relationships between role ambiguity, role conflict, and job performance. *Journal of Management*, 26(1), pp. 155-169.

Tuten, T. L., & Neidermeyer, P. E. 2004. Performance, satisfaction and turnover in call centers. *Journal of Business Research*, 57(1), pp. 26-34.
Tuttle, R., & Garr, M. 2012. Shift work and work to family fit: Does schedule control matter? *Journal of Family and Economic Issues*, 33(3), pp. 261-271.
Van De Voorde, K. 2009. *HRM, employee well-being and organizational performance: A balanced perspective.* PhD Thesis. Tilburg: Tilburg University.
Van De Voorde, K., & Beijer, S. 2015. The role of employee HR attributions in the relationship between high performance work systems and employee outcomes. *Human Resource Management Journal*, 25(1), pp. 62-78.
Van De Voorde, K., Paauwe, J., & Van Veldhoven, M. 2012. Employee well-being and the HRM-organizational performance relationship: A review of quantitative studies. *International Journal of Management Reviews*, 14(4), pp. 391-407.
Van der Doef, M., & Maes, S. 1999. The job demand-control (-support) model and psychological well-being: A review of 20 years of empirical research. *Work & Stress*, 13(2), pp. 87-114.
Van Mierlo, H., Vermunt, J. K., & Rutte, C. G. 2009. Composing group-level constructs from individual-level survey data. *Organizational Research Methods*, 12(2), pp. 368-392.
Van Veldhoven, M. 2005. Financial performance and the long-term link with HR practices, work climate and job stress. *Human Resource Management Journal*, 15(4), pp. 30-53.
Van Wanrooy, B., Bewley, H., Bryson, A., Forth, J., Freeth, S., Stokes, L., & Wood, S. 2013. *Employment relations in the shadow of recession: Findings from the 2011 Workplace Employment Relations Study*. Basingstoke: Palgrave MacMillan.
Van Wanrooy, B., Bewley, H., Bryson, A., Forth, J., Freeth, S., Stokes, L. & Wood, S. 2011. Workplace Employment Relations study: First findings. [Online]. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/336651/bis-14-1008-WERS-first-findings-report-fourth-edition-july-2014.pdf [Accessed: 12 August 2014].
Van Yperen, N. W., & Hagedoorn, M. 2003. Do high job demands increase intrinsic motivation or job strain or both? The role of job control and social support. *Academy of Management Journal*, 46(3), pp. 339-348.
Vandenberg, R. J., Richardson, H. A., & Eastman, L. J. 1999. The impact of high involvement work processes on organizational effectiveness: A second-order latent variable approach. *Group and Organizational Management*, 24(3), pp. 300-339.
Vanhala, S., von Bonsdorff, M. E., & Janhonen, M. 2009. Impact of high involvement work practices on company performance and employee well-being. In: *IIRA world congress, conference proceedings. ISBN*, pp. 978-0.
Vanhala, S., & Tuomi, K. 2006. HRM, company performance and employee well-being. *Management Revue*, 17(3), pp. 241-255.
Varma, A., Beatty, R. W., Sneier, C. E., & Ulrich, D. O. 1999. High performance work systems: Exciting discovery or passing fad? *Human Resource Planning*, 22(1), pp. 26-37.
Vaishnav, C., Khakifirooz, A., & Devos, M. 2006. Punishing by rewards: When the performance bell-curve stops working for you. Nijmegen: International Conference of System Dynamics.
Vogus, T. J., & Sutcliffe, K. M. 2007. The safety organizing scale: Development and validation of a behavioral measure of safety culture in hospital nursing units. *Medical Care*. 45(1), pp. 46-54.
von Bonsdorff, M. E., Janhonen, M., Zhou, Z. E., & Vanhala, S. 2015. Team autonomy, organizational commitment and company performance–a study in the retail trade. *International Journal of Human Resource Management*, 26(8), pp. 1098-1109.
Voydanoff, P. 1980. Perceived job characteristics and job satisfaction among men and women. *Psychology of Women Quarterly,* 5(2), pp. 177-185.
Vroom, V. H. 1964. *Work and motivation*. New York: Wiley.
Wald, A. 1950. A note on the identification of economic relations. In: Koopmans, T. C. (Ed.), *Statistical inference in dynamic models*. New York: Wiley, pp. 238-244.

Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., & West, M. A. 2004. On the validity of subjective measures of company financial performance. *Personnel Psychology*. 5(7), pp. 95-118.

Wall, T. D., & Wood, S. J. 2005. The romance of human resource management and business performance, and the case for big science. *Human Relations*, 58(4), pp. 429-462.

Wallace, C., & Chen, G. 2006. A multilevel integration of personality, climate, self-regulation and performance. *Personnel Psychology*, 59(30), pp. 529-557.

Walton, R. 1985. From 'control' to 'commitment' in the workplace. *Harvard Business Review*, 63(2), pp. 77-84.

Wang, L., & Preacher, K. J. 2015. Moderated mediation analysis using Bayesian methods. *Structural Equation Modeling: A Multidisciplinary Journal*, 22(2), pp. 249-263.

Wang, S., Wang, S., Yi, X., Lawler, J., & Zhang, M. 2011. Efficacy of high-performance work practices in Chinese companies. *The International Journal of Human Resource Management*, 22(11), pp. 2419–2441.

Warr, P. 1987. *Work, unemployment and mental health*. Oxford: Clarendon Press.

Warr, P. 1990. The measurement of well-being and other aspects of mental health. *Journal of Occupational Psychology*, 63(3), pp. 193-210.

Warr, P. B. 1999. Well-being and the workplace. In: Kahneman, D., Diener, E., & Schwarz, N. (Eds.), *Well-Being: The foundations of hedonic psychology*. New York, NY: Russell Sage Foundation, pp. 392-412.

Way, S. A. 2002. High performance work systems and intermediate indicators of firm performance within the US small business sector. *Journal of Management*, 28(6), pp. 765-785.

Wayne, S. J., Shore, L. M., & Liden, R. C. 1997. Perceived organizational support and leader-member exchange: A social exchange perspective. *Academy of Management Journal*, 40(1), pp. 82-111.

Wayne, J. H., Randel, A. E., & Stevens, J. 2006. The role of identity and work-family support in work-family enrichment and its work-related consequences. *Journal of Vocational Behavior*, 69(3), pp. 445-461.

Wei, Y. C., Han, T. S., & Hsu, I. C. 2010. High-performance HR practices and OCB: A cross-level investigation of a causal path. *The International Journal of Human Resource Management*, 21(10), pp. 1631-1648.

Weiss, H. M. 2002. Deconstructing job satisfaction: Separating evaluations, beliefs, and affective experience. *Human Resource Management Review*, 12(2), pp. 173–194.

Weiss, H. M., & Cropanzano, R. 1996. Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In: Weiss, H. M., Cropanzano, R., Staw, B. M., & Cummings, L. L. (Eds.) *Research in organizational behavior: An annual series of analytical essays and critical reviews*. Greenwich, CT: JAI Press, pp. 1-74.

Weston, R., & Gore, P. A. 2006. A brief guide to structural equation modeling. *The Counselling Psychologist*, 34(5), pp. 719-751.

White, M., & Bryson, A. 2013. Positive employee attitudes: How much human resource management do you need? *Human Relations*, 66(3), pp. 385-406.

White, M., & Bryson, A. 2011. HRM and workplace motivation: Incremental and threshold effects. CEP Discussion Paper No 1097. November.

White, M., Hill, S., McGovern, P., Mills, C., & Smeaton, D. 2003. High- performance' management practices, working hours and work-life balance. *British Journal of Industrial Relations*, 41(2), pp. 175-195.

Whitener, E. M. 2001. Do 'high commitment' human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling. *Journal of Management*, 27(5), pp. 515-535.

Whittle, A., & Mueller, F. 2009. I could be dead for two weeks and my boss would never know: Telework and the politics of representation. *New Technology, Work & Employment*, 24(2), pp.

131-143.
Wicks, A. C., & Freeman, R. E. 1998. Organization studies and the new pragmatism: Positivism, anti-positivism, and the search for ethics. *Organization Science*. 9(2), pp. 123-140.
Wilkinson, A. 1992. The other side of quality: Soft issues and the human resource dimension. *Total Quality Management*, 3(3), pp. 323-329.
Willmott, H. 1993. Strength is ignorance; slavery is freedom: Managing culture in modern organisations. *Journal of Management Studies*, 30(4), pp. 515-552.
Wood, S. 2008. Job characteristics, employee voice and well-being in Britain. *Industrial Relations Journal*, 2(2), pp. 153-168.
Wood, S. 1999. Human resource management and performance. *International Journal of Management Reviews*, 1(4), pp. 367-413.
Wood, S., Burridge, M., Green, W., Nolte, S., Rudloff, D., & Ni, L. A. 2013. High Performance Working in the Employer Skills Surveys.
Wood, S., & de Menezes, L. M. 2011. High involvement management, high-performance work systems and well-being. *The International Journal of Human Resource Management*, 22(7), pp. 1586-1610.
Wood, S., & Bryson, A. 2009. High involvement management. In: Brown, W., Bryson, A., Forth, J. & Whitfield, K. (Eds.) *The evolution of the modern workplace*, Cambridge: Cambridge University Press, pp. 151-175.
Wood, S., & de Menezes, L. M. 2008. Comparing perspectives on high involvement management and organizational performance across the British economy. *The International Journal of Human Resource Management*, 19(4), pp. 639-683.
Wood, S., & Michaelides, G. 2016. Challenge and hindrance stressors and wellbeing-based interference: A diary study of portfolio workers. *Human Relations*. 69(1), pp. 111-138.
Wood, S., Van Veldhoven, M., Croon, M., & de Menezes, L. M. 2012. Enriched job design, high involvement management and organizational performance: the mediating roles of job satisfaction and well-being. *Human Relations*, 65(4), pp. 419-445.
Wood, S. J., & Wall, T. D. 2007. Work enrichment and employee voice in human resource management-performance studies. *International Journal of Human Resource Management*, 18(7), pp. 1335-1372.
Wood, S., Burridge, M., Rudloff, D., Green, W., & Nolte, S. 2015. Dimensions and location of high-involvement management: Fresh evidence from the UK Commission's 2011Employer Skills Survey. *Human Resource Management Journal*, 25(2), pp. 166-183.
Wright, H. 2015. Employee wellbeing is about business results: The proof. *Occupational Health,* 67 (12), pp. 12-13.
Wright, S. 1960. Path coefficients and path regressions: Alternative or complementary concepts? *Biometrics*, 16(2), pp. 189-202.
Wright, T. A., & Cropanzano, R. 2000. Psychological well-being and job satisfaction as predictors of job performance. *Journal of Occupational Health Psychology*, 5(1), pp. 84-94.
Wright, P. M., & Kehoe, R. R. 2007. Human resource practices and organizational commitment : A deeper examination. (CAHRS Working Paper # 07-15). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies. http://digitalcommons.ilr.cornell.edu/cahrswp/472.
Wright, P. M., & Kehoe, R. R. 2008. Human resource practices and organizational commitment: A deeper examination. *Asia Pacific Journal of Human Resources*, 46(1), pp. 6-20.
Wright, P. M., & MacMahan, G. C. 1992. Theoretical perspectives for strategic human resource management. *Journal of Management*, 18(2), pp. 295-320.
Wright, P. M., Gardner, T. M., Moynihan, L. M., & Allen, M. R. 2005. The Relationship between HR practices and firm performance: Examining causal order. *Personnel Psychology*, 58(2), pp. 409-446.

Wright, P. M., Gardner, T. M., & Moynihan, L. M. 2003. The impact of HR practices on the performance of business units. *Human Resource Management Journal*, 13(3), pp. 21-36.
Wright, P. M., & McMahan, G. C. 2011. Exploring human capital: putting 'human' back into strategic human resource management. *Human Resource Management Journal*, 21(2), pp. 93-104.
Wright, T. A., & Staw, B. M. 1999. Affect and favorable work outcomes: Two longitudinal tests of the happy- productive worker thesis. *Journal of Organizational Behavior*, 20, pp. 1-23.
Wright, T. A. 2010. More than meets the eye: The role of employee well-being in organizational research. In: Linley, P. A., Harrington, S., & Garcea, N. (Eds.) *Oxford handbook of positive psychology and work*. pp. 143-154.
Wrzesniewski, A., Dutton, J. E., & Debebe, G. 2003. Inter-personal sensemaking and the meaning of work. In: Staw, B., & Kramer, R. (Eds.) *Research in organizational behavior*. New York: Elseveier Science, 25, pp. 93-135.
Wu, P. C., & Chaturvedi, S. 2009. The role of procedural justice and power distance in the relationship between high performance work systems and employee attitudes: A multilevel perspective. *Journal of Management*, 35(5), pp. 1228-1247.
Xanthopoulou, D., Bakker, A.B., Demerouti, E., & Schaufeli, W. B. 2007a. The role of personal resources in the job demands-resources model. *International Journal of Stress Management*, 14(2), pp. 121-141.
Xanthopoulou, D., Bakker, A. B., Dollard, M. F., Demerouti, E., Schaufeli, W. B., Taris, T. W., & Schreurs, P. J. 2007b. When do job demands particularly predict burnout? The moderating role of job resources. *Journal of Managerial Psychology*, 22(8), pp. 766-786.
Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. 2009. Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology*, 82(1), pp. 183-200.
XpertHR, 2015. Sickness absence rates and costs revealed in UK's largest survey. [Online]. Available at: www.personneltoday.com/hr/sickness-absence-rates-and-costs-revealed-in-uks-largest-survey/. [Accessed: October 28th 2015].
Yammarino, F. J., & Markham, S. E. 1992. On the application of within and between analysis: Are absence and affect really group-based phenomena? *Journal of Applied Psychology*. 77, pp. 168-176.
Yang, Y. 2012. High-involvement human resource practices, affective commitment, and organizational citizenship behaviors. *Service Industries Journal*, 32(8), pp. 1209-1227.
Yeh, H. J. 2015. Job demands, job resources, and job satisfaction in East Asia. *Social Indicators Research*, 121(1), pp. 47-60.
Yin, R.K. 1994. *Case study research: Design and method*. 2nd Edition London: Sage.
Yin, R.K. 2003. *Case study research: Design and method*. 3rd Edition. London: Sage.
Zatzick, C. D., & Iverson, R. D. 2006. High-involvement management and workforce reduction: Competitive advantage or disadvantage? *Academy of Management Journal*, 49(5), pp. 999-1015.
Zatzick, C. D., & Iverson, R. D. 2011a. The effects of downsizing on labor productivity: The value of showing consideration for employees' morale and welfare in high-performance work systems. *Human Resource Management*, 50(1), pp. 29-44.
Zatzick, C. D., & Iverson, R. D. 2011b. Putting employee involvement in context: A cross-level model examining job satisfaction and absenteeism in high-involvement work systems. *The International Journal of Human Resource Management*, 22(17), pp. 3462-3476.
Zelenski, J. M., Murphy, S. A., & Jenkins, D. A. 2008. The happy-productive worker thesis revisited. *Journal of Happiness Studies*, 9(4), pp. 521-537.
Zhou, K. Z., Li, J. J., Zhou, N., & Su, C. 2008. Market orientation, job satisfaction, product quality and firm performance: Evidence from China. *Strategic Management Journal*, 29(9), pp. 985-1000.
Zhang, B., & Morris, J. L. 2014. High-performance work systems and organizational performance: Testing the mediation role of employee outcomes using evidence from PR China. *The International Journal of Human Resource Management*, 25(1), pp. 68-90.

Zhang, M., Zhu, C. J., Dowling, P. J., & Bartram, T. 2013. Exploring the effects of high-performance work systems (HPWS) on the work-related well-being of Chinese hospital employees. *The International Journal of Human Resource Management*, 24(16), pp. 3196-3212.

Zhang, Y. C., & Li, S. L. 2009. High performance work practices and firm performance: evidence from the pharmaceutical industry in China. *The International Journal of Human Resource Management*, 20(11), pp. 2331-2348.

Zheng, C., & Lamond, D. 2009. A critical review of human resource management studies (1978–2007) in the People's Republic of China. *The International Journal of Human Resource Management*, 20(11), pp. 2194-2227.

APPENDIX A

SUMMARY of EMPIRICAL STUDIES on HP-HR and EMPLOYEE WELL-BEING

Table A-1: Summary of Empirical Studies linking High Performance HR Practices and Job-related Anxiety/Stress

Author(s)/ Year	Country	Industry	HRM Practices	Research Methods	Sample Size	Response Rate	Findings
1. Appelbaum, Bailey, Berg & Kalleberg (2000)	USA	Manufacturing, steel, clothing and medical products.	Autonomy over task-level decision-making, company help with work and family issues, membership of self-directed production and off-line teams, communication with people outside the work group, training (formal & informal), job security, promotion prospects, and development for skill enhancement and financial incentives for motivation.	Quantitative (Survey)	4374	68%	A modest negative association exists between opportunity to participate and job stress.
2. Danford, Richardson, Stewart, Tailby & Upchurch (2008)	UK	Manufacturing finance, insurance local authority employer and NHS hospital trust.	Self-directed teams, integrated project teams, problem-solving groups, job rotation within teams, job rotation between teams, team briefing, formal consultation, Works council, consult committee, attitude surveys, employee appraisals, off-the-job training, on-the-job training, merit/incentive pay, share ownership scheme, profit-sharing schemes, harmonised conditions and partnership practices.	Quantitative (Survey)	Aero1:604 Aero2:878 Fin:128 Ins. :127 Local:386 NHS:452 Total: 2, 577	62% 80% 32% 25% 52% 38%	Working in a partnership environment, more extensive consultation, employee commitment and working in self-directed teams were all associated with higher stress levels. Further, the average hours worked in a typical week, increases in work hours, increases in job responsibilities and increases in workloads are all positively associated with stress. The case study interview data highlighted that the high commitment high involvement model generates considerable work pressure and job strain that results in greater stress.
3. De Joy, Wilson, Vandenberg, McGrath-Higgins &	USA	Retail	Information sharing, opportunities for meaningful participation, and allocating necessary resources for making structural and operational changes.	Quantitative (Survey) Longitudinal	2, 207- Pre-test. 1,723 - Post-test1 1,510 -Post-test 2	- - -	HRM factors have significant positive effects on job strain in baseline models.

Griffin-Blake (2010)							
4. Godard (2001)	Canada	-	Alternative Work practices (AWP) Programs: JIT, re-engineering quality mgmt. On-Line AWPs: Job rotation, multi-skilling, teams, team autonomy, team responsibility. Off-Line AWPs: Information sharing, team briefings, quality circles, permanently established committees system, joint steering committee meetings, Economic AWPs: Profit-Sharing and group bonus.	Quantitative (Telephone Survey)	508	55%	Team based work, is negatively related to job related stress. AWP adoption is positively associated with more stressful work. Team responsibility and committee system is significantly and positively related to job related stress.
5. Guest & Conway (2007)	UK	Multiple	Competence Bundle: Recruitment and selection, induction and training and development. Opportunity to participate bundle: Job design, team-working, two way communication, consultation, involvement and attitude surveys. Motivation bundle: Performance appraisal, individual and collective PRP, profit related pay, employee share ownership. Commitment bundle: Information sharing, equal opportunities, flexible working, fringe benefits and job security.	Quantitative (Survey) WERS 2004	MQ: 22451 SEQ: 1559	-	Attitude surveys, flexible working and fringe benefits are negatively related to wellbeing (anxiety). Commitment bundle has a negative relationship with wellbeing (anxiety). Total count of HR practices are negatively related to wellbeing (anxiety).
6. Harley, Sargent & Allen (2010)	Australia	Care Industry	Autonomous team membership, job characteristics, performance management and training.	Quantitative (Survey)	974	32%	Training, performance management and job characteristics had a negative association with emotional exhaustion.
7. Jensen, Patel & Messersmith (2013)	Wales	Multiple	Selection and recruitment, employee training, performance management, management consultation of employees in decision making, career opportunities, adequate communication, team work, reduction	Quantitative (Survey)	1592	26.5%	HPW perception in employees lead to anxiety.

			of status differences between management and employees, job security, and competitive compensation.				
8. Macky & Boxall (2008)	New Zealand	Multiple	Power and autonomy, Information provision, rewards, knowledge and training, team work and work life balance.	Quantitative (Survey)	775	-	Greater empowerment is associated with lower stress. While greater communication or autonomy or performance-related rewards or opportunities for training and development are Not more likely to express negative outcomes in the form of increased stress or fatigue.
9. Mohr & Zoghi (2008)	Canada	Multiple	Job rotation, quality circles, self-directed task teams, total quality management, enhanced training, non-traditional compensation, suggestion and information sharing programs.	Quantitative (Longitudinal) Workplace & Employee survey (1999-2000)	Approx. 25,000 employees	1999= 90% 2000=85%.	Information about workplace change and participation in task teams has negative significant association with stress. Participation in suggestion programmes has positive association with stress.
10. Ogbonnaya, Daniels & Connolly (2013)	UK	Multiple	Workplace level HPWP practices: Job autonomy, team working, training, PRP, employee representation, flexible working, selective hiring and grievance procedures. Employee perceptions of HPWP practices: Supportive management, information sharing and participative decision making. Cluster-1 (non-innovative HRM): (training (high), employee representation (average), flexible working (average) selective hiring (high) and grievance (high) & remaining HPWP practices (low). Cluster-2 (innovative HRM): all HPWP practices used in high and average intensity. Cluster-3 (moderately innovative HRM): Job autonomy (high), team-working (average), PRP (average), perceived supportive management	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 1733	MQ: 64% SEQ: 61%	Training, PRP, flexible working and employee perception of supportive management is significantly and negatively related to job strain. High use of HPWP (high to average synergies) show better latent factor mean score of job strain than low use of HPWP (low level synergies). Employee representation is significantly and positively related to job strain. Low use of HPWP (low level synergies – cluster 1) show high latent factor mean score of job strain than high use of HPWP (high to average level synergies).

			(average), perceived information sharing (average) and perceived participation in decision making (average) & remaining HPWP practices (low).				
11. Orlitzky & Frenkel (2005)	Australia	Manufacturing & Service	Supportive HR Employment practices Index: Communication, decentralised management, employee participation, fair pay, fair procedures, good benefits, job security and training. HPWP (high road strategy): Rigorous selection, formal training & development, employee participation and equal employment opportunity/affirmative action. HRM Strategy: Role of HRM function and investment in HRM	Quantitative (Survey) AWRIS	2001	80%	Employee perceptions of supportive HR employment practices are negatively related to job strain through perceived job discretion.
12. Peccei (2004)	UK	Multiple	Employee grievance/voice, numerical flexibility, employment stability, work/job design, employee knowledge, skills, competencies, downward communication, information sharing, consultative participation, performance appraisal, quality management practices and procedures, pay structure, benefits rewards, status equalisation, fair treatment at work and welfare.	Quantitative (Survey) WERS 1998	23000 employees 1249 workplaces	-	Of the 33 practices examined, 18 had a positive impact the composite measure of overall wellbeing (high job satisfaction and low job stress).
13. Ramsay, Scholarios & Harley (2000)	UK	Multiple	System of Work Practices 1 (SW1 score): Employee union representation, consultation committees, EEO/diversity management, family friendly policies and sophisticated recruitment and selection. SW2 score: Grievance procedures, formal teams, harmonisation, appraisals, formal training and downward communication. HPWP score: Profit related pay, employee share ownership, employee consultation, TQM, problem solving	Quantitative (Survey) WERS 1998	Total: 15,920	-	HPWP practices are positively and significantly related to job strain (anxiety).

			groups, team autonomy, job control, investors in people accreditation, upward communication, job security, internal labour market and induction.				
14. Robinson & Smallman (2006)	UK	Manufacturing & Service	Specific OHS committee, trade union representative for OHS; employee OHS, specific OHS representative, management consult no OHS provision problem-solving groups or a suggestion scheme, team briefings, regular meetings; newsletter, or uses the management chain; employees receive OHS training; work variety, job discretion, job control, team working semi-autonomous work team autonomous work team.	Quantitative (Survey) WERS 98	2191 Workplaces	-	Working in a partnership environment was associated with greater workplace stress and quality of working life.
15. Topcic, Baum & Kabst (2016)	Germany	Multiple	Challenge-demand HPWPs: performance evaluation and continuing education. Job-resource HPWPs: Participation in decision making and flexible working hours.	Quantitative (Survey) German General Social Survey (ALLBUS) & ALLBUS enterprise survey	197 usable dyads from the ALLBUS & ALLBUS enterprise survey.	- 17.9%	Performance evaluation, continuing education and participation in decision making significantly increase individual job stress. Flexible working hours are not related to job stress.
16. Truss (2001)	UK	Fast-moving consumer goods, NHS trust, banking, financial services, pharmaceuticals & telecommunication	Recruitment and selection, training, development, career management, appraisal, and reward management - from the perspectives of both policy, from the HR department, and experience, from staff, line and senior managers, recognizing that experiences are likely to vary between levels of staff.	Mixed Methods: Interviews, questionnaires focus groups & documentary evidence. Longitudinal	Questionnaires: 1994: 215 1996: 209	56% 52%	Employee's perception of HR policy and practices adopted had a positive significant association with work stress.
17. Vanhala & Tuomi (2006)	Finland	Metal & Retail	Formal HR policies, recruitment, employee development, motivation and reward, employment flexibility, teamwork, participation and communication.	Quantitative (Survey) 2 company surveys (1997 & 1999).	Company level: 91 Employee level:	-	Formality of HR and communication are positively related to general psychological wellbeing. Further, formality of HR, employee development and communication practices are negatively

				2 employee survey (1998 & 2000)	1389	-	related to emotional exhaustion. HRM is insignificant on strain.
18. Vanhala, Bonsdorff & Janhonen (2004)	Finland	Metal & Retail	Performance-based rewards, alignment, information, involvement, empowerment, teamwork, development, trust, creativity, and performance enablers.	Quantitative (Survey)	506	25.5%	Employee perception of high involvement work practices are negatively and significantly related to emotional exhaustion.
19. Wood & de Menezes (2011)	UK	Multiple	Enriched Jobs: Influence over how tasks are carried out, pace of work, how to do the job, the order in which the job is carried out and time of finish and start of their job. High Involvement management (HIM): Functional flexibility, quality circle, suggestion schemes, teamwork, induction, interpersonal skills training, team briefing, information disclosure and appraisal. Employee Voice: Employee perception of consultative management, informative management and trade union recognition. Motivational Supports: Profit sharing, job security guarantees, internal recruitment, group/organisational level performance related pay and employee share ownership schemes.	Quantitative (Survey) WERS 2004	MQ: 2295: SEQ: 22451 Total: 22, 322	MQ: 64% SEQ: 61%	High involvement management is negatively related to anxiety-contentment. Enriched jobs and employee voice (informative management) is positively related to job anxiety-contentment. Consultative management is unrelated to anxiety.
20. Wood, Van Veldhoven, Croon & de Menezes (2012)	UK	Multiple	Enriched Job Design: variety in work, discretion over how the work is done and control over the ace of work. High Involvement Management: functional flexibility, quality circles, suggestions schemes, teamwork, induction, interpersonal skills training, briefing groups, information disclosure and appraisals.	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451	MQ: 64% SEQ: 61%	High involvement management is negatively related to job anxiety.

All studies are cross-sectional unless otherwise stated
MQ: Management Questionnaire; SEQ: Survey of Employee Questionnaire

Table A-2: Summary of Studies linking High Performance HR Practices and Job Satisfaction

Author(s)/ Year	Country	Industry	HRM Practices	Research Methods	Sample Size	Response Rate	Findings
1. Absar, Azim, Balasundaram & Akhter (2010)	Bangladesh	Manufacturing 20 Firms	Recruitment & selection, HR planning, training & development, compensation, appraisal and individual relations.	Quantitative (Survey)	60	-	HR planning and training & development has a significant positive relationship with job satisfaction.
2. Akdere (2009)	US	Health Care	Quality focused HR Practices (QHRP): Leadership, knowledge management, process management, general HR function, customer focus and employee focus.	Quantitative (Survey) Multilevel Two data sets: Organisational Quality Survey & Service Quality Resident Survey	3598 1272	56% 51%	QHRP is positively related to employee job satisfaction and customer satisfaction. Employee focus of the firms and strategic management is positively related to employee satisfaction. General HR function is positively related to both employee and customer satisfaction. Process management is negatively related to employee satisfaction.
3. Allen, Shore & Griffeth (2003)	US	Beauty & Insurance	Participation in decision making, fairness of rewards/recognition & growth opportunities.	Quantitative (Survey)	215 Beauty store 197 Insurance sales persons	-	Perception of supportive HR practices lead to job satisfaction.
4. Ang, Bartram, McNeil, Leggat & Stanton (2013)	Australia	Health Care (Hospital)	Recruitment & selection, equal opportunities, cultural diversity, performance management, training & development and participation in decision making.	Quantitative (Survey) Multilevel	Employees 193 Managers: 58	13% 31%	High performance work system has a positive significant association with job satisfaction.
5. Appelbaum, Bailey, Berg & Kalleberg (2000)	USA	Manufacturing, steel, clothing and medical products.	Autonomy over task-level decision-making, company help with work and family issues, membership of self-directed production and off-line teams, communication with people outside the work group, training (formal & informal), job security, promotion prospects, and	Quantitative (Survey)	4374	68%	Opportunity to participate is positively related to job satisfaction. Autonomy in decision making, formal training, fair and performance pay, company help for work and family issues and promotion prospects significantly and positively relate to job satisfaction.

			development for skill enhancement and financial incentives for motivation.				
6. Barling, Kelloway & Iverson (2003)	Australia	Multiple	Extensive training, job variety, and job autonomy.	Quantitative (Survey) WIRS 95	16,466	-	Improving employee job quality (by training and improving job variety and autonomy) positively influences their job satisfaction.
7. Bauer (2004)	15 European countries	All excluding non-profit sector, self-employed, civil servants, agriculture, mining, army and over 65 individuals.	Work system Index: Autonomy in decision making, horizontal/vertical communication, team work, job design involving job rotation. Skill Index: Formal job training and days of training received. Incentive Index: Profit sharing, group sharing, receives income from company shares. Overall HPWO Scale: Average of three indexes.	Quantitative (Survey) ESWC 2000	10,693	-	The more workers are involved in HPWOs the higher is there job satisfaction. Especially the high involvement in flexible work systems to avail increased autonomy and communication adds to job satisfaction.
8. Boon, Hartog, Boselie & Paauwe (2011)	Netherlands	Retail & health care.	Training/development, participation, autonomy, job design, performance appraisal, rewards, teamwork, autonomy, work-life balance, recruitment and selection and employment security.	Quantitative (Survey)	412	20%	Employee perceptions of overall high performance HR system measure has a significant positive relationship with job satisfaction.
9. Brown, Forde, Spencer & Charlwood (2008)	UK	Multiple	Task Practices: Team working, functional flexibility and quality circles Individual Supports: briefing groups, information disclosure and human relations training Organisational supports: Job security guarantees, financial participation and the presence of an internal labour market.	Quantitative (Survey) Pooled data from WERS 1999-2004	-	-	Training in team working, communication skills or problem solving has positive effect on satisfaction with pay. Internal recruitment and high levels of organisational support is positively related to satisfaction with pay. Perceptions of job security and responsive management has a positive significant relationship with satisfaction with pay, influence and sense of achievement. Guaranteed job security policy is negatively associated with satisfaction with sense of achievement & influence. Financial participation schemes have low levels of satisfaction with pay.

							Overall, high level of task practices (as a bundle) has negative influence on satisfaction.
10. Danford, Richardson, Stewart, Tailby & Upchurch (2008)	UK	Manufacturing finance, insurance local authority employer and NHS hospital trust.	Self-directed teams, integrated project teams, problem-solving groups, job rotation within teams, job rotation between teams, team briefing, formal consultation, Works council, consult committee, attitude surveys, employee appraisals, off-the-job training, on-the-job training, merit/incentive pay, share ownership scheme, profit-sharing schemes, harmonised conditions and partnership practices.	Quantitative (Survey)	Aero1: 604 Aero2: 878 Fin: 128 Ins.: 127 Local: 386 NHS: 452 Total: 2,577	62% 80% 32% 25% 52% 38%	Fair treatment, and consultation scale, job security, team jointly deciding tasks and increasing job responsibilities have positive significant relationship with job satisfaction.
11. De Joy, Wilson, Vandenberg McGrath-Higgins & Griffin-Blake (2010)	USA	Retail	Information sharing, opportunities for meaningful participation, and allocating necessary resources for making structural and operational changes.	Quantitative (Survey) Longitudinal	Pre-test.: 2, 207 Post-test1: 1,723 Post-test2:1510	- - -	HRM factors have significant positive effects on job satisfaction in baseline models.
12. Den Hartog, Boon, Verburg & Croon (2013)	Netherlands	Restaurant Chain	Promotion, performance management, training & development, autonomy, job design and teamwork.	Quantitative (Survey) Multilevel	Employees 2063 Managers: 449	54%	Manager-rated and employee-rated HRM practices have a significant positive relationship with job satisfaction.
13. García-Chas, Neira-Fontela & Castro-Casal (2013)	Spain	Engineers from variety of economic sectors.	HPWS Second Order Factor: Selective staffing, extensive training, internal mobility, employment security, job description, result-oriented appraisal, incentive, reward & participation practices.	Quantitative (Survey)	155	-	HPWS is associated positively with job satisfaction.
14. Godard (2001)	Canada	-	Alternative Work practices (AWP) AWP Programs: JIT, re-engineering quality mgmt. On-Line AWVPs: Job rotation, multi-skilling, teams, team autonomy, team responsibility	Quantitative (Telephone Survey)	508	55%	Moderate adoption of AWP practices is positively associated with job satisfaction but job satisfaction starts to decline at high levels of adoption of AWP. Team based working and

			Off-Line AWVPs: Information sharing, team briefings, quality circles, permanently established committees system, joint steering committee meetings, Economic AWPs: Profit-Sharing and group bonus.				information sharing is positively significantly related to job satisfaction. High levels of adoption of AWP practices is negatively and significantly associated with job satisfaction. JIT practices are negatively significantly related to job satisfaction.
15. Gould-Williams (2003)	UK	Service	Employee perception of training and development, information sharing, notable status differences, job variety, team working, rigorous selection, job security, internal recruitment, performance related pay and involvement in decision making.	Quantitative (Survey)	191	65.2%	HR practices have a significant positive relationship with job satisfaction.
16. Gould-Williams (2004)	UK	Service	Involvement in decision making, relationship with boss/superiors, relationship with colleagues, job security, training, job variety, team working, selection, communication, status differentials, PRP and empowerment.	Quantitative (Survey) Follow up interviews	206	64.4%	Relation with boss/superiors, training and empowerment have a significant positive relationship with job satisfaction.
17. Guest & Conway (2007)	UK	Multiple	Competence Bundle: Recruitment and selection, induction and training and development. Opportunity to participate bundle: Job design, team-working, two way communication, consultation, involvement and attitude surveys. Motivation bundle: Performance appraisal, individual and collective PRP, profit related pay, employee share ownership. Commitment bundle: Information sharing, equal opportunities, flexible working, fringe benefits and job security.	Quantitative (Survey) WERS 2004	MQ: 22451 SEQ: 1559	-	Participation bundle has a positive relationship with employment relations. Fringe benefits are negatively related to job satisfaction**.** Commitment bundle is negatively related to employment relations (job satisfaction).
18. Guest & Peccei (2001)	UK	Multiple	Direct employee involvement in decision making and personal employment issues, participation of employee representative in decisions about employment issues and broader organisational policy issues,	Quantitative (Survey) Data from Involvement &	240 Matched responses :108	-	Direct participation, direct and representative participation, job design and quality focus is positively and significantly related to employee

			flexible job design and focus on quality, performance management, employee share ownership, two-way communication, harmonisation, internal labour market and employment security.	Participation Association (IPA)			attitudes and behaviour (organisational commitment).
19. Guest (2002)	UK		Performance appraisal, training and development, equal opportunity practices, performance related pay, anti-harassment practices, job design, family friendly practices, internal promotion, involvement in decision making processes and policies for avoiding layoffs and redundancies.	Quantitative (Survey)	2000	-	Job design, information sharing, family friendly practices, equal opportunities and anti-harassment practices have a significant positive relationship with work satisfaction. Scope of direct participation by employees positively relates to work satisfaction.
20. Guest (2004)	UK	-	-	Theoretic	-	-	Employees feel more satisfied with their jobs when they work in an organisation that offer HR practices that enhance their participation in decision making, skills and knowledge and provide optimal opportunities for training.
21. Guest (1999)	UK	Multiple	Training and development, information sharing, involvement in decision making, job design performance related pay, reduced status, profit sharing, attitude survey, anti-harassment practices, profit sharing and internal promotion.	Quantitative (Survey) ASER 1997	-	-	Using more HR practices has a significant positive effect on job satisfaction.
22. Harley, Sargent & Allen (2010)	Australia	Care Industry	Autonomous team membership, job characteristics, performance management and training.	Quantitative (Survey)	974	32%	Training, performance management and job characteristics had a strong association with satisfaction.
23. Heffernan & Dundon (2012)	Ireland	Food, Insurance & Consultancy	Employee resourcing, training and development, performance management and remuneration, communication and involvement, and work-life balance.	Quantitative (Survey) Multilevel	187	30.9%	High investment in HPWS has relatively lower perceptions of job satisfaction than those in organisations with a medium or low investment in HPWS. Overall, both high and low levels of HPWS index have a negative relationship with job satisfaction and affective commitment
24. Hoque (1999)	UK	Hotel	Terms and conditions: Harmonisation, single status, internal promotion and no compulsory redundancy.	Quantitative (Survey)	209	-	HRM practices are positively and significantly related to job satisfaction.

			Recruitment & Selection: Trainability, use of psychological test, job previews and formally communicating values/systems to new staff. Training: Deliberate development of learning organisation and formal training. Job design: Flexible job description, autonomous work groups, job enrichment, team working and staff involvement in setting performance targets. Quality Issues: Staff responsible for own quality and quality circles. Communication and consultation: Attitudes surveys, team briefing, down ward communication and information sharing on company matters. Pay systems: Merit pay and formal appraisal system for all staff.	Survey of HRM in Hotel Industry (1995)			
25. Innocenti, Pilati & Peluso (2011)	Italy	Production, distribution, marketing and consultancy.	Job evaluation, information sharing, training, non-monetary recognition, economic rewards, employee survey and job design.	Quantitative (Survey)	9166	-	HRM practices index has a significant positive effect on employee attitudes (job satisfaction).Ability and motivation bundles have a positive impact on employee attitudes (job satisfaction). Opportunity bundle exert a significant negative impact on employee attitudes (job satisfaction).
26. Jiang et al. (2012)	-	-	Skill enhancing: Recruitment, selection, training. Motivation enhancing: performance appraisal, compensation, incentive, benefit, promotion/ career development, and job security. Opportunity enhancing: Job design, work teams, employee involvement, formal grievance and complaint processes, and information sharing.	Meta-Analysis	-	-	All three dimensions of HR practices were positively and significantly related to employee motivation. (i.e. job satisfaction, organisational commitment, perceived organisational support, organisational climate and organisational citizenship behaviour).
27. Katou & Budhwar (2006)	Greece	Manufacturing	Resourcing and development: Recruitment, selection, separation, flexible work arrangements, training, monitoring training and development, careers, work design, performance	Quantitative (Survey)	178	30%	HRM systems of resourcing and reward are positively related to employee outcomes (job satisfaction).

			appraisal, job evaluation and promotion arrangements. Reward and relations: compensation, promotion arrangements, incentive schemes, benefits, employee participation, employee involvement communications and health and safety.				
28. Katou & Budhwar (2010)	Greece	Manufacturing	Resourcing and development: Recruitment, selection, separation, flexible work arrangements, training and development, monitoring training and development, careers, performance appraisal Compensation and incentives: Job evaluation, compensation, promotion, incentives, benefits Involvement and job design: Work design, participation, involvement, communication, health and safety.	Quantitative (Survey)	178	30%	Compensation & incentive practices significantly and positively effects employee attitudes (job satisfaction).
29. Kaya, Koc & Topcu (2010)	Turkey	Banking	Recruitment and selection, teamwork, extensive training, written policies, training in multiple functions, incentives, performance appraisal and feedback on performance.	Mixed (Interviews & regression)	346	-	A set of HR practices (especially recruitment/selection, teamwork and all types of training) make positive contributions of job satisfaction.
30. Khilji & Wang (2006)	Pakistan	Banking	Appraisal, compensation, training, recruiting and job design.	Mixed methods Interviews Questionnaires & company documents	508 Questionnaires 195 Interviews	-	Consistent implementation of HRM practices positively associates to employee satisfaction with HRM.
31. Kooij, Jansen, Dikkers & De Lange (2010)	-	-	Job security, staffing & selection, rewards & benefits, performance management (performance appraisal & pay), participation(empowerment, grievances & suggestion schemes), information sharing, communication, teamwork, team cooperation, work-life policies, flexible work schemes, training & development, internal promotion, career development and job enrichment.	Meta-analysis	83 Studies		Employee perception of HPWS is positively and significantly related to job satisfaction.

32. Macky & Boxall (2008)	New Zealand	Multiple	Power and autonomy, Information provision, rewards, knowledge and training, team work and work life balance.		775		All five HPW variables show a positive relationship with job satisfaction.
33. Macky & Boxall (2007)	New Zealand	-	Performance-pay, teams, employee participation programmes, reduced status differentials, internal promotion/recruitment, formal performance appraisal system, development based appraisal, formal communication system, employee attitude surveys, job security policies, formal training, merit-based promotion and job analysis.	Quantitative (Survey)	1880	26 %	HPWS have positive relationship with job satisfaction.
34. Mendelson, Turner & Barling (2011)	Canada	-	Employment security, selective hiring, extensive training, contingent compensation, teams and decentralized decision making, information sharing, reduced status distinctions, transformational leadership.	Quantitative (Survey)	313	-	The Second-Order Factor Model of high Involvement Work Systems is positively correlated with job satisfaction.
35. Messersmith, Patel, Lepak & Gould-Williams (2011)	UK (Wales)	Multiple	Sophisticated recruitment and selection, performance appraisal, promotion, communication, teamwork, skill and group based pay, attitude surveys, employee participation, family friendly policies and flexible work arrangements.	Quantitative (Survey)	1755	26.5%	Departmental level high performance work systems utilization is positively related to job satisfaction.
36. Mohr & Zoghi (2008)	Canada	Multiple	Job rotation, quality circles, self-directed teams, total quality management, enhanced training and non-traditional compensation, suggestion and information sharing programs.	Quantitative (Survey - (Longitudinal Data - Workplace & Employee survey 1999-2000)	Approx. 25,000 employee	1999: 90% 2000: 85%.	Cross-sectional: Suggestion programs, information sharing, teams, and quality circles are positively associated with job satisfaction. Unionised workers and workers who were already participating in high-involvement jobs and additional participatory practices also positively related to job satisfaction. Positive significant association between high involvement index and satisfaction persists at the organizational level.

37. Mostafa & Gould-Williams (2014)	Egypt	Health & Higher Education	Ability Enhancing: Selection, training and development. Motivation Enhancing: Job security, promotion and performance related pay. Opportunity Enhancing: Autonomy and communication	Quantitative (Survey)	671	67%	Second order constructs of high performance HR practices has significant positive relationship with job satisfaction.
38. Nishii, Lepak & Schneider (2008)	-	Department stores	Employee perceptions of Staffing, training, benefits, pay, and performance appraisals. 5 HR typologies were derived based on the HR practices: Business goal: HR Service Quality Cost Reduction HR philosophy: Employee well-being Exploiting Employees External Attribution Compliance with union contract	Quantitative (Survey)	4,208 Employees 1,010 Dept. Managers	- -	Quality and employee wellbeing HR attributes are positively related to employee attitudes (job satisfaction and organisational commitment). Exploiting cost and employee HR attributes are negatively related to employee attitudes (job satisfaction and organisational commitment).
39. Ogbonnaya, Daniels & Connolly (2013)	UK	Multiple	Workplace level HPWP practices: Job autonomy, team working, training, PRP, employee representation, flexible working, selective hiring and grievance procedures. Employee perceptions of HPWP practices: Supportive management, information sharing and participative decision making. For details on HPWP clusters see Table A-1, study 11	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 1733	MQ: 64% SEQ: 61%	Training, PRP, flexible working and employee perception of supportive management is significantly and positively related to job satisfaction. High use of HPWP (high–average synergies) show better latent factor mean score of job satisfaction than low use of HPWP (low level synergies).
40. Orlitzky & Frenkel (2005)	Australia	Manufacturing & service	Supportive HR Employment practices: Communication, decentralised management, employee participation, fair pay, fair procedures, good benefits, job security and training. HPWP (high road strategy): Rigorous selection, formal training & development, employee participation and equal employment opportunity/affirmative action. HRM Strategy: Role of HRM function and investment in HRM	Quantitative (Survey) AWRIS	2001	80%	Employee perceptions of supportive HR employment practices are positively related to employment relations (ER – job satisfaction).

41. Park, Mitsuhashi, Fey & Bjorkman (2003)	Japanese MNEs in USA & Russia	Service & others	Compensation system based on financial results, performance-based compensation merit based promotion, effective communication between the HR department and the top management, alignment of business and HR/personnel strategies, clear and well communicated strategic mission, training, focus on skills enhancement for competitive advantage, employee input and suggestion	Quantitative (Survey)	52	USA 28% Russia 48%	Synergistic HR system is positively and significantly related to employee attitudes (job satisfaction).
42. Peccei (2004)	UK	Multiple	Employee grievance/voice, numerical flexibility, employment stability, work/job design, employee knowledge, skills, competencies, downward communication, information sharing, consultative participation, performance appraisal, quality management practices and procedures, pay structure, benefits rewards, status equalisation, fair treatment at work and welfare	Quantitative (Survey) WERS 1998	23000 employees 1249 workplaces	-	Of the 33 practices examined, 18 had a positive impact the composite measure of overall wellbeing (high job satisfaction and low job stress).
43. Petrescu & Simmons (2008)	UK		Supervision, work organisation, pay practices, training & learning, employee involvement, recruitment & selection and job autonomy.	Mixed Methods Interviews & Survey	2 data sets: Sample1: 1518 Sample2: 19890	-	Supervision, employee involvement, job autonomy and training & learning has a significant positive relationship with job satisfaction.
44. Ramsay, Scholarios & Harley (2000)	UK	Multiple	HPWP score: Profit related pay, employee share ownership, employee consultation, TQM, problem solving groups, team autonomy, job control, investors in people accreditation, upward communication, job security, internal labour market and induction. For details on SW1&2 practices see Table A-1, study 14	Quantitative (Survey) WERS 1998	15, 788 13, 242	-	HPWP practices are positively and significantly related to satisfaction with pay.
45. Riordan, Vandenberg & Richardson (2005)	USA & Canada	Insurance	Perceived Employee Involvement (EI) climate practices: participative decision making, information sharing, training and performance based rewards.	Quantitative (Survey)	4828	90%	Overall, EI practices have a significant positive effect on job satisfaction. Individually, participative decision making and information sharing

							practices are positively and significantly related to job satisfaction.
46. Rose & Wright (2005)	UK	Insurance	Work-based characteristics, identification with organization involvement, consultation, emotional pressure, technological pressure, job control, and targets.	Mixed (Interviews & Survey)	173	84.8%	Employee development practices increases their level of job satisfaction.
47. Takeuchi, Chen & Lepak (2009)	Japan	Multiple	13 items HPWS scale developed by Huselid (1995)	Quantitative (Survey) Multilevel	324 Managers 522 Employees	-	HPWS utilisation was positively related to individual level job satisfaction.
48. Vandenberg Richardson, & Eastman (1999)	USA & Canada	Insurance	Work design, incentive practices, flexibility, training opportunities, and direction setting.	Quantitative (Survey)	3570	-	HIM practices have a direct positive influence on job satisfaction.
49. Vanhala & Tuomi (2006)	Finland	Metal & Retail	Formal HR policies, recruitment, employee development, motivation and reward, employment flexibility, teamwork, participation and communication.	Quantitative (Survey) 2 company level surveys (1997 & 1999). 2 employee level survey (1998 & 2000).	Company level: 91 Employee level: 1389	- -	Employee development and employment flexibility increases employees' general satisfaction. Employee development and recruitment policy are negatively related to general satisfaction.
50. Vanhala, Bonsdorff & Janhonen (2004)	Finland	Metal & Retail	Performance-based rewards, alignment, information, involvement, empowerment, teamwork, development, trust, creativity, & performance enablers.	Quantitative (Survey)	506	25.5%	Employee perception of high involvement work practices are positively related to general satisfaction and wellbeing.
51. Varma, Beatty, Schneier & Ulrich (1999)	USA	Insurance, telecommunications, food processing, consumer goods, power, & agricultural.	Reward for customer services (internal and external), rigorous selection, multiple selection mechanisms training for selectors, competency growth of employees, team-based rewards, non-financial rewards, reward for employee learning and competency growth.	Quantitative (Survey)	39 Firms	-	HPWS system positively and significantly influenced job satisfaction.
52. Wei, Han & Hsu (2010)	Taiwan	Manufacturing (Electronic)	Internal career opportunities, extensive training, employment security, participation and communication, sensitive selection and incentive compensation.	Quantitative (Survey) Multilevel	576	82.3%	High performance HR practices are positively related to job satisfaction.

53. White & Bryson (2013)	UK	Whole market sector Multiple	HRM domain: Development, participation, teams, incentives, recruitment, family friendly, equal opportunities and diversity. Other practices: employee involvement in change, job security/no compulsory redundancy, internal vacancies, pay for long service, occupational pension, other incentives, selection based on fitting into teams and commitment.	Quantitative (Survey) WERS 2004	1140 workplaces 11854 employees	-	HRM practices have significantly positive relationships with intrinsic job satisfaction mainly at high levels of implementation. Development, participatory and incentive domains have positive effects on intrinsic job satisfaction. Higher intensity of HPHR usage is positively and significantly related to job satisfaction index. At the low/moderate level HPHR index has negative and significant relationship with job satisfaction index. Across Domains: Incremental effects across HR domains (system level) at high levels of implementation have positive significant effects on intrinsic job satisfaction. Intensive team working is negatively related to intrinsic job satisfaction.
54. Wood & de Menezes (2011)	UK	Multiple	Job enrichment, High Involvement management (HIM): functional flexibility, quality circle, suggestion schemes, teamwork, induction, interpersonal skills training, team briefing, information disclosure and appraisal. Employee Voice: Employee perception of consultative management, informative management and trade union recognition. Motivational Supports: Profit sharing, job security guarantees, internal recruitment, group/organisational level performance related pay and employee share ownership schemes.	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 22, 322	MQ: 64% SEQ: 61%	Enriched jobs and employee voice (consultative and informative management) is positively related to job satisfaction. Enriched jobs positively associate to Job satisfaction. Voice is positively related to satisfaction and not with anxiety-contentment. Enriched job design, consultative management, informative management positively related to JS. Supportive management, being 60 or over, tenure positively related to job satisfaction.
55. Wood, Van Veldhoven, Croon & de Menezes (2012)	UK	Multiple	Enriched Job Design: variety in work, discretion over how the work is done and control over the ace of work. High Involvement Management: functional flexibility, quality circles, suggestions schemes, teamwork,	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451	MQ: 64% SEQ: 61%	Enriched job design is positively related to job satisfaction. High involvement management is negatively related to job satisfaction.

			induction, interpersonal skills training, briefing groups, information disclosure and appraisals.				
56. Wu & Chaturvedi (2009)	China, Singapore & Taiwan	Service & Manufacturing	Selection, comprehensive training, internal career opportunities, formal appraisals, empowerment & performance-related pay.	Quantitative (survey) Multilevel	1383	67.5%	Organisational level HPWS index is strongly related to individual level employee job satisfaction.
57. Zatzick & Iverson (2011)	Canada	Multiple	Individual level EI-Practices: Employee surveys, employee suggestion programs, job rotation or cross-training programs, labour–management committees, quality circles, self-directed work groups,) newsletter with information about workplace performance, organizational changes, or the implementation of new technology, contingent pay (profit sharing or gainsharing in the current year). Organisational level HIWS System: Enriched work, training, employee voice, decision rights over important aspects of their work (i.e. planning, feedback, staffing, and training.	Quantitative (Survey) Multilevel	1429 organisations 8424 employees using workplace employee survey	1999: 95.2% 2000: 85.9%	Individual level relationship between employee involvement and job satisfaction was positive and significant. Cross-level main effect of an organisation's HIWS were positively related to an employee's job satisfaction.
58. Zhang & Morris (2013)	China	Multiple	Internal merit-based promotion, employment security, rigorous selection procedures, grievance procedures, communication extensive training, information sharing, participation, performance-management systems, performance-related pay, self- managed teams and profit-sharing.	Quantitative (Survey)	168	20.5%	High performance work system has a positive significant impact on employee's outcome (job satisfaction).
59. Zhang, Zhu, Dowling & Bartram (2013)	China	Health Care	Recruitment, training, compensation, employee participation and job security.	Quantitative (Survey)	207	41%	HPWS is positively and significantly associated with job satisfaction.

All studies are cross-sectional unless otherwise stated

MQ: Management Questionnaire; SEQ: Survey of Employee Questionnaire

Table A-3: Summary of Studies linking High Performance HR Practices and Organisational Commitment

Author(s)/ Year	Country	Industry	HRM Practices	Research Methods	Sample Size	Response Rate	Findings
1. Ahmad & Schroeder (2003)	Germany, Italy, Japan & USA	Manufacturing	Employment insecurity, selective hiring, teams & decentralization, performance contingent compensation, extensive training, status differential and information sharing.	Quantitative (Survey) World class manufacturing project - WCM data	107 sites 1153 employees	60%	HR practices pertaining to selective hiring (manufacturing & human resources fit and behaviour & attitudes), teams & decentralization, incentives to meet objectives, extensive training and information sharing (communication of strategy & feedback on performance) are positively and significantly related to organisational commitment.
2. Allen, Shore & Griffeth (2003)	US	Beauty & Insurance	Participation in decision making, fairness of rewards/recognition & growth opportunities.	Quantitative (Survey)	215 Beauty store 197 Insurance sales persons	-	Perception of supportive HR practices lead to organisational commitment.
3. Boon, Hartog, Boselie & Paauwe (2011)	Netherlan -ds	Retail & Health care.	Training/development, participation, autonomy, job design, performance appraisal, rewards, teamwork, autonomy, work-life balance, recruitment and selection and employment security.	Quantitative (Survey)	412	20%	Employee perceptions of overall high performance HR system measure has a significant positive relationship with organisational commitment.
4. Bryson & White (2008)	UK	Multiple	HPW: Participation, involvement in change programmes, development, internal vacancies, team-working, team autonomy, incentive/other incentives, recruitment, selection by references and values, consultation and attitude survey. POS: Tolerance for absence, grievances, personal help, shift work, non-sanctioning, replacement of employees by contractors, job security guarantees, long term benefits and employment, equal	Quantitative (Survey)	22, 451	60%	HPWS: Other incentives, selection by values and consultation are positively related to mean workplace organisational commitment. Development score, selection by values and consultation are positively related to individual employee organisational commitment. Participation and internal vacancies are negatively related to individual employee organisational commitment. POS: Tolerance for absence, grievance score and non-sanctioning score are positively

			opportunities and family friendly practices.				related to individual employee organizational commitment. Shift work and long term benefits are negatively related to workplace mean organisational commitment. Personal help and shift work are negatively related to individual employee organizational commitment.
5. Danford, Richardson, Stewart, Tailby & Upchurch (2008)	UK	Manufacturing finance, insurance local authority employer and NHS hospital trust.	Self-directed teams, integrated project teams, problem-solving groups, job rotation within teams, job rotation between teams, team briefing, formal consultation, Works council, consult committee, attitude surveys, employee appraisals, off-the-job training, on-the-job training, merit/incentive pay, share ownership scheme, profit-sharing schemes, harmonised conditions and partnership practices.	Quantitative (Survey)	Aero1: 604 Aero2: 878 Fin: 128 Ins: 127 Local: 386 NHS: 452 Total : 2,577	62% 80% 32% 25% 52% 38%	Fair treatment scale, problem solving and groups and increase in amount of work have positive significant relationship with organisational commitment.
6. de Joy, Wilson, Vandenberg, McGrath-Higgins & Griffin-Blake (2010)	USA	Retail	Information sharing, opportunities for meaningful participation, and allocating necessary resources for making structural and operational changes.	Quantitative (Survey) Longitudinal	Pre-test.: 2, 207 Post-test1: 1,723 Post-test2: 1,510	- - -	HRM factors have significant positive effects on organisational commitment in baseline models.
7. Godard (2001)	Canada	-	Alternative Work practices (AWP) Programs: JIT, re-engineering quality mgmt. On-Line AWPs: Job rotation, multi-skilling, teams, team autonomy, team responsibility. Off-Line AWPs: Information sharing, team briefings, quality circles, permanently established committees system, joint steering committee meetings, Economic AWPs: Profit-Sharing and group bonus.	Quantitative (Telephone Survey)	508	55%	Moderate adoption of AWP practices is positively associated with commitment and high levels of adoption of AWP system has insignificant effect organisational commitment. Group bonuses have a significant positively relationship with organisational commitment. JIT and team autonomy have a significant negative relationship with organisational commitment.

8. Gould-Williams (2003)	UK	Service	Employee perception of training and development, information sharing, notable status differences, job variety, team working, rigorous selection, job security, internal recruitment, performance related pay and involvement in decision making.	Quantitative (Survey)	191	65.2%	HR practices have a significant positive relationship with organisational commitment.
9. Gould-Williams (2004)	UK	Service	Involvement in decision making, relationship with boss/superiors, relationship with colleagues, job security, training, job variety, team working, selection, communication, status differentials, PRP and empowerment.	Quantitative (Survey) Follow up interviews	206	64.4%	Involvement in decision making, relation with boss/superior and colleagues, training and team working have a significant positive relationship with organisational commitment. Communication and status differences have a negative relationship with organisational commitment.
10. Guest & Conway (2007)	UK	Multiple	Competence Bundle: Recruitment and selection, induction and training and development. Opportunity to participate bundle: Job design, team-working, two way communication, consultation, involvement and attitude surveys. Motivation bundle: Performance appraisal, individual and collective PRP, profit related pay, employee share ownership. Commitment bundle: Information sharing, equal opportunities, flexible working, fringe benefits and job security.	Quantitative (Survey) WERS 2004	MQ: 22451 SEQ: 1559	-	Participation bundle has a positive relationship with organisational commitment and better perception of better employment relations. Induction has a negative relationship with organisational commitment. Commitment bundle is negatively related to organisational commitment.
11. Guest & Peccei (2001)	UK	Multiple	Direct employee involvement in decision making and personal employment issues, participation of employee representative in decisions about employment issues and broader organisational policy issues, flexible job design and focus on quality, performance management, employee share ownership, two-way	Quantitative (Survey) Data from Involvement & Participation Association (IPA)	240 Matched responses :108	-	Direct participation, direct and representative participation, job design and quality focus is positively and significantly related to employee attitudes and behaviour (organisational commitment).

			communication, harmonisation, internal labour market and employment security.				
12. Guest (1999)	UK	-	Training & development, information sharing, performance-related pay, job design, anti-harassment, involvement in decision making, reduced status, profit sharing, attitude surveys and internal promotions.	Quantitative (survey)	-	-	HR practices has a significant positive relationship with organisational commitment and job satisfaction
13. Harley, Sargent & Allen (2010)	Australia	Care Industry	Autonomous team membership, job characteristics, performance management and training.	Quantitative (survey)	974	32%	Autonomous team membership and training associated positively with commitment. Performance management and job characteristics had a strong positive association with commitment.
14. Heffernan & Dundon (2012)	Ireland	Food, Insurance & Consultancy	Employee resourcing, training and development, performance management and remuneration, communication and involvement, and work-life balance.	Quantitative (Survey) Multilevel	187	30.9%	High investment in HPWS has relatively lower perceptions of organisational commitment than those in organisations with a medium or low investment in HPWS. Overall, both high and low levels of HPWS index have a negative relationship with affective commitment
15. Hoque (1999)	UK	Hotel	Terms and conditions: Harmonization, single status, internal promotion and no compulsory redundancy. Recruitment & Selection: Trainability, use of psychological test, job previews and formally communicating values/systems to new staff. Training: development of learning organisation and formal training. Job design: flexible job description, autonomous work groups, job enrichment, team working and staff involvement in setting performance targets. Quality Issues: Staff responsible for own	Quantitative (Survey) Survey of HRM in Hotel Industry (1995)	209	-	HRM practices are positively and significantly related to organisational commitment.

			quality and quality circles. Communication and consultation: Attitudes surveys, team briefing, down ward communication and information sharing on company matters. Pay systems: Merit pay and formal appraisal system for all staff.				
16. Innocenti, Pilati & Peluso (2011)	Italy	Production, distribution, marketing and consultancy.	Job evaluation, information sharing, training, non-monetary recognition, economic rewards, employee survey and job design.	Quantitative (Survey)	9166	-	HRM practices index has a significant positive effect on employee attitudes (organisational commitment). Ability and motivation bundles have a positive impact on employee attitudes (organisational commitment). Opportunity bundle exert a significant negative impact on employee attitudes (organisational commitment).
17. Jiang et al. (2012)	-	-	Skill-enhancing practices: Recruitment, selection, training. Motivation-enhancing practices: performance appraisal, compensation, incentive, benefit, promotion/ career development, and job security. Opportunity-enhancing practices: Job design, work teams, employee involvement, formal grievance and complaint processes, and information sharing.	Meta-Analysis	-	-	All three dimensions of HR practices were positively and significantly related to employee motivation. (i.e. job satisfaction, organisational commitment, perceived organisational support, organisational climate and organisational citizenship behaviour).
18. Katou & Budhwar (2006)	Greece	Manufacturing	Resourcing and development: Recruitment, selection, separation, flexible work arrangements, training, monitoring training and development, careers, work design, performance appraisal, job evaluation and promotion arrangements. Reward and relations: compensation, promotion arrangements, incentive schemes, benefits, employee participation, employee involvement	Quantitative (Survey)	178	30%	HRM systems of resourcing and reward are positively related to employee outcomes (organisational commitment).

			communications and health and safety.				
19. Katou & Budhwar (2010)	Greece		Resourcing and development: Recruitment, selection, separation, flexible work arrangements, training and development, monitoring training and development, careers, performance appraisal Compensation and incentives: Job evaluation, compensation, promotion, incentives, benefits Involvement and job design: Work design, participation, involvement, communication, health and safety.	Quantitative (Survey)	178	30%	Compensation & incentive practices significantly and positively effects employee attitudes (organisational commitment).
20. Kehoe & Wright (2013)	USA	Food Service Organisation	Selection, compensation, employee participation, training, performance evaluation, information sharing, communication and merit-based promotion.	Quantitative (Survey)	-	-	Employee perception of high performance HR practices positively influence organisational commitment.
21. Kooij, Jansen, Dikkers & De Lange (2010)	-	-	Job security, staffing & selection, rewards & benefits, performance management (performance appraisal & pay), participation(empowerment, grievances & suggestion schemes), information sharing, communication, teamwork, team cooperation, work-life policies, flexible work schemes, training & development, internal promotion, career development and job enrichment.	Meta-Analysis	83 Studies	-	Employee perception of HPWS is positively and significantly related to affective commitment.
22. Macky & Boxall (2007)	New Zealand		Performance-pay, teams, employee participation programmes, reduced status differentials, internal promotion/recruitment, formal performance appraisal system, development based appraisal, formal communication system,	Quantitative (Survey)	1880	26%	Experience of a greater number of HPWS is associated with employees reporting stronger psychological identification with their organisations.

			employee attitude surveys, job security policies, formal training, merit-based promotion and job analysis.				
23. Mendelson, Turner & Barling (2011)	Canada	-	Employment security, selective hiring, extensive training, contingent compensation, teams and decentralized decision making, information sharing, reduced status distinctions, transformational leadership	Quantitative (Survey)	313	-	The Second-Order Factor Model of high Involvement Work Systems is positively correlated with affective commitment
24. Messersmith Patel, Lepak & Gould-Williams (2011)	UK (Wales)	Multiple	Sophisticated recruitment and selection, performance appraisal, promotion, communication, teamwork, skill and group based pay, attitude surveys, employee participation, family friendly policies and flexible work arrangements.	Quantitative (Survey)	1755	26.5%	Departmental level high performance work systems utilisation is positively related to organisational commitment.
25. Nishii, Lepak & Schneider (2008)	-	Department stores	Employee perceptions of Staffing, training, benefits, pay, and performance appraisals. 5 HR typologies were derived based on the HR practices: Business goal: HR Service Quality Cost Reduction; HR philosophy: Employee well-being Exploiting Employees; External Attribution Compliance with union contract	Quantitative (Survey)	4,208 Employees 1,010 Dept. Managers	- -	Quality and employee wellbeing HR attributes are positively related to employee attitudes (job satisfaction and organisational commitment). Exploiting cost and employee HR attributes are negatively related to employee attitudes (job satisfaction and organisational commitment).
26. Ogbonnaya, Daniels & Connolly (2013)	UK	Multiple	Workplace level HPWP practices: Job autonomy, team working, training, PRP, employee representation, flexible working, selective hiring and grievance procedures. Employee perceptions of HPWP practices: Supportive management, information sharing and participative decision making.	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 1733	MQ: 64% SEQ: 61%	Training, flexible working and employee perception of supportive management is significantly and positively related to organisational commitment. High use of HPWP (high–average synergies) show better latent factor mean score of organisational commitment than low use of HPWP (low level synergies). Low use of HPWP (low level synergies – cluster 1) show high latent factor mean score of organisational commitment

			For details on HPWP clusters see Table A-1, study 11.				than high use of HPWP (high to average level synergies).
27. Orlitzky & Frenkel (2005)	Australia	Manufacturing & service	Supportive HR Employment practices (employee perception): Communication, decentralized management, employee participation, fair pay, fair procedures, good benefits, job security and training. HPWP (high road strategy): Rigorous selection, formal training & development, employee participation and equal opportunity/affirmative action. HRM Strategy: Role of HRM function and investment in HRM	Quantitative (Survey) AWRIS	2001	80%	Employee perceptions of supportive HR employment practices are positively related to employment relations (ER–organisational commitment).
28. Park, Mitsuhashi, Fey & Bjorkman (2003)	Japanese MNEs in USA & Russia	Service & others	Compensation system based on financial results of the company, performance-based compensation merit based promotion Effective communication between the HR department and the top management, alignment of business and HR/personnel strategies, clear and well communicated strategic mission, training, focus on skills enhancement for competitive advantage, employee input and suggestion are highly encouraged and implemented.	Quantitative (Survey)	52	USA 28% Russia 48%	Synergistic HR system is positively and significantly related to employee attitudes (organisational commitment).
29. Paul & Anantharaman (2003)	India	Software	Selectivity in hiring, valued- based induction, comprehensive training, team-based job design, compensation, employee-friendly work environment, development-oriented appraisal, career development and employee ownership (incentives).	Quantitative (Survey)	370	75.55%	Family friendly work environment, development performance appraisal, compensation and career development have a positive significant relationship with organisational commitment.

30. Qiao, Khilji & Wang (2009)	China	Manufacturing	Guthrie (2001), Dutta et al (2005) Training, fair recruiting, promotion, performance appraisal and performance feedback.	Quantitative (survey)	1176	86%	Employee perception of HPWS implementation associated positively and significantly with organisational commitment.
31. Ramdania, Mellahib, Guermatc & Kechad (2014)	Algeria	-	Employee training, empowerment, performance based compensation, competence based appraisal (financial & broader appraisal) and merit based promotion (merit and non-merit/personal based promotion).	Quantitative (Survey)	81	-	Individually training, empowerment, compensation, financial appraisal and merit based promotion is positively and significantly related to employee performance (i.e. organisational commitment). Simultaneous/joint effect of training, empowerment and merit based promotion are positively and significantly related to employee performance (organisational commitment).
32. Ramsay, Scholarios & Harley (2000)	UK	Multiple	HPWP score: Profit-related pay, employee share ownership, employee consultation, TQM, problem solving groups, team autonomy, job control, investors in people accreditation, upward communication, job security, internal labour market and induction. For details on SW1 & 2 practices, see Table A-1, study 14.	Quantitative (Survey) WERS 1998	15,660	-	HPWP practices are positively and significantly related to organisational commitment. SW1 practices are negatively and significantly related to organisational commitment.
33. Riordan, Vandenberg & Richardson (2005)	USA & Canada	Insurance	Perceived Employee Involvement (EI) climate practices: participative decision making, information sharing, training and performance based rewards.	Quantitative (Survey)	4828	90%	Perceived EI climate significantly and positively related to commitment. Overall, EI practices have a significant positive effect on organisational commitment. Individually, participative decision making, performance based rewards and information sharing practices are positively and significantly related to organisational commitment.
34. Scheible & Bastos (2013)	Brazil	IT	Training and development, benefit and compensation and stability.	Quantitative (Survey)	307	0ver 25%	Perception of HRM practices have a strong positive association with affective commitment. Practices relating to training, development and stability represent a stronger positive relationship with affective

							commitment than that of compensation and stability practices.
35. Takeuchi, Chen & Lepak (2009)	Japan	Multiple	13 items HPWS scale developed by Huselid (1995)	Quantitative (Survey) Multilevel	324 Managers 522 Employees	-	HPWS was positively related to individual level affective commitment.
36. Takeuchi & Takeuchi (2013)	Japan	Health Care	Performance appraisal, staffing & recruitment, compensation and training & development.	Quantitative (Survey)	1052	55.2%	Perceived HRM practices are indirectly related to both affective and continuance commitment, and P-E fit mediates these relationships.
37. Vandenberg, Richardson, & Eastman (1999)	USA & Canada	Insurance	Work design, incentive practices, flexibility, training opportunities, and direction setting.	Quantitative (Survey)	3570	-	HIM practices have a direct positive influence on organisational commitment.
38. White & Bryson (2011)	UK	Whole market sector	HRM domain: Development, participation, teams, incentives, recruitment, family friendly, equal opportunities and diversity. Other practices: employee involvement in change, job security/no compulsory redundancy, internal vacancies, pay for long service, occupational pension, other incentives, selection based on fitting into teams and commitment.	Quantitative (Survey) WERS 2004	1140 workplaces 11854 employees	-	HRM practices have significantly positive relationships with organisational mainly at high levels of implementation. Development, participatory and incentive domains have positive effects on organisational commitment. Across Domains: Incremental effects across HR domains (system level) at high levels of implementation have positive significant effects on organisational commitment. Intensive team working is negatively related to organisational commitment.
39. White & Bryson (2013)	UK	Multiple	HRM Index: Participation teams, incentives, development and recruitment.	Quantitative (Survey) WERS 2004	1140 work-places 11,854 employees	-	Higher intensity of HP-HR usage is positively and significantly related to organisational commitment index. At the low/moderate level HPHR index has negative and significant relationship with organisational commitment index.
40. Whitener (2001)	USA	Credit Unions	Staffing, training, reward system/compensation, and performance appraisal.	Quantitative (Survey) Cross-level	185	37%	HR practices exhibiting more support and commitment to employee yields stronger employee commitment.
41. Wright, Gardner & Moynihan (2003)	USA & Canada	Food	Selection and staffing, training, pay for performance and participation.	Quantitative (Survey)	5635	-	Index of HR practices is strongly and positively related to organisational commitment. Higher scores on an index of

							HR practices were correlated with higher employee organizational commitment.
42. Wright, Gardner, Moynihan & Allen (2005)	USA	Food	Employee perception of selection, training, pay for performance, performance evaluation and participation.	Quantitative (Survey)	6986	-	Additive index of the HR practices correlate positively with organisational commitment.
43. Wu & Chaturvedi (2009)	China, Singapore & Taiwan	Service & Manufacturing	Selection, comprehensive training, internal career opportunities, formal appraisals, empowerment, and performance-related pay	Quantitative (Survey) Multilevel	1383	67.5%	Organisational level HPWS index is strongly related to individual level employee organisational commitment.
44. Yang (2012)	Taiwan		Information sharing, fair rewards, recognition, empowerment and competence development.	Quantitative (Survey)	172	43%	High involvement HR practices have a significant positive relationship with perceived affective commitment, which in turn positively relates to citizenship behaviour.
45. Zhang & Morris (2013)	China	Multiple	Internal merit-based promotion, employment security, rigorous selection procedures, grievance procedures, communication extensive training, information sharing, participation, performance-management systems, performance-related pay, self- managed teams and profit-sharing.	Quantitative (Survey)	168	20.5%	High performance work system has a positive significant impact on employee's outcomes (organisational commitment).

All studies are cross-sectional unless otherwise stated
MQ: Management Questionnaire; SEQ: Survey of Employee Questionnaire

APPENDIX B

SUMMARY of EMPIRICAL STUDIES on HP-HR and WORK INTENSIFICATION

Table B-1: Summary of Empirical studies linking High Performance HR Practices and Work Demands/Work Intensification

Author(s)/ Year	Country	Industry	HRM Practices	Research Methods	Sample Size	Response Rate	Findings
1. Carter, Danford, Howcroft, Richardson, Smith and Taylor (2011)	UK	Tax & Revenue (HMRC)	Clear communications with staff, new leadership behaviours, work redesign along lean principles, performance management, team configurations, individual an targets and one day compulsory training programmes.	Mixed Methods (Interviews & Survey)	840	51%	HR practices introduced along lean techniques (hard HRM) showed a significant rise in increase in volume, pace and intensity of work pressure and a significant decline in job discretion and skill utilisation.
2. Danford, Durbin, Richardson, Tailby & Stewart (2009)	UK	Engineering, finance and government-owned scientific research.	Interviews: Management communications, two-way consultation and direct & indirect consultation through trade union and joint consultative committees team briefings, focus groups, 'meet the directors' sessions, and other forms of direct interaction. Survey: Direct consultation by management, direct and indirect influence on company strategy, investment strategy, staffing issues, pay and conditions, and changes to working practices.	Mixed Methods (Case Study) Interviews Survey	DesEng 28 FinCo: 40 GovSci: 50 DesEng 700 FinCo: 262 GovSci: 600	46% 56, 49, 41 & 60% 37%	Despite breadth and depth of practices relating to individual and collective influence over management decision-making processes many employees remain dissatisfied with the extent of involvement and report work intensification as a major cause of dissatisfaction.
3. de Joy, Wilson, Vandenberg, McGrath-Higgins & Griffin-Blake (2010)	USA	Retail	Information sharing, opportunities for meaningful participation, and allocating necessary resources for making structural and operational changes.	Quantitative (Survey) Longitudinal	2,207 - Pre-test. 1,723 - Post-test1 1,510 - Post-test2	- - -	HRM factors have significant positive effects on workload, physical work demands and unpredictable work schedules in baseline models.

4. Fan, Cui, Zhang, Zhu, Härtel & Nyland (2014)	China	Health Care Hospital	Ability: skill training programmes Motivation: job security, job description clarity and performance appraisal. Opportunity: employee voice and communication.	Quantitative (Survey)	1488	14.8%	HPWS has a significant negative association with burnout.
5. Godard (2001)	Canada	-	AWP Programs: JIT, re-engineering quality mgmt. On-Line AWVPs: Job rotation, multi-skilling, teams, team autonomy, team responsibility, Off-Line AWVPs: Information sharing, team briefings, quality circles, permanently established committees system, joint steering committee meetings. Economic AWPs: Profit-Sharing and group bonus.	Quantitative (Telephone Survey)	508	55%	Level of AWP is not associated with workload. Re-engineering, team responsibility and committee systems have significant positive effect on workload. Multi-skilling and group bonuses have significant negative effect on workload.
6. Gould-Williams (2003)	UK	Service	Employee perception of training and development, information sharing, notable status differences, job variety, team working, rigorous selection, job security, internal recruitment, performance related pay and involvement in decision making.	Quantitative (Survey)	191	65.2%	HR practices have a significant positive relationship with work effort (working harder & smarter).
7. Green (2004)	UK	Multiple	Introduction of initiatives to involve Employees and increases in proportion of Performance Related Pay for non-managerial workers (PRP).	Quantitative (Survey) WERS 1998	MQ:2191 SEQ:947	80% 82%	Employee involvement policies are effective in small establishments, and significant only within the service sector. They are insignificant in influencing effort in large establishments. The influence of PRP on work intensification is also greater in smaller establishments. Larger production sector establishments have a very small and insignificant link with work intensification.
8. Guest (1999)	UK	Multiple	Training and development, information sharing, involvement in decision making, job design performance related pay, reduced status, profit sharing, attitude survey, anti-harassment practices, profit sharing and internal promotion.	Quantitative (Survey) ASER 1997	-	-	Using HR practices has a direct positive effect on work pressure. Employee who indicate using less HR practices are always under pressure whereas employees who indicate using a higher number of HR practices are quite often under pressure.

9. Heffernan & Dundon (2012)	Ireland	Food, Insurance & Consultancy	Employee resourcing, training and development, performance management and remuneration, communication and involvement, and work-life balance.	Quantitative (Survey) Multilevel	187	30.9%	High level of HPWS index are positively and significantly related to work pressures. Low level of HPWS index has a significant negative relationship with work pressure.
10. Jensen, Patel & Messersmith (2013)	Wales	Multiple	Selection and recruitment, employee training, performance management, management consultation of employees in decision making, career opportunities, adequate communication, team work, reduction of status differences between management and employees, job security, and competitive compensation.	Quantitative (Survey)	1592	26.5%	HPW perception in employees lead to overload.
11. Kroon et al. (2009)	Netherlands	Multiple	Rigorous selection, development and career opportunities, rewards, performance evaluations, participation and communication, task analysis, and job design.				The organization's utilization of a system of high- performance work practices showed that as employee perceptions of HPWS utilization increased, perceptions of job demands also increased.
12. Marchington & Wilkinson (2005)	-	-	-	-	-	-	HR practices that increase employees' opportunity to participate cause higher work intensification.
13. Ogbonnaya, Daniels & Connolly (2013)	UK	Multiple	Workplace level HPWP practices: Job autonomy, team working, training, PRP, employee representation, flexible working, selective hiring and grievance procedures. Employee perceptions of HPWP practices: Supportive management, information sharing and participative decision making. For details of HR clusters, see Table, A-1, study 11.	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 1733	MQ: 64% SEQ: 61%	Job autonomy and perceived supportive management increases work intensity. Training, selective hiring and perceived information sharing reduces work intensification. Latent factor mean score of work intensification is significantly higher in cluster 3 (positive) and significantly lower in cluster 1 (negative). Work intensification negatively mediates the relationship between training, selective hiring and perceived information sharing and job strain. Work intensification negatively mediates the effects of HPWP on job strain in cluster 1. Work intensification positively mediates the relationship between both job autonomy and perceived supportive management and job

							strain. Work intensification positively mediates the effects of HPWP on job strain in cluster 3. Work intensification positively mediates the relationship between training, selective hiring and perceived information sharing and job satisfaction. Work intensification negatively mediates the effects of HPWP on job satisfaction in cluster 3. Work intensification does bot mediate the effects of HPWP on organisational commitment. Work intensification positively mediates the effects of HPWP on job satisfaction in cluster 1. Work intensification has insignificant mediation effect on the relationship between HPWP on organisational commitment.
14. Orlitzky & Frenkel (2005)	Australia	Manufacturing & service	Communication, decentralised management, employee participation, fair pay, fair procedures, good benefits, job security and training. HPWP: Rigorous selection, formal training & development, employee participation and equal employment opportunity/affirmative action. HRM Strategy: Role of HRM function and investment in HRM	Quantitative (Survey) AWRIS	2001	80%	HPWP have a positive significant relationship with work intensification.
15. Ramsay, Scholarios & Harley (2000)	UK	Multiple	HPWP score: Profit-related pay, employee share ownership, employee consultation, TQM, problem solving groups, team autonomy, job control, investors in people accreditation, upward communication, job security, internal labour market and induction. For details on SW1 & 2 practices, see Table A-1, study 14	Quantitative (Survey) WERS 1998	1386	-	HPWP practices are positively and significantly related to work intensification.
16. Truss (2001)	UK	Fast-moving consumer goods, NHS Trust, banking,	Recruitment and selection, training, development, career management, appraisal, and reward management - from the perspectives of both policy, from the HR department, and experience, from staff, line and senior	Mixed Methods: Interviews, questionnaires, focus groups &	Questionnaires: 1994: 215 1996: 209	56% 52%	Employee's perception of HR policy and practices adopted have a positive significant association with work intensification.

		financial services, pharmaceuticals & telecommunications	managers, recognizing that experiences are likely to vary between levels of staff.	documentary evidence. Longitudinal			
17. Vanhala & Tuomi (2006)	Finland	Metal & Retail	Formal HR policies, recruitment, employee development, motivation and reward, employment flexibility, teamwork, participation & communication.	Quantitative (Survey)	Company level: 91 Employee level: 1389	- -	Employee development and recruitment policy are negatively related to general satisfaction.
18. White, Hill, McGovern, Mills & Smeaton (2003)	UK	Multiple	Appraisal index, working in groups, effort determined by co-workers, work improvement groups, group PRP, profit sharing, individual PRP, workplace PRP, effort determined by incentive pay and merit increases.	Quantitative (Survey) WIB 2000 EIB 1992	WIB: 1915 EIB: 1474	- -	High performance practices (appraisal systems, group-based forms of work organisation and individual incentives) show positive and significant association with negative job-to-home spill over for employees in 1999 and 2000 samples (inferring increasing work demands and their spill over effect on family time/responsibilities).
19. Wood & de Menezes (2011)	UK	Multiple	Job enrichment, functional flexibility, quality circle, suggestion schemes, teamwork, induction, interpersonal skills training, team briefing, information disclosure and appraisal. Employee perception of consultative management, informative management and trade union recognition. Profit sharing, job security guarantees, internal recruitment, group/organisational level performance related pay and employee share ownership schemes.	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 22, 322	MQ: 64% SEQ: 61%	Supportive management, age, low earnings is positively related to demands or workload.
20.Zhang, Zhu, Dowling & Bartram (2013)	China	Health Care	Recruitment, training, compensation, employee participation and job security.	Quantitative (Survey)	207	41%	HPWS is positively associated with employees' work exhaustion (though the relationship was insignificant).

All studies are cross-sectional unless otherwise stated

MQ: Management Questionnaire; SEQ: Survey of Employee Questionnaire

Table B-2: Summary of Empirical Studies Linking Job Demands and Employee Well-being

Author(s)/ Year	Country	Industry	Job Demands	Research Methods	Sample Size	Response Rate	Findings
1. Carter, Danford, Howcroft, Richardson, Smith & Taylor (2011)	UK	Tax & Revenue (HMRC)	Material changes to work organisation and the decomposition of labour processes. Felt pressurised as a result of work patterns before and after lean work redesign principles.	Mixed Methods (Interviews & Survey)	840	51%	Work pressure and declining job autonomy and skill utilisation is associated with a significant rise in perceptions of health and stress problems.
2. Chandler, Keller & Lyon (2000)	USA	Manufacturing	Frequently have to take work home or work overtime, constrained by limited time and resources, not given enough time to do quality work, (4) I frequently have to buck rules/policies to get the job done.	Quantitative (Survey)	429	85%	Excessive workload pressures seem to inhibit the perception of an innovative supportive work culture.
3. Currivan (1999)	USA	Public School Teachers	Working very fast on the job; not having enough time to get anything done in my job; workload on my job is too heavy.	Quantitative (Survey) Panel Data	Sample1: 838 Sample2: 482	57% 58% Overall:42%	Routinisation and work load have significant negative effects on satisfaction. Routinisation and role overload have significant negative effects on commitment.
4. Danford, Richardson, Stewart, Tailby & Upchurch (2008)	UK	Manufacturing finance, insurance local authority employer and NHS hospital trust.	Increase in amount of work and working hours.	Quantitative (Survey)	Aero1: 604 Aero2: 878 Fin: 128 Ins.: 127 Local: 386 NHS: 452 Total : 2,577	62% 80% 32% 25% 52% 38%	Increase in amount of work and working hours have a significant negative relationship with job satisfaction.
5. Humphrey, Nahrgang & Morgeson (2007)	-	-	Physical demands at work	Meta-analysis	259 studies 219,625 participants	-	Physical demands were negatively related to job satisfaction.
6. Ogbonnaya, Daniels & Connolly (2013)	UK	Multiple	Work Intensity: working very hard, insufficient time to get the job done and worry outside working hours.	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 1733	MQ: 64% SEQ: 61%	Work intensification is negatively related to job satisfaction. Work intensification is positively related to job strain.

7. Orlitzky & Frenkel (2005)	Australia	Manufacturing & Service	Change in work effort expected of employees, change in work stress and pace.	Quantitative (Survey) AWRIS	2001	80%	Perception of work intensification is positively related to employee perceived job strain.
8. Ramsay, Scholarios & Harley (2000)	UK	Multiple	Work Intensification as Labour productivity	Quantitative (Survey) WERS 1998	15,920	-	Work intensification has insignificant relation on job strain.
9. Vanhala & Tuomi (2006)	Finland	Metal & Retail	Mental demands & physical demands.	Quantitative (Survey) 2 company surveys (1997 & 1999). 2 employee survey (1998 & 2000).	Company level: 91 Employee level: 1389	- -	Mental and physical work demands are negatively related to general psychological wellbeing and positively related to emotional exhaustion.
10. Wood & de Menezes (2011)	UK	Multiple	Job demands: not having enough time to get work done and working very hard. Amount of hours worked	Quantitative (Survey) WERS 2004	MQ: 2295 SEQ: 22451 Total: 22,322	MQ: 64% SEQ: 61%	Job demands, not having permanent contract (temporary/fixed term contract), being educated, being male negatively relates to job satisfaction. Job demands and hours worked, having temporary contract is negatively related to anxiety-contentment. Job demands, no permanent contract, being educated, being male negatively relates to job satisfaction.

All studies are cross-sectional unless otherwise stated
MQ: Management Questionnaire; SEQ: Survey of Employee Questionnaire

APPENDIX C

RESEARCH METHODOLOGY

Table C-1: Central Tenets and Points of Contrast between Positivism, Critical Realism and Interpretivism

Explanation ↓ ↓ ↓ ***Understanding***

Distinguishing Criteria	Positivism	Critical Realism	Interpretivism
Ontology	Based on realist, foundationalsit ontology; world exist independent of our knowledge of it.	Based on foundationalsit ontology; but allowing for interpretation in research.	Based on anti-foundationalsit ontology: the world does not exist independently of our knowledge of it.
Aim of Research (Causality vs. Cognition Debate)	There are patterns and regularities, causes and consequences, in the social world as is in the natural world. Hence, causal statements are achievable.	The objects and structures in society have causal powers. Hence casual statements and causal mechanism are possible. However, this causation is not law like; it acknowledges and requires interpretivism.	Generation of causality is not the dynamo of research. Causal explanations are secondary to cognition.
Research Approach (Unity vs. Distinction of Sciences & their Methods)	Unity of natural and social science methods. Hence, scientific methods can be used to analyse the social world.	Use of natural science methods may be used to analyse the social world. However, interpretative understanding of the reality is also mandatory.	Social and natural sciences are distinct from each other. The social world need to be studied from within and with methods different from those used in the study of natural sciences.
Independence Theory &Neutral Observational Criteria	Methods employed are neutral and so are the researchers using them.	The choice between neutral or value laden methods to employ depend on nature of object of study and what we want to learn about it.	Methods are employed to arrive at meaning of the world in which the studied live. Meaning is more important than neutrality.
Purpose of Research (Explanation vs. Understanding)	Explanation of facts with the aim of prediction is paramount rather than understanding.	Both understanding and explanation of social reality is vital.	Understanding rather than explanation is paramount.
Empirical vs. Normative Accounts (Fact vs. Value Divide)	The facts can be distinguished from value. Positivism is concerned with the facts not value.	Structure (fact) and agency/action (value) is mutually constitutive, but can be divided for analytic purposes.	The facts-value divide is not clear as the world is socially constructed from the interactions of individuals.
Conception of Reality	Reality is observable and independent. There is	Social change or conflict in social reality	The researcher is inextricably a part of

	aversion to metaphysics as science of being.	is not always apparent or observable. Looking beyond surface is essential.	social reality being researched. Hence, they are not detached from the subjects they are studying.
Value Freedom	There is 'objectivity' in research. What is to be studied and how to study it is based on objective criteria rather than by human beliefs and interests.	Pre-existing structures affect and are affected by actors. Human agency occurs in relation to deeply structured settings.	Objective or value free analysis is impossible.
Correspondence Theory of Truth	Relationship between social phenomena may be established by using theory to generate hypotheses, which can then be tested by direct observation and producing accounts that correspond to that independent reality.	Causal links not always observable in order to offer fuller explanations of social reality. Reality/truth is 'structured' or 'stratified' which requires a depth ontology.	Language plays a decisive role in constructing reality and truth. Meaning illustrated by language in the study of social life is more important than theory.
The Role of Double Hermeneutic in Research	There is no room for interpretations of an actor's understanding of his/her situation in a particular context.	The role of double hermeneutic is fully acknowledged.	Double hermeneutic facilitates cognition of society, social actors and their perceptions of their role/position in society.

Source: Based on and Adapted from Grix (2004) and Johnson and Duberley (2000)

Table C-2: The Quantitative and Qualitative Dichotomy

	Quantitative	Qualitative
Intended Outcome	Interested in finding out numerical qualities of an event or case: how many, how much?	Interested in the nature and essence of an event, person or case.
Goal of Investigation	Goal of investigation is prediction, control, description, hypothesis testing.	Goal of investigation is understanding, description, discovery and hypothesis-generation.
Preferred Data Type	Uses hard data (numbers).	Uses soft data (words/images from documents or observations, etc.)
Ontological Orientation	Objective.	Subjective.
Researcher-Subject Relationship	Researcher is distant.	Researcher is close.
Nature of Inquiry & Type of Sample	Usually tackles macro-issues, using large, random and representative samples.	Tends to analyse micro-issues, using small, non-random and non-representative samples.
Research Strategy	Employs deductive research strategy.	Employs an inductive research strategy.
Epistemological Orientation	Its epistemological orientation is argued to be rooted in the positivist tradition.	Its epistemological orientation is argued to be rooted in the interpretative tradition.
Research Aim	Aims at identifying general patterns and relationships.	Aims at interpreting events of historical and cultural significance.
View on Social Reality	Macro view.	Micro view.
Operationalisation of Measures	Measures are created prior to data collection and are standardised.	Measures are created during interaction with data and are often specific to the individual setting.
Data Collection Methods	Survey methodology.	Interview (in-depth case study).
Research Procedures & Verifiability	Research procedures are standard, replication is presumed.	Research procedures are particular, replication is rare.
Reflexivity & Value Freedom	Value-free.	Political.
Role of Social Context	Abstract.	Grounded.
Nature of Concepts	Concepts are in the form of variables.	Concepts are in the form of themes and motifs.
Representativeness & Generality of Research	Findings attempt to be comprehensive, holistic and generalisable.	Findings are seen to be precise, narrow and not generalisable. Contextual understanding.

Source: Based on Bryman & Bell (2003); Grix (2004) -- Adapted from Mason (1998, pp. 27-28); Silverman (2000); Nueman (2000, p. 123); Danemark et al. (2002, p. 162)

Table C-3: Demographic Profile of the Employees in WERS 2011

Demographics	Sub-Category	Frequency	Percentage (%)
Gender	Male	9572	43.5
	Female	12263	55.8
	Invalid Responses	146	0.7
	Total Responses	**21981**	**100**
Age (in Years)	16-21	859	3.9
	22-29	3142	14.3
	30-39	4611	21.0
	40-49	6170	28.1
	50-59	5329	24.2
	60-64	1290	5.9
	65 and Above	423	1.9
	Invalid Responses	157	0.7
	Total Responses	**21981**	**100**
Marital Status	Married	15183	69.1
	Unmarried	6583	29.9
	Invalid Responses	215	1.0
	Total Responses	**21981**	**100**
Dependent Children	No dependent children	15247	69.4
	Pre-school age children (0-4 years)	1222	5.6
	School age children (5-18 years)	3838	17.5
	Both pre-school and school age children	681	3.1
	Invalid Responses	993	4.5
	Total Responses	**21981**	**100**
Academic Qualification	None	3200	15
	Below A-Levels	8534	40
	A-Levels	2774	13
	Degree or Higher	6827	32
	Invalid Responses	646	2.9
	Total Responses	**21981**	**100**
Professional Training	No Training Received	6448	29.3
	Some Training Received	15346	69.8
	Invalid Responses	187	0.9
	Total Responses	**21981**	**100**
Tenure (in Years)	Less than a year	2475	11.3
	1 to less than 2 years	2115	9.6
	2 to less than 5 years	5247	23.9
	5 to less than 10 years	5291	24.1
	10 years or more	6687	30.4
	Invalid Responses	166	0.8
	Total Responses	**21981**	**100**
Job Status (Contract Type)	Permanent	20246	92.1
	Temporary- with no agreed end date	766	3.5
	Fixed Period- with agreed end date	818	3.7
	Invalid Responses	151	0.7
	Total Responses	**21981**	**100**
Member Trade Union/ Staff Association	Yes	8136	37.0
	No-but have been in the past	3708	16.9
	No-have never been a member	10013	45.6
	Invalid Responses	124	0.6
	Total Responses	**21981**	**100**

Source: Based on Responses of Employees in the SEQ

Table C-4: Items pertaining to Skills & Ability-Enhancing Bundle

HP-HR Bundle	HP-HR Practices	No. of Practices	Sub-Practices	Description of Measures	Response Range
SKLLABS		**15**			0-15
	Standard Induction	**1**		**STDINDCT**- Standard induction programmes are present for new inductees.	0-1
	Sophisticated Recruitment & Selection	**7**	Internal Recruitment	**INTRECT**-Internal candidates are the only source, no external candidates or internal candidates are given preference, other things being equal, over external candidates.	0-7
			Recruitment Criteria	**RECTSKLL**- Skills as an important factor when recruiting. **RECTQUAL-** Qualification as important factor when recruiting. **RECTEXP**- Experience as an important factor when recruiting **RECTMTVT**-Motivation as an important factor when recruiting.	
			Recruitment Tests	**PABTEST**-Personality/attitude test are conducted when recruiting for managerial/non-managerial employees. **PRCTEST**-Performance/competency test are conducted when recruiting for managerial/non-managerial employees.	
	Formal Training Systems	**7**	Interpersonal skills Training	**INTPERS1**-Training covered team working skills matters. **INTPERS2**- Training covered communication skills matters. **INTPERS3**-Training covered problem solving methods matters. **INTPERS4**- Training covered customer services/liaison matters.	0-7
			Off-the Job Training	**FRMTRAINB**- 80% or more employees in the LOG are given time off-their normal daily work duties for training over the past 12 months.	
			Functional Flexibility	**FUNCFLEX**-40% or more employees in the LOG are formally trained to be able to do jobs other than their own.	
			Training Need Evaluation	**PATRAIN**-Performance Appraisal results in an evaluation of employees' training needs.	

LOG (largest occupational group)
HP-HR practice response scale: 0-1

Table C-5: Items pertaining to Motivation-Enhancing Bundle

HP-HR Bundle	HP-HR Practices	No. of Practices	Sub-Practices	Description of Measures	Response Range
MOTIV		**13**			0-13
	Performance Appraisal Measures	**3**	PA Eligibility	**PAALL-**Performance appraisal is conducted for managerial or non-managerial employees.	0-3
			Proportion Receiving PA	**PACNDCTB**-80% or more of non-managerial employees in the LOG have their performance formally appraised.	
			Pay tied to PA	**PAPAY**- Individual employees pay is linked to performance appraisal.	
	Performance Related Pay (PRP) Measures	**4**	PRP Use	**FPREF**-Any employee(s) get paid by results (PBR) of receive merit pay.	0-4
			Measures evaluating PRP ----1	**PYINDPRF**- Payments by results (PBR) are determined by individual performance.	
			Measures evaluating PRP ----2	**PYGRPPRF**-Payments by results (PBR) are determined by team, workplace or organisation based measures.	
			Proportion Receiving PRP	**MRTPAYB**-40% or more non-managerial employees in the LOG receive payments by results or merit pay.	
	Profit Related Pay (PROF-PAY) Measures	**3**	FROF-PAY	**FPROF**- Any employee(s) receive profit related pay?	0-3
			Use PRFO-PAY Eligibility	**PROFALL**- Managerial or non-managerial employees participate in profit related pay schemes.	
			Proportion receiving PROF-PAY	**PFTPAYB**-40% or more employees in the LOG receive profit related pay.	
	Use of ESOS	**3**	ESOS Operates	**ESOSOPRT**-The workplace operates either SIP, SAYE, EMI, CSOP or any other ESOS.	0-3
			ESOS Participation Eligibility	**ESOSALL**-Managerial or non-managerial groups of employees are eligible for ESOS.	
			Proportion Eligible for ESOS	**ESOSB**- 40% or more employees in the LOG are eligible for ESOS.	

LOG (largest occupational group); ESOS (Employee Share Ownership Schemes) ; SIP (Share Incentive Plans); SAYE (Save as You Earn); EMI (Enterprise Management Incentives); CSOP (Company Share Option Plans)
HP-HR practice response scale: 0-1

Table C-6: Items pertaining to Opportunity-Enhancing Bundle

HP-HR Bundle	HP-HR Practices	No. of Practices	Sub-Practices	Description of Measures	Response Range
OPPTY		**21**			0-21
	Communication	**4**	Mgmt. Workforce Meeting	**MEETALL-** Meetings between senior managers and the whole workforce are held at the workplace.	0-4
			Briefing Groups	**BRGROUP**- Meetings between line managers/supervisors and employees for whom they are responsible are held at the workplace.	
			Frequency (Mgmt-Wrkf)	**FREQMTAL**- Meetings between senior managers and the whole workforce are held less than every 3 months at the workplace.	
			Frequency Briefing Groups	**FREQBRGP-** Meetings between line managers/supervisors and employees for whom they are responsible are held more than fortnightly at the workplace.	
	Consultation	**4**	Consult Committee	**CNSLTCMT**- Committees of managers and employees primarily concerned with consultation rather than negotiation exist at the workplace.	0-4
			Suggestion Schemes	**SUGGSCHMS**- Management communicates or consults with the employees at the workplace through suggestion schemes.	
			Consultation Time at (Mgmt-Wrkf)	**METCNSLT**- 25% or more time at the meetings between senior managers and the whole workforce is usually available for questions from employees or for employees to offer their views.	
			Consultation Time at Briefing Group	**BRGCNSLT**-25% or more time at the meetings between line managers and the employees they are responsible for (briefing groups) is usually available for questions from employees or for employees to offer their views.	
	Quality Circles	**1**		**QLTYCIRC**-Groups of non-managerial employees that solve specific problems or discuss aspects of performance or quality exist at the workplace.	0-1
	Attitude Surveys	**1**		**ATTSURVY**-Workplace has conducted a formal survey of employees' views or opinions during the past two years either by itself or using a third party at the workplace.	0-1
	Formal Team Working	**4**	Designated Teams	**TMWRKB**- 80% or more of the employees in the LOG work in formally designated teams.	0-4
			Team Autonomy	**TEAMDPND**-Team members are interdependent on each other's work to be able to do their job.	
				TEAMDECD-Team members jointly decide how the work is to be done.	
				TEAMRESP-Teams are given responsibility for specific products or services.	

Information Sharing	**3**	Investment Plans	**INFSHAR1**-Management regularly provides information to employees or their representatives on internal investment plans.	0-3
		Financial Plans	**INFSHAR2**- Management regularly provides information to employees or their representatives on financial positions of the workplace.	
		Staffing Plans	**INFSHAR3**- Management regularly provides information to employees or their representatives on staffing plans.	
Job Design	**4**	Job Variety	**JBVARTYB**-Employees in the LOG have a lot of variety in their work.	0-4
		Job Discretion	**JBDSCRTB**-Employees in the LOG have a lot of discretion over how they do their work.	
		Job Pace Control	**JCNTROLB**- Employees in the LOG have a lot of control over the pace at which they work.	
		Work Organisation Control	**JINVOLVB**- Employees in the LOG have a lot of involvement in decisions over how their work is organised.	

LOG (largest occupational group)
HP-HR practice response scale: 0-1

Table C-7: Items pertaining to Commitment-Enhancing Bundle

HP-HR Bundle	HP-HR Practices	No. of Practices	Sub-Practices	Description of Measures	Response Range
COMMIT		**38**			0-38
	Equal Opportunities	**17**	EOD Policy	**EODPOLCY-** Workplace has a formal written policy on equal opportunities or managing diversity.	0-17
			Monitor (R&S)	**MONRSG**- Workplace monitors R&S for gender.	
				MONRSE- Workplace monitors R&S for ethnic background.	
				MONRSD- Workplace monitors R&S for disability.	
				MONRSA- Workplace monitors R&S for age.	
			Review (R&S)	**REVRSG-** Workplace reviews R&S for gender equality.	
				REVRSE- Workplace reviews R&S for ethnic background.	
				REVRSD- Workplace reviews R&S for disability.	
				REVRSA- Workplace monitors R&S for age.	
			Monitor Promotions	**MONPROMG-** Workplace monitors promotions on gender.	
				MONPROME- Workplace monitors promotions on ethnic background.	
				MONPROMD- Workplace monitors promotion on disability.	
				MONPROMA- Workplace monitors promotions on age.	
			Review Promotions	**REVPROMG-**Workplace reviews promotion procedures for gender.	
				REVPROME- Workplace reviews promotion procedures for ethnic backgrounds.	
				REVPROMD- Workplace reviews promotion procedures for disability.	
				REVPROMA- Workplace reviews promotion procedures for age.	
	Grievance Handling Procedures	**4**	Formal Grievance Procedures	**GHANDLE**- Workplace has a formal procedure for dealing with individual grievances raised by employees.	0-4
			Writing Grievances	**GWRITE**- Employees are required to set out in writing the nature of grievances (always or sometimes).	
			Managerial Meeting for Grievances	**GMEETNG**- Employees are asked to attend a formal meeting with a manager to discuss the nature of their grievance (always or sometimes).	
			Grievance Appeal	**GAPPEAL**-Employees have a right to appeal against a decision made under the procedure.	
	Fringe Benefits Entitlements	**5**	Pension Entitlements	**LOGPENSN**-Employee in the LOG are entitled to employer contributions to a pension scheme.	0-5
			Vehicle Entitlements	**LOGCAR**- Employee in the LOG are entitled to company vehicle or vehicle allowance.	

		Private Health Insurance	**LOGHELTH**- Employee in the LOG are entitled to private health insurance.	
		Leave Entitlements	**LOGLEAVE**- Employee in the LOG are entitled to more than 28 days of paid annual leave including public holidays.	
		Sick Pay Entitlements	**LOGSICK**- Employee in the LOG are entitled to sick pay in excess of statutory requirements.	
	Flexible Working Arrangements (Family Friendly)	**7**	Working from Home	**WRKHOME**-Workplace allows working at from home in normal working hours to any employees.	0-7
			Flexi-time	**FLEXI**- Workplace provides flexi time arrangements to any employees.	
			Job Share	**JSHARE**- Workplace provides job sharing schemes to any employees.	
			Reduced Working Hours	**REDUCHRS**- Workplace offers the ability to reduce working hour's to any employees.	
			Compressed Working Hours	**COMPHRS**- Workplace allows working standard hours across fewer days to any employees.	
			Shift Patterns	**SHIFTPAT**- Workplace provides the ability to change set working hours to any employees.	
			Term Time Working	**TERMTIME**- Workplace provides working only during school term time to any employees.	
	Family Care Arrangements	**4**	Workplace Nursery	**NURSERY**- Workplace entitles any employee for workplace nursery or nursery linked with workplace.	0-4
			Financial Help with Child Care	**CHILDCARE**- Workplace entitles any employee to financial help with childcare.	
			Financial Help with Elders	**FINOLDER**- Workplace entitles any employee to financial help with the care of older adults.	
			Leave for Caring Elders	**LEAVCARE**- Workplace entitles any employee a specific period of leave for carers of older adults in addition to time off for emergencies.	
	Job Security	**1**		**JSEC1**- There is a policy of guaranteed job security or no-compulsory redundancies for either managerial or non-managerial employees.	0-1

LOG (largest occupational group); EOD- Equal Opportunities or Managing Diversity; Recruitment & Selection (R&S)
HP-HR practice response scale: 0-1

Table C-8: Distribution of Original High Performance HR Practices based on Job Design when they are not binary

High Performance HR Practices (Degree of Control)	**Job Variety (%)**	**Job Discretion (%)**	**Job Pace Control (%)**	**Involvement in Decision Making (%)**
None	50 (1.9)	163 (6.1)	227 (8.5)	163 (6.1)
A little	338 (12.6)	620 (23.2)	732 (27.5)	578 (21.6)
Some	1013 (37.9)	1209 (45.2)	1177 (44.2)	1257 (47.0)
A lot	1273 (47.6)	685 (25.6)	525 (19.7)	678 (25.3)
Valid responses	2674	2677	2661	2676
Missing Values (%)	6 (0.2)	3 (0.1)	19 (0.7)	4 (.1)
Median	3.00	3.00	3.00	3.00
Mode	4	3	3	3
Skewness	-0.847	-0.410	-0.283	-0.456
Kurtosis	0.035	-0.458	-0.573	-0.345
Type of Distribution	Skewed	Skewed	Skewed	Skewed
Treatment for Analysis	Binary at a lot of control (Median Split)	Binary at a lot of control (Median Split)	Binary at a lot of control (Median Split)	Binary at a lot of control (Median Split)

Table C-9: Distribution of Original High Performance Variables when they are not binary

High Performance HR Practices (Proportion of Employees)	Off the Job Training (%)	Designated Teams (%)	Functional Flexibility (%)	Performance Appraisal (%)	Employee Share Ownership Eligibility (%)	Merit Pay/ Payment by Results (%)	Profit Related Pay (%)
None (0%)	219 (8.3)	330 (12.3)	606 (23.2)	457 (17.1)	2371 (88.5)	1757 (65.6)	2319 (86.6)
Just a few (1-19%)	307 (11.6)	93 (3.5)	781 (29.9)	31 (1.2)	8 (0.3)	116 (4.3)	47 (1.8)
Some (20-39%)	255 (9.7)	99 (3.7)	408 (15.6)	37 (1.4)	3 (0.1)	80 (3.0)	19 (0.7)
Around half (40-59%)	248 (9.4)	99 (3.7)	255 (9.8)	44 (1.6)	1(0.0)	58 (2.2)	16 (0.6)
Most (60-79%)	269 (10.2)	238 (8.9)	172 (6.6)	66 (2.5)	6 (0.2)	58 (2.2)	18 (0.7)
Almost all (80-90%)	381 (14.4)	619 (23.1)	165 (6.3)	176 (6.6)	13 (0.5)	68 (2.5)	51 (1.9)
All (100%)	961 (36.4)	1197 (44.7)	228 (8.7)	1868 (69.7)	276 (10.3)	537 (20.0)	208 (7.8)
Valid Responses	2640	2675	2615	2679	2678	2674	2678
Missing Values (%)	40 (1.5)	5 (0.5)	65 (2.4)	1 (0.0)	2 (0.1)	6 (0.2)	2 (0.1)
Median	6.00	6.00	2.00	7.00	1.00	1.00	1.00
Mode	7	7	2	7	1	1	1
Skewness	-0.532	-1.208	0.853	-3.325	2.495	1.075	2.542
Kurtosis	-1.172	0.003	-0.420	11.078	4.265	-0.689	4.671
Type of Distribution	Skewed	Skewed	Skewed	Skewed	Skewed	Skewed	Skewed
Treatment for Analysis	Binary at 80% Median Split	Binary at 80% Median Split	*Binary at 40%	*Binary at 80% Median Split	*Binary at 40%	*Binary at 40%	*Binary at 40%

* 40% cut-off for dichotomisation is chosen arbitrarily in order to avoid an otherwise low cut-off at 20% median value.

Table C–10: Summary of Goodness of Fit Indices and their Cut-off Criteria

Categories of Goodness of Fit	Fit Indexes	General Rule for Acceptable Fit
Absolute/Predictive Fit Measures	Chi-Square (χ^2)	Non-significant χ^2; p-value ≥ 0.05.
	Normed Fit Chi-Square (χ^2/df)	Values less than 2 and up to 5 indicate a reasonable fit. Useful for nested models/model.
	Root Mean Square Error of Approximation (**RMSEA**)	Values ≤ 0.05 indicate good fit; Values between 0.05 up to 0.08 indicate adequate fit.
	Standardised Root Mean Square Residual (**SRMR**)	Values ≤ 0.05 indicate good fit; Values between 0.01 up to 0.05 indicate adequate fit.
	Weighted Root Mean Residual (**WRMR**)	Values ≤ 0.90 indicate good fit.
	Goodness-of-fit Index (**GFI**)	Values ≥ 0.95 indicate good fit; Values between 0.09 up to 0.95 indicate adequate fit.
Incremental Fit Measures	Adjusted Goodness-of-fit Index (**AGFI**)	Values ≥ 0.95 indicate good fit; Values between 0.09 up to 0.95 indicate adequate fit.
	Buntler-Bonett Normed Fit Index (**NFI**)	Values ≥ 0.95 indicate good fit; Values between 0.09 up to 0.95 indicate adequate fit.
	Tucker-Lewis Index (**TLI**) – also called Buntler-Bonett NON-Normed Fit Index (**NNFI**)	Values ≥ 0.95 indicate good fit; Values between 0.09 up to 0.95 indicate adequate fit.
	Comparative Fit Index (**CFI**) – same as Relative/Adjusted Non-centrality Index (**RNI**)	Values ≥ 0.95 indicate good fit; Values between 0.09 up to 0.95 indicate adequate fit.
Parsimony Fit Measures	Parsimony Normed Fit Index (**PNFI**)	Higher values indicate better fit. Compare between alternative models; Sensitive to sample size.
	Parsimony Adjusted GFI (**PGFI**)	Values closer to1 the better. Sensitive to model size.
	Akaike Information Criterion (**AIC**)	Values closer to 0 better. Good for model comparison.

Source: Adapted from Hair et al. (2010); Hu and Bentler (1999); Kaplan (2000); Kline (2011); Schumacker and Lomax (2004); Schreiber et al. (2006).

APPENDIX D

MISSING VALUE ANALYSIS

Table D-1: Missing Data Patterns - HP-HR Variables with more than 5 number of cases

	Missing Data Patterns																
PATTERN ID	**1**	**3**	**4**	**9**	**14**	**16**	**19**	**26**	**29**	**33**	**39**	**45**	**60**	**74**	**89**	**102**	**122**
FREQUENCY	*2330*	*10*	*20*	*8*	*8*	*13*	*6*	*8*	*13*	*8*	*10*	*10*	*11*	*31*	*18*	*6*	*10*
STDINDCT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
INTRECRT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
RECTMTVT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
RECTSKLL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
RECTQUAL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
RECTEXP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PABTEST	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PRCTEST	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
INTPERS1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
INTPERS2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
INTPERS3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
INTPERS4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
FRMTRANB	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
PATRAIN	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x
FNCFLX40	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PACNDCTB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PAPAY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PAALL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FPREF	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PYINDPRF	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PYGRPPRF	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MRTPAYB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FPROF	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PROFALL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PFTPAYB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ESOSOPRT	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x
ESOSALL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ESOSB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BRGROUP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MEETALL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FREQMTAL	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FREQBRGP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CNSLTCMT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SUGSCHMS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
METCNSLT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BRGCNSLT	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x
QLTYCIRC	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ATTSURVY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TEAMDPND	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TEAMDECD	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
TEAMRESP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TMWRKB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JBVARTYB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JBDSCRTB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

JCNTROLB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JINVOLVB	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
INFSHAR1	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
INFSHAR2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
INFSHAR3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
EODPOLCY	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x
MONRSG	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
MONRSE	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
MONRSD	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
MONRSA	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x
REVRSG	x	x	x	x	x				x	x	x	x	x	x	x	x	x
REVRSE	x	x	x	x	x				x	x	x	x	x	x	x	x	x
REVRSD	x	x	x	x	x				x	x	x	x	x	x	x	x	x
REVRSA	x	x	x	x	x				x	x	x	x	x	x	x	x	x
MONPROMG	x	x	x	x		x			x	x	x	x	x	x	x	x	x
MONPROME	x	x	x	x		x			x	x	x	x	x	x	x	x	x
MONPROMD	x	x	x	x		x			x	x	x	x	x	x	x	x	x
MONPROMA	x	x	x	x		x			x	x	x	x	x	x	x	x	x
REVPROMG	x	x	x	x		x			x	x	x	x	x	x	x	x	x
REVPROME	x	x	x	x		x			x	x	x	x	x	x	x	x	x
REVPROMD	x	x	x	x		x			x	x	x	x	x	x	x	x	x
REVPROMA	x	x	x	x		x			x	x	x	x	x	x	x	x	x
GAPPEAL	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
GHANDLE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
GWRITE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
GMEETNG	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LOGPENSN	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LOGCAR	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LOGHELTH	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LOGLEAVE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LOGSICK	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JOBSEC1	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
WRKHOME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FLEXI	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JSHARE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
REDUCHRS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
COMPHRS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SHIFTPAT	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TERMTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
NURSERY	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CHLDCARE	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FINOLDER	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LEAVCARE	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Missing Data Patterns (x=not missing)

Table D-2: Missing Data Patterns (Survey of Employees Questionnaire)

PATTERN ID	**1**	**2**	**3**	**4**	**5**	**6**	**9**	**10**	**12**	**14**	**15**	**20**	**22**	**25**	**28**	**33**	**41**	**45**	**54**	**67**	**69**	**71**	**74**	**75**	**89**	**92**	**100**	**109**
FREQUENCY	*15129*	*529*	*19*	*36*	*16*	*8*	*49*	*28*	*13*	*8*	*112*	*9*	*12*	*11*	*38*	*21*	*7*	*16*	*11*	*10*	*11*	*26*	*210*	*11*	*10*	*14*	*26*	*59*
JD1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CONSULT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CONSULT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CONSULT3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SRLT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SRLT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FLEXTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JOBSHARE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
REDUCEHRS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
REDUCEDAY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
HOMEWRKN	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TERMTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PAIDLEV	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

JS3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
JS5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x
JS6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
JS7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x
JS8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x		x	x
JS9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
ANX1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x
ANX2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x
ANX3	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x		x	x	x	x	x	x	x
DEP1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x	x
DEP2	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x		x	x	x	x	x	x	x
DEP3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x
ORGCMIT1	x	x	x	x	x	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT2	x	x	x	x	x	x	x	x			x			x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT3	x	x	x	x	x	x	x		x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x
GENDER	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
AGE	x	x	x			x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MSTATUS	x	x	x			x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JSTATUS	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CHILD	x		x	x		x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x

PATTERN ID	**123**	**131**	**138**	**143**	**148**	**166**	**174**	**180**	**183**	**194**	**205**	**206**	**248**	**249**	**273**	**279**	**290**	**293**	**333**	**339**	**352**	**380**	**391**	**406**	**413**
FREQUENCY	*7*	*50*	*6*	*15*	*17*	*31*	*71*	*20*	*41*	*33*	*9*	*170*	*248*	*18*	*6*	*11*	*16*	*88*	*12*	*16*	*74*	*23*	*35*	*7*	*7*

JD1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

DCOM4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CONSULT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CONSULT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
CONSULT3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
TIM4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	
SRLT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x		x
SRLT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x
FLEXTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x	x	x
JOBSHARE	x	x	x	x	x	x	x	x	x	x	x	x						x		x	x	x	x	x
REDUCEHRS	x	x	x	x	x	x	x	x	x	x	x		x	x	x			x		x	x	x	x	x
REDUCEDAY	x	x	x	x	x	x	x	x	x			x	x	x	x	x		x		x	x	x	x	x
HOMEWRKN	x	x	x	x	x	x	x	x		x		x	x	x		x		x		x	x	x	x	x
TERMTIME	x	x	x	x	x	x			x	x		x	x	x	x	x		x		x	x	x	x	x
PAIDLEV	x	x	x	x	x		x		x	x		x	x	x	x	x		x		x	x	x	x	x
JS1	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS2	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS3	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS4		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS5		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS7	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

GENDER	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
AGE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MSTATUS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JSTATUS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCHILD	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
PATTERN ID	**422**	**448**	**474**	**490**	**498**	**509**	**510**	**513**	**520**	**540**	**542**	**553**	**564**	**580**	**604**	**619**	**660**	**682**	**697**	**711**	**773**	**774**	**786**	**808**	**813**
FREQUENCY	*22*	*48*	*8*	*19*	*29*	*380*	*16*	*14*	*18*	*9*	*7*	*14*	*8*	*11*	*46*	*113*	*7*	*10*	*11*	*84*	*391*	*14*	*14*	*10*	*10*
JD1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCOM4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
CONSULT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x	x
CONSULT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x				x	x		x	x	x	x	x
CONSULT3	x	x	x	x	x										x			x			x	x	x	x	x
TIM1	x					x	x	x	x	x	x	x	x		x	x		x	x	x	x	x	x	x	x
TIM2		x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM3	x	x	x			x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x
TIM4	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SRLT1	x	x	x			x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x
SRLT2	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FLEXTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JOBSHARE	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	
REDUCEHRS	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x		x
REDUCEDAY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
HOMEWRKN	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TERMTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

PAIDLEV	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS7	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x		x	x	x
JS8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT1	x	x	x	x		x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT2	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT3	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
GENDER	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
AGE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MSTATUS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JSTATUS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCHILD	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x

PATTERN ID	**833**	**852**	**859**	**908**	**935**	**959**	**990**	**1012**	**1048**	**1080**	**1109**	**1120**	**1148**	**1196**	**1219**	**1243**	**1286**	**1330**	**1343**	**1355**	**1390**	**1454**
FREQUENCY	*9*	*6*	*73*	*9*	*13*	*101*	*8*	*23*	*29*	*16*	*12*	*10*	*14*	*6*	*34*	*151*	*26*	*22*	*13*	*29*	*42*	*7*
JD1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JD3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JC2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
JC3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	
JC4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x	

JC5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x	
DCOM1	x	x	x	x	x	x	x	x	x	x	x	x					x	x	x	x	x	x
DCOM2	x	x	x	x	x	x	x	x					x				x	x	x	x	x	x
DCOM3	x	x	x	x	x				x	x			x	x			x	x	x	x	x	x
DCOM4						x	x		x		x		x				x	x	x	x	x	x
CONSULT1	x	x	x	x		x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
CONSULT2	x	x	x			x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
CONSULT3	x	x				x		x	x	x	x	x	x	x	x		x	x	x	x	x	x
TIM1	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TIM4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SRLT1		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SRLT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
FLEXTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JOBSHARE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
REDUCEHRS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
REDUCEDAY	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
HOMEWRKN	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TERMTIME	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PAIDLEV	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JS9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ANX3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DEP2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

DEP3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
GENDER	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
AGE	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
MSTATUS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
JSTATUS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
DCHILD	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

PATTERN ID	**1477**	**1528**	**1562**	**1570**	**1590**	**1610**	**1611**	**1645**	**1675**	**1748**	**1788**	**1865**
FREQUENCY	*19*	*22*	*14*	*11*	*17*	*112*	*12*	*6*	*10*	*29*	*43*	*61*
JD1	x	x	x	x	x	x	x	x	x			
JD2	x	x	x	x	x					x		
JD3	x	x				x	x	x	x	x	x	x
JC1			x	x	x	x	x	x	x	x	x	
JC2	x		x	x	x	x	x	x	x	x	x	
JC3	x		x	x	x	x	x	x	x	x	x	
JC4	x		x	x	x	x	x	x	x	x	x	
JC5	x		x	x	x	x	x	x	x	x	x	
DCOM1	x	x	x	x		x	x	x	x	x	x	x
DCOM2	x	x	x	x		x	x	x	x	x	x	x
DCOM3	x	x	x	x		x	x	x	x	x	x	x
DCOM4	x	x	x	x		x	x	x		x	x	x
CONSULT1	x	x	x	x		x	x	x	x	x	x	x
CONSULT2	x	x	x	x		x	x	x	x	x	x	x
CONSULT3	x	x	x	x		x	x	x	x	x	x	x
TIM1	x	x	x	x	x	x	x	x	x	x	x	x
TIM2	x	x	x	x	x	x	x	x	x	x	x	x
TIM3	x	x	x	x	x	x	x	x	x	x	x	x
TIM4	x	x	x	x	x	x	x	x	x	x	x	x
SRLT1	x	x	x	x	x	x	x	x	x	x	x	x
SRLT2	x	x	x	x	x	x	x	x	x	x	x	x
FLEXTIME	x	x	x			x	x	x	x	x	x	x
JOBSHARE	x	x	x			x	x		x	x	x	x

REDUCEHRS	x	x	x			x	x	x	x	x	x	x
REDUCEDAY	x	x	x			x	x	x	x	x	x	x
HOMEWRKN	x	x	x			x	x	x	x	x	x	x
TERMTIME	x	x	x			x	x	x	x	x	x	x
PAIDLEV	x	x	x			x	x	x	x	x	x	x
JS1	x	x	x	x	x	x	x	x	x	x	x	
JS2	x	x	x	x	x	x	x	x	x	x	x	
JS3	x	x	x	x	x	x	x	x	x	x	x	
JS4	x	x	x	x	x	x	x	x	x	x	x	
JS5	x	x	x	x	x	x	x	x	x	x	x	
JS6	x	x	x	x	x	x	x	x	x	x	x	
JS7	x	x	x	x	x	x	x	x	x	x	x	
JS8	x	x	x	x	x	x	x	x	x	x	x	
JS9	x	x	x	x		x	x	x	x	x	x	x
ANX1	x	x	x	x	x	x	x	x	x	x	x	
ANX2	x	x	x	x	x	x	x	x	x	x	x	
ANX3	x	x	x	x	x	x	x	x	x	x	x	
DEP1	x	x	x	x	x	x	x	x	x	x	x	
DEP2	x	x	x	x	x	x	x	x	x	x	x	
DEP3	x	x	x	x	x	x	x	x	x	x	x	
ORGCMIT1	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT2	x	x	x	x	x	x	x	x	x	x	x	x
ORGCMIT3	x	x	x	x	x	x	x	x	x	x	x	x
GENDER	x	x	x	x	x	x	x	x	x	x	x	x
AGE	x	x	x	x	x	x	x	x	x	x	x	x
MSTATUS	x	x	x	x	x	x	x	x	x	x	x	x
JSTATUS	x	x	x	x	x	x	x	x	x	x	x	
DCHILD	x	x	x	x	x	x		x	x	x	x	x

Missing Data Patterns (x = not missing)

Table D-3: Reason of Missingness for Indicator Variables with more than 5% Missing Data – Survey of Employee Questionnaire

Groups Formed by Missing Data on	JD1	JD2	JD3	JC1	JC2	JC3	JC4	JC5	DCOM1	DCOM2	DCOM3	DCOM4
DCOM4												
t-Value	3.6	11.6	8.9	4.7	2.9	3.3	4.7	5.9	-2.6	-2.7	-3.0	.
Significance (2-tailed)	0.000	0.000	0.000	0.000	0.003	0.001	0.000	0.000	0.010	0.007	0.002	.
df	1495.4	1465.4	1517.3	1470.2	1434.5	1445.7	1440.4	1452.9	1242.7	1122.5	1129.2	.
# of cases (valid data)	20325	20147	20528	20371	20275	20320	20309	20286	20507	20446	20341	20576
# of cases (missing data)	1335	1294	1326	1323	1291	1301	1301	1293	1112	1007	1016	0
Mean of cases (valid data)	4.16	3.31	2.79	3.11	3.06	3.33	3.30	2.59	3.43	3.31	3.41	3.21
Mean cases (missing data)	4.07	2.96	2.52	2.97	2.97	3.24	3.18	2.38	3.52	3.40	3.51	.
CONSULT3												
t-Value	5.9	12.1	11.0	4.7	1.6	-0.5	1.8	5.7	-7.9	-6.0	-7.4	-3.5
Significance (2-tailed)	0.000	0.000	0.000	0.000	0.104	0.630	0.074	0.000	0.000	0.000	0.000	0.001
df	1855.1	1850.0	1878.6	1844.5	1805.0	1855.5	1820.7	1813.9	1712.0	1630.2	1645.4	1284.7
# of cases (valid data)	20050	19863	20245	20088	20004	20035	20026	20004	20175	20074	19978	19444
# of cases (missing data)	1610	1578	1609	1606	1562	1586	1584	1575	1444	1379	1379	1132
Mean of cases (valid data)	4.16	3.32	2.80	3.11	3.05	3.32	3.30	2.59	3.42	3.30	3.40	3.21
Mean cases (missing data)	4.04	2.98	2.48	2.99	3.01	3.33	3.26	2.41	3.64	3.47	3.59	3.32

Groups Formed by Missing Data on	CONSULT1	CONSULT2	CONSULT3	TIM1	TIM2	TIM3	TIM4	SRLT1	SRLT2	FLEX TIME	JOB SHARE	REDUCE HRS
DCOM4												
t-Value	-3.1	-3.5	-1.8	-5.8	-5.5	-6.6	-5.1	-4.0	-4.3	7.0	3.5	4.4
Significance (2-tailed)	0.002	0.000	0.074	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
df	1262.1	1163.2	928.5	1383.5	1427.0	1404.5	1438.7	1336.0	1393.0	1513.7	1467.8	1466.0
# of cases (valid data)	20290	20037	19444	20206	20274	20209	20322	20154	20315	20325	20036	20151
# of cases (missing data)	1127	1048	855	1217	1243	1224	1264	1173	1221	1314	1268	1281
Mean of cases (valid data)	3.28	3.17	2.94	3.28	3.39	3.43	3.43	3.54	3.50	0.38	0.17	0.34
Mean cases (missing data)	3.38	3.30	3.01	3.45	3.55	3.62	3.59	3.66	3.62	0.29	0.13	0.28
CONSULT3												
t-Value	-8.1	-9.0	.	-8.9	-11.2	-12.4	-11.1	-9.1	-6.6	3.7	5.9	7.2
Significance (2-tailed)	0.000	0.000	.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
df	1366.5	1006.4	.	1658.5	1767.1	1737.7	1824.0	1685.1	1754.4	1863.0	1911.6	1879.4
# of cases (valid data)	20236	20189	20299	20034	20076	20024	20092	19937	20075	20051	19741	19857
# of cases (missing data)	1181	896	0	1389	1441	1409	1494	1390	1461	1588	1563	1575
Mean of cases (valid data)	3.27	3.17	2.94	3.27	3.38	3.42	3.42	3.53	3.49	0.38	0.17	0.34
Mean cases (missing data)	3.51	3.47	.	3.50	3.65	3.71	3.70	3.75	3.66	0.34	0.12	0.26

Groups Formed by Missing Data on	REDUCE DAY	HOME WRKN	TERM TIME	PAID LEV	ANX1	ANX2	ANX3	DEP1	DEP2	DEP3	JS1	JS2
DCOM4												
t-Value	4.6	20.2	0.1	12.5	9.1	7.8	6.2	5.8	5.5	4.4	-2.8	-0.8
Significance (2-tailed)	0.000	0.000	0.896	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.439
df	1506.5	1808.6	1446.2	1525.2	1510.9	1505	1504.4	1521.0	1496.4	1515.0	1528.4	1490.5
# of cases (valid data)	20348	20346	20271	20322	20398	20353	20371	20364	20300	20384	20413	20404
# of cases (missing data)	1301	1309	1280	1296	1344	1316	1318	1317	1313	1321	1346	1317
Mean of cases (valid data)	0.23	0.22	0.18	0.38	2.64	2.16	1.96	1.83	1.91	1.76	3.85	3.88
Mean cases (missing data)	0.18	0.07	0.18	0.23	2.37	1.94	1.78	1.67	1.75	1.64	3.92	3.91
CONSULT3												
t-Value	6.1	7.8	2.7	12.3	13.1	9.9	10.2	13.2	12.9	12.6	-4.0	-2.4
Significance (2-tailed)	0.000	0.000	0.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014
df	1915.1	1956.3	1870.4	1908.2	1908.4	1900.7	1931.0	1989.4	1951.2	2015.2	1942.4	1941.6
# of cases (valid data)	20061	20064	19973	20042	20123	20072	20093	20084	20022	20108	20138	20132
# of cases (missing data)	1588	1591	1578	1576	1619	1597	1596	1597	1591	1597	1621	1589
Mean of cases (valid data)	0.23	0.21	0.18	0.38	2.65	2.17	1.97	1.84	1.92	1.77	3.85	3.88
Mean cases (missing data)	0.17	0.14	0.15	0.24	2.31	1.92	1.72	1.54	1.62	1.50	3.94	3.93

Groups Formed by Missing Data on	JS3	JS4	JS5	JS6	JS7	JS8	JS9	ORGCMIT1	ORGCMIT2	ORGCMIT3
DCOM4										
t-Value	-1.2	-7.0	-4.5	0.7	-5.3	-2.8	-0.3	2.5	-0.7	-2.2
Significance (2-tailed)	0.215	0.000	0.000	0.503	0.000	0.004	0.802	0.012	0.504	0.030
df	1476.4	1472.6	1482.0	1495.7	1413.4	1504.6	1562.4	1359.6	1492.9	1488.7
# of cases (valid data)	20305	20302	20349	20377	19995	20385	20545	20165	20409	20426
# of cases (missing data)	1291	1289	1287	1321	1238	1325	1333	1208	1303	1309
Mean of cases (valid data)	3.60	3.40	3.37	3.01	3.40	3.85	3.22	3.73	3.90	3.81
Mean cases (missing data)	3.63	3.61	3.50	2.98	3.56	3.92	3.22	3.67	3.92	3.87
CONSULT3										
t-Value	-2.5	-6.2	-4.2	-2.6	-1.6	-5.2	-0.9	-0.7	-4.4	-5.4
Significance (2-tailed)	0.011	0.000	0.000	0.010	0.101	0.000	0.363	0.501	0.000	0.000
df	1909.8	1876.7	1877.8	1880.8	1760.4	1915.8	2089.7	1725.0	1947.5	1934.4
# of cases (valid data)	20033	20019	20076	20099	19734	20109	20277	19933	20136	20148
# of cases (missing data)	1563	1572	1560	1599	1499	1601	1601	1440	1576	1587
Mean of cases (valid data)	3.60	3.40	3.37	3.00	3.41	3.85	3.21	3.73	3.90	3.81
Mean cases (missing data)	3.65	3.56	3.48	3.07	3.45	3.96	3.23	3.74	3.98	3.93

For each quantitative variable, pairs of groups are formed by indicator variable (present, missing).
Only Indicator variable with more than 5% missing data are reported.

Table D-4: Noticeable Patterns and Significant t-values between Missing vs. Valid Data

Groups Formed by Missing Data on: (% missing data)	Variables for which Noticeable Pattern with Significant t-values exits	# of significant comparison vs. total comparisons
JD1 (1.5)	JD3, DCOM1, CONSULT3, TIM1, SRLT2, JOBSHARE, HOMEWRKN, JS1, JS2, JS3, JS4, JS7, JS8, JS9, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3	20 vs. 46
JD2 (2.5)	JD1, JD3, DCOM1, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT2, FLEXTIME, HOMEWRKN, PAIDLEV, JS1, JS3, JS4, JS5, JS7, JS9, ANX1, ANX2, ANX3, DEP1, DEP3, ORGCMITC2.	28 vs. 46
JD3 (0.6)	CONSULT1, CONSULT2, CONSULT3, TERMTIME, PAIDLEV, JS4, JS5, JS8, ANX1, ORGCMIT2, ORGCMIT3.	11 vs.46
JC1 (1.3)	JD2, JC5, DCOM1, DCOM2, FLEXTIME, HOMEWRKN, PAIDLEV, JS7, ANX1, DEP2, ORGCMIT1	11 vs. 46
JC2 (1.9)	JD2, JC4, DCOM1, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, SRLT2, FLEXTIME, HOMEWRKN, PAIDLEV, JS4, JS5, JS7, ANX1, ORGCMIT1, ORGCMIT3	20 vs. 46
JC3 (1.6)	JD2, JC2, JC4, JC5, SRLT2, PAIDLEV, JS7, ANX1, ORGCMIT1	9 vs. 46
JC4 (1.7)	JD2, JC5, DCOM1, CONSULT1, TIM1, SRLT2, HOMEWRKN, PAIDLEV, JS4, JS5, JS7, ANX1, ORGCMIT1	13 vs. 46
JC5 (1.8)	JD2, JC5, DCOM1, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, SRLT2, FLEXTIME, JOBSHARE, HOMEWRKN, PAIDLEV, JS3, JS4, JS5, JS7, ANX1, ORGCMIT1	19 vs. 46
DCOM1(1.6)	JD2, JD3, JC1, JC5, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, FLEXTIME, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS4, JS5, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3.	26 vs. 46
DCOM2 (2.4)	JD1, JD2, JD3, JC4, JC5, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, FLEXTIME, JSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS3, JS4, JS7, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3, ORGCMIT1.	28 vs. 46
DCOM3 (2.8)	JD1, JD2, JD3, JC5, DCOM1, DCOM2, TIM4, SRLT1, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS3, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3	22 vs 46
DCOM4 (6.4)	JD1, JD2, JD3, JC1, JC2, JC3, JC4, JC5, DCOM1, DCOM2, DCOM3, CONSULT1, CONSULT2, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, JS1, JS4, JS5, JS7, JS8, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3, ORGMIT1, ORGCMIT3	37 vs. 46
CONSULT1 (2.6)	JD1, JD2, JD3, JC1, JC3, JC5, TIM1, TIM2, TIM3, TIM4, SRLT1, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, PAIDLEV, JS4, JS5, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3, ORGCMIT3	26 vs 46
CONSULT2 (4.1)	JD1, JD2, JD3, JC1, JC2, JC3, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, DCOM1, DCOM4, HOMEWRKN, PAIDLEV, JS6, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3.	23 vs 46
CONSULT3 (7.7)	JD1, JD2, JD3, JC1, JC5, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, PAIDLEV, JS1, JS2, JS3, JS4, JS5, JS6, JS8, ANX1, ANX2, ANX3, DEP1, DEP2, DEP3, ORGCMIT2, ORGCMIT3.	37 vs. 46

TIM1 (2.5)	JD2, JC1, JC2, JC3, JC4, JC5, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM3, SRLT1, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS1, JS2, JS3, JS7, JS9, ANX1, ANX2, DEP1, DEP2, DEP2, ORGCMIT2	30 vs 46
TIM2 (2.1)	JD2, JC1, JC2, JC4, DCOM2, CONSULT1, CONSULT2, CONSULT3, TIM1, SRLT2, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, PAIDLEV, JS1, JS2, JS3, JS6, JS7, JS8, JS9, ANX1, ORGCMIT1, ORGCMIT2, ORGCMIT3	26 vs 46
TIM3 (2.5)	JD2, JC1, JC2, JC3, JC4, JC5, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM4, SRLT1, SRLT2, FLEXTIEM, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, PAIDLEV, JS1, JS2, JS3, JS4, JS5, JS6, JS7, JS8, JS9, ANX1, ORGCMIT1, ORGCMIT2, ORGCMIT3.	37 vs 46
TIM4 (1.8)	JD2, JC1, JC2, JC3, JC4, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, SRLT2, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, PAIDLEV, JS1, JS2, JS3, JS5, JS7, JS8, JS9, ORGCMIT1, ORGCMIT2, ORGCMIT3	28 vs 46
SRLT1 (3.0)	JD1, JD2, JD3, JC1, JC2, JC3, JC4, JC5, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM4, SRLT2, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS1, JS2, JS3, JS8, JS9, ANX1, ANX2, ANX3, ORGCMIT1, ORGCMIT2, ORGCMIT3	37 vs 46
SRLT2 (2.0)	JC1, JC3, JC4, JC5, DCOM2, DCOM3, CONSULT1, CONSULT3, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS5, JS7, JS9, ANX1, ANX2, ORGCMIT1	21 vs 46
FLEXTIME (1.59)	JD3, JC1, DCOM2, DCOM3, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, JOBSHARE, REDUCEHRS, REDUCEDAY, JS1, JS2, JS3, JS4, JS5, JS7, JS8, JS9, ANX1, DEP1, DEP2, DEP3, ORGCMIT2, ORGCMIT3.	30 vs 46
JOBSHARE (3.17)	JD3, JC2, JC3, JC4, JC5, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT2, REDUCEHRS, REDUCEDAY, PAIDLEV, JS1, JS2, JS3, JS4, JS5, JS8, JS9, ANX1, DEP1, DEP3, ORGCMIT1, ORGCMIT2, ORGCMIT3	33 vs 46
REDUCEHRS (2.56)	JD3, DCOM1, DCOM2, DCOM3, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, SRLT2, REDUCEHRS, REDUCEDAY, PAIDLEV, JS1, JS2, JS3, JS4, JS5, JS8, JS9, ANX1, DEP1, DEP3, ORGCMIT1, ORGCMIT2, ORGCMIT3	27 vs 46
REDUCEDAY(1.48)	JD3, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, SRLT2, REDUCEDAYS, JS1, JS4, JS5, JS7, JS8, JS9, ANX1, ANX2, DEP2, DEP3, ORGCMIT2, ORGCMIT3	25 vs 46
HOMEWRKN (1.5)	DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, FLEXTIME, JOBSHARE, REDUCEHRS, REDUCEDAY, TERMTIME, JS1, JS2, JS3, JS4, JS5, JS7, JS8, JS9, ANX1, DEP3, ORGCMIT1, ORGCMIT2, ORGCMIT3	31 vs 46
TERMTIME (1.99)	JD1, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, FLEXTIME, JOBSHARE, REDUCEHRS, JS1, JS2, JS3, JS4, JS5, JS7, JS8, JS9, ANX1, DEP1, DEP2, DEP3, ORGCMIT1, ORGCMIT2, ORGCMIT3	32 vs 46
PAIDLEV (1.67)	JD1, DCOM1, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT1, SRLT2, FLEXTIME, TERMTIME, JS1, JS2, JS3, JS4, JS5, JS7, JS8, JS9, DEP1, DEP2, DEP3, ORGCMIT1, ORGCMIT2, ORGCMIT3	30 vs 46
JS1 (1.0)	FLEXTIME, REDUCEDAY, JS8, DEP1, DEP2, ORGCMIT1	6 vs 46

JS2 (1.2)	JD2, JC1, JC2, JC3, JC4, FLEXTIME, HOMEWRKN, PAIDLEV, JS1, JS3, JS5, ORGCMIT1	12 vs 46
JS3 (1.8)	JD2, JC1, JC3, JC4, JC5, FLEXTIME, REDUCEDAY, HOMEWRKN, PAIDLEV, ANX1	10 vs 46
JS4 (1.8)	JC4, JC5, FLEXTIME, REDUCEHRS, REDUCEDAY, HOMEWRKN, PAIDLEV, ANX1, ORGCMIT1	9 vs 46
JS5 (1.6)	JD2, JC2, JC3, JC4, JC5, FLEXTIME, HOMEWRKN, TERMTIME, PAIDLEV, JS6, ANX1, ORGCMIT1	12 vs 46
JS6 (1.3)	DCOM1, TIM1, HOMEWRKN, TERMTIME, PAIDLEV, JS2, JS4, JS7, ANX1, ANX2, ANX3	11 vs 46
JS7 (3.4)	JD2, JD3, JC1, JC4, JC5, DCOM2, CONSULT1, CONSULT3, TIM1, TIM2, TIM3, TIM4, SRLT2, FLEXTIME, REDUCEHRS, REDUCEDAY, HOMEWRKN, TERMTIME, PAIDLEV, JS5, JS6, JS8, JS9, ORGCMIT1	24 vs 46
JS8 (1.2)	DCOM2, TIM4, FLEXTIME, REDUCEDAY, TERMTIME, PAIDLEV, JS1, JS4, JS5, JS6, JS7	11 vs 46
JS9 (0.5)	DCOM1, TIM4, SRLT1, HOMEWRKN, PAIDLEV, JS4	6 vs 46
ANX1(1.1)	JD1, JS4, ANX2, DEP1, DEP2, DEP3	6 vs 46
ANX2 (1.4)	JD1, FLEXTIME, HOMEWRKN, JS2, ANX1, ANX3, DEP1, DEP2, DEP3, ORGCMIT1	10 vs 46
ANX3 (1.3)	JD1, JD3, ANX1, ANX2, DEP1, DEP2, DEP3, ORGCMIT1	8 vs 46
DEP1 (1.4)	JOBSHARE, HOMEWRKN, JS4, JS5, JS8, ANX1, ANX2, ANX3 DEP2, DEP3,	10 vs 46
DEP2 (1.7)	JD1, JC1, DCOM1, JS4, JS8, ANX1, ANX2, ANX3, ORGCMIT1	9 vs 46
DEP3 (1.3)	JD1, HOMEWRKN, JS1, JS4, JS8, ANX1, ANX2, ANX3, DEP1, DEP2	10 vs 46
ORGCMIT1 (2.8)	JD2, JD3, JC1, JC2, JC3, JC4, JC5, DCOM1, DCOM3, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM4, FLEXTIME, JOBSHARE, REDUCEHRS, HOMEWRKN, TERMTIME, PAIDLEV, JS1, JS2, JS6, JS9, ANX1, ORGCMIT2, ORGCMIT3	28 vs 46
ORGCMIT2 (1.2)	JC2, JC3, JC4, DCOM2, DCOM3, DCOM4, CONSULT1, CONSULT2, CONSULT3, TIM1, TIM2, TIM4, SRLT1, SRLT2, FLEXTIME, HOMEWRKN, PAIDLEV, JS1, JS3, JS5, JS6, JS8, JS9, ANX2, ANX3, DEP2, DEP3, ORGCMIT1, ORGCMIT3	29 vs 46
ORGCMIT3 (1.1)	JC4, CONSULT1, TIM1, SRLT1, SRLT2, REDUCEHRS, HOMEWRKN, TERMTIME, PAIDLEV, JS1, JS2, JS3, JS8, JS9	14 vs. 46

Table D-5: Reason for Missingness in Survey of Employees Questionnaire

Workplace Intermediate and Outcome Measures	Valid Response	Missing Values (%)	Missing Value Reasons			
			Non Response	Don't Know	N A	Multi-Coded
INTERMEDIATE VARIABLES						
JD1- My job requires that I work very hard	21660	321 (1.5)	282	25	6	0
JD2- I never seem to have enough time to get my work done	21441	540 (2.5)	474	52	6	8
JD3- Often difficult to fulfil non-work commitments due to time spent on job	21854	127 (0.6)	99	0	21	7
JC1- Influence over what tasks you do in your job	21694	287 (1.3)	195	72	9	11
JC2- Influence over the pace at which you work	21566	415 (1.9)	278	121	9	7
JC3- Influence over how you do your work	21621	360 (1.6)	264	78	9	9
JC4- Influence over the order in which you carry out tasks	21610	371 (1.7)	262	83	9	17
JC5-Influence over the time you start or finish your working day.	21579	402 (1.8)	276	112	9	5
TIM1-Managers can be relied upon to keep their promises.	21423	558 (2.5)	137	380	32	9
TIM2- Managers are sincere in attempting to understand employees' view	21517	464 (2.1)	146	277	32	9
TIM3-Managers deal with employees honestly	21433	548 (2.5)	150	354	32	12
TIM4-Managers deal with employees fairly	21586	395 (1.8)	143	200	32	20
DCOM1-Management discloses changes on how the organisation is being run	21619	362 (1.6)	109	225	22	6
DCOM2-Management discloses changes in staffing	21453	528 (2.4)	172	326	22	8
DCOM3-Management discloses changes in the way you do your job	21357	624 (2.8)	187	404	22	11
DCOM4-Management discloses financial matters including budgets/profits	20576	1405 (6.4)	187	1187	22	9
CONSULT1-Managers seek views of employees/representatives	21417	564 (2.6)	96	436	25	7
CONSULT2-Managers respond to suggestions from employees/representatives	21085	896 (4.1)	132	731	25	8
CONSULT3-Managers allow employees/representatives to influence final decisions	20299	1682 (7.7)	143	1507	25	7
SRLT1-Managers understand about employees responsibilities outside work	21327	654 (3.0)	153	461	32	8
SRLT2-Managers understand encourage people to develop their skills	21536	445 (2.0)	149	252	32	12
FLEXTIME-Flexi time availed/ available	19581	2400 (10.9)	337	2042	16	5
JOBSHARE-Job Share availed/ available	18140	3841 (17.5)	668	3148	16	9
REDUCEHRS-Chance to reduce working hours availed/ available	17819	4162 (18.9)	532	3597	16	17

REDUCEDAY-Option to working the same number of hours per week across fewer days availed/ available	18323	3658 (16.6)	318	3310	16	14
HOMEWRKN-Working at or from home in normal working hours availed/ available	20343	1638 (7.5)	305	1296	16	21
TERMTIME-Working only during school term time availed/ available	18824	3157 (14.4)	425	2711	16	5
PAIDLEV-Paid leave to care for dependents availed/ available	15141	6840 (31.1)	344	6461	16	19
OUTCOME VARIABLES						
ANX1-Tense	21742	239 (1.1)	200	0	16	23
ANX2-Worried	21669	312 (1.4)	266	0	16	30
ANX3-Uneasy	21689	292 (1.3)	254	0	16	22
DEP1-Depressed	21681	300 (1.4)	269	0	16	15
DEP2-Gloomy	21613	368 (1.7)	326	0	16	0
DEP3-Miserable	21705	276 (1.3)	249	0	16	0
JS1-Satisfied with the sense of achievement you get from your work	21759	222 (1.0)	164	44	11	3
JS2-Satisfied with the scope for using your initiative	21721	260 (1.2)	173	68	12	7
JS3-Satisfied with the amount of influence you have over your job	21596	385 (1.8)	231	130	12	12
JS4-Satisfied with the training you receive	21591	390 (1.8)	222	147	12	9
JS5-Satisfied with the opportunity to develop your skills in your job	21636	345 (1.6)	189	136	12	8
JS6-Satisfied with the amount of pay you receive	21698	283 (1.3)	192	63	16	12
JS7-Satisfied with your job security	21233	748 (3.4)	205	520	11	12
JS8-Satisfied with the work itself	21710	271 (1.2)	197	56	13	5
JS9-Satisfied with the involvement in decision making at this workplace	21878	103(0.5)	71	0	25	7
ORGCMIT1-I share many of the values of my organisation	21570	411 (1.9)	148	233	28	2
ORGCMIT2-I feel loyal to my organisation	21373	608 (2.8)	174	398	28	8
ORGCMIT3-I am proud to tell people who I work for	21712	269 (1.2)	133	103	28	5

Figure D-1a – c: Matrix Plots for HP-HR Variables

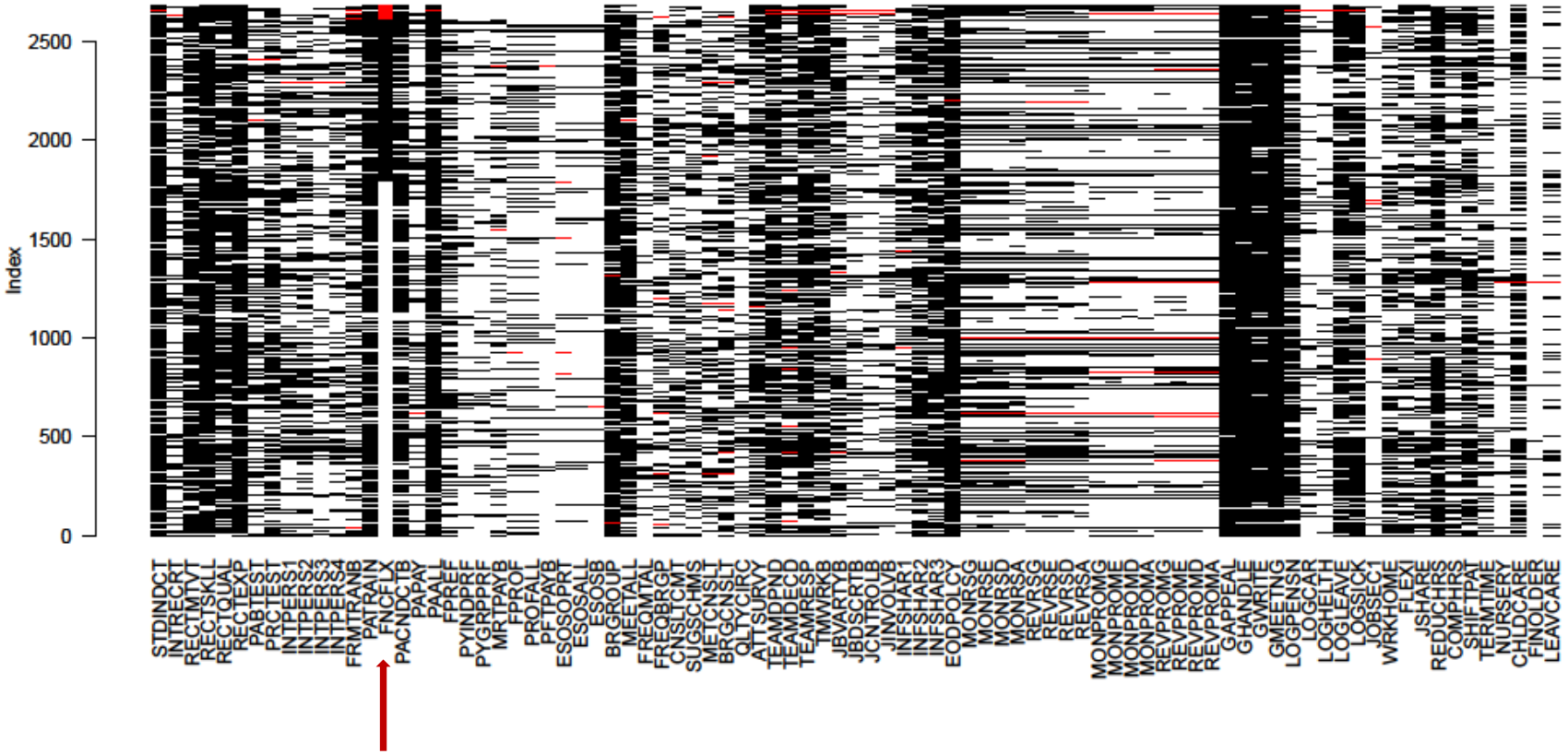


Figure D-1a - Matrix Plot sorted by Functional Flexibility (FNCFLX)

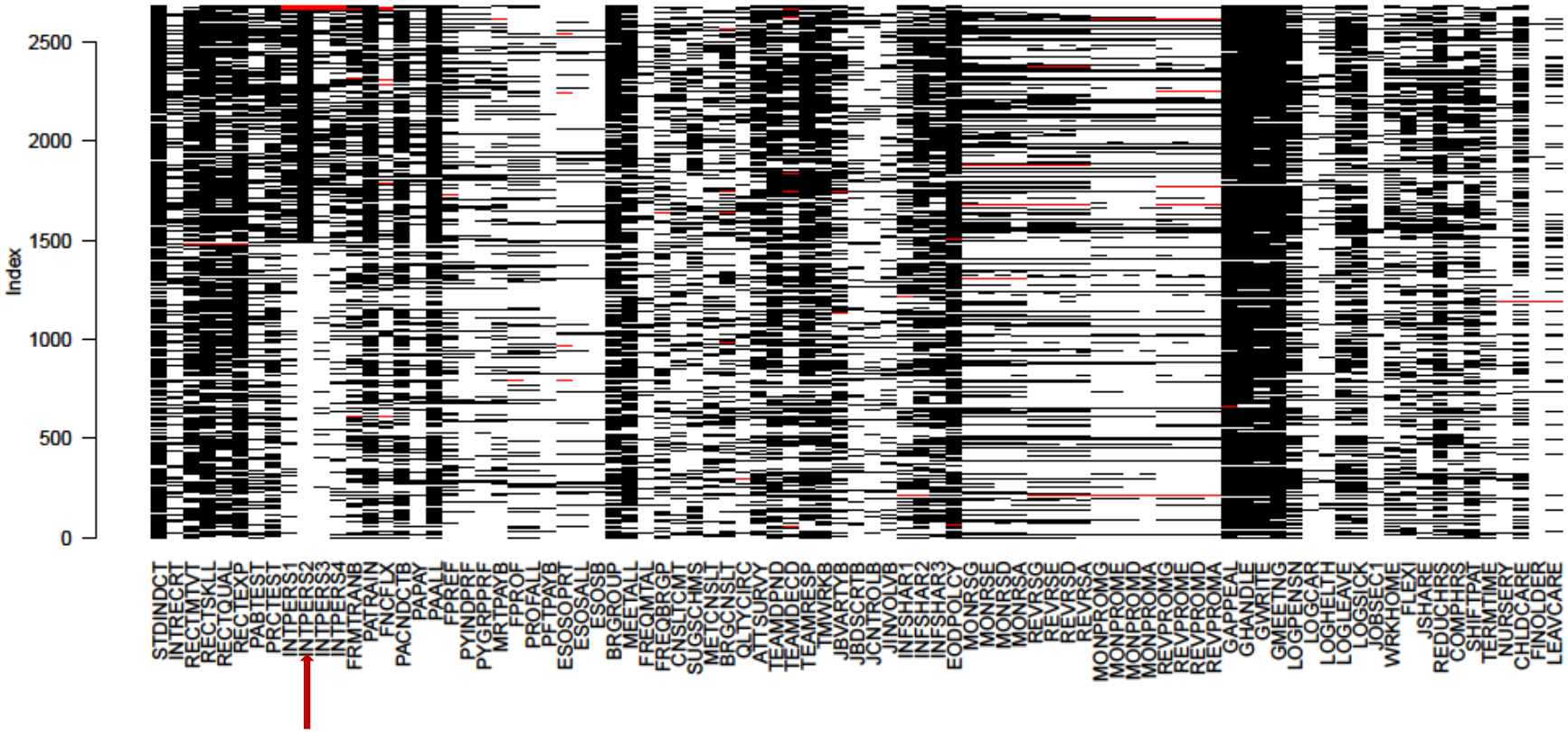


Figure D-1b - Matrix Plot sorted by soft skills training in communication skills (INTPERS2)

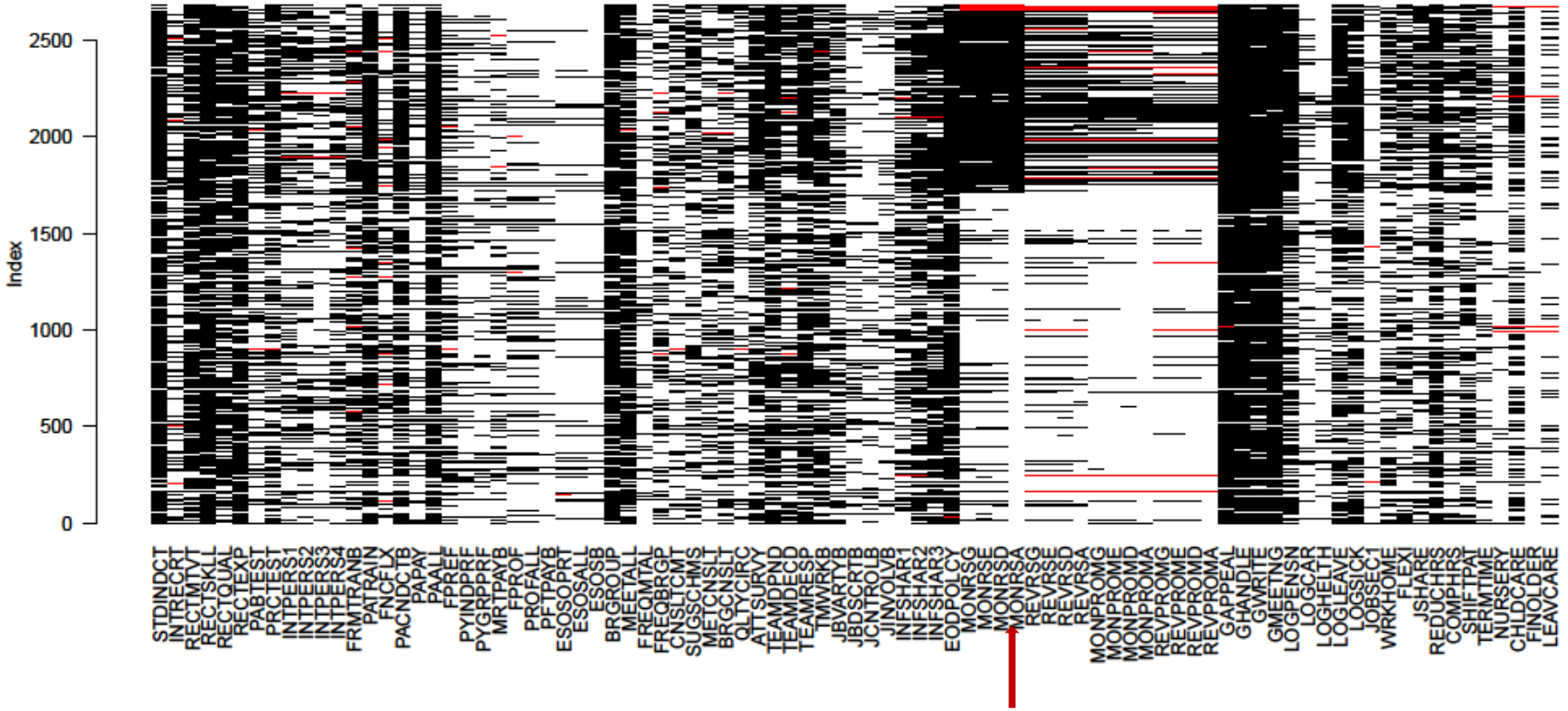


Figure D-1c - Matrix Plot sorted by monitor recruitment and selection on the basis of age (MONRSA)

Figures D-1a-c illustrate that when there are missing values (red rectangles) on whether the workplace monitors recruitment and selection on the basis of gender, there are, generally, prominent bands of missing values on other aspects of monitoring and reviewing recruitment and selection and promotion procedures, interpersonal skills training (INTPERS1-4) and functional flexibility (FUNCFLEX). Missing values in other variables are also visible in Figures D-1a-c, but the occurrence of those missing responses is somewhat inconsistent and does not seem to follow any set structure.

Figure D-2a – e: Matrix Plots for Intermediate Variables

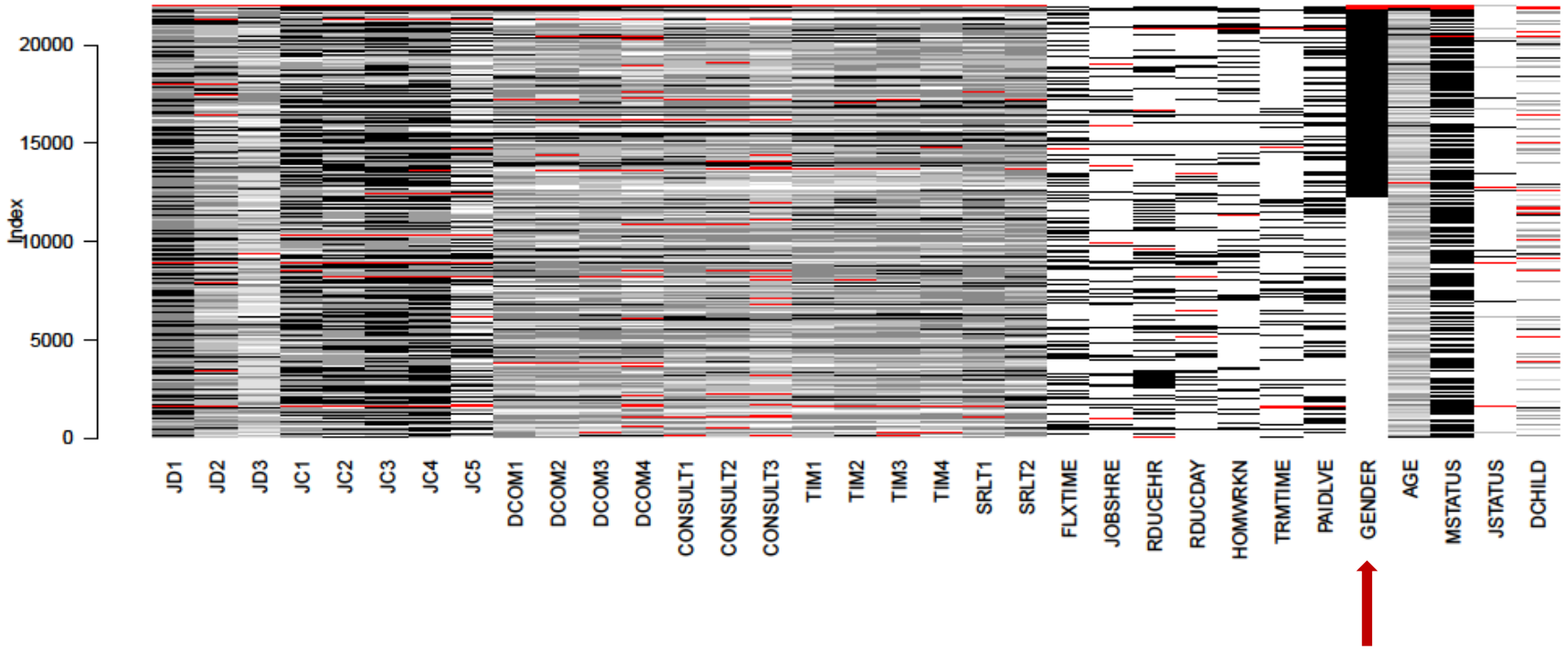


Figure D-2a - Matrix Plot sorted by Gender

Figure D-2a illustrates that there are more females than males in our data (smaller black rectangle). Thin red line on top of the plot suggests that respondents who have not indicated their gender, have also not replied to questions on perceived job demands, job control and managerial support. Majority of the missing values are apparent in perceived family support measures (i.e. FLXTIME - PAIDLVE), when gender shows a white gradient. This suggests that female respondents have missing responses on these measures. Generally, more women have omitted responses in relation to aspects of perceived job demands and job control. Otherwise, gender does not seem to modify the structure of missing values or induce patterns of variation in perceptions of employees on job demands, job control, managerial and family support.

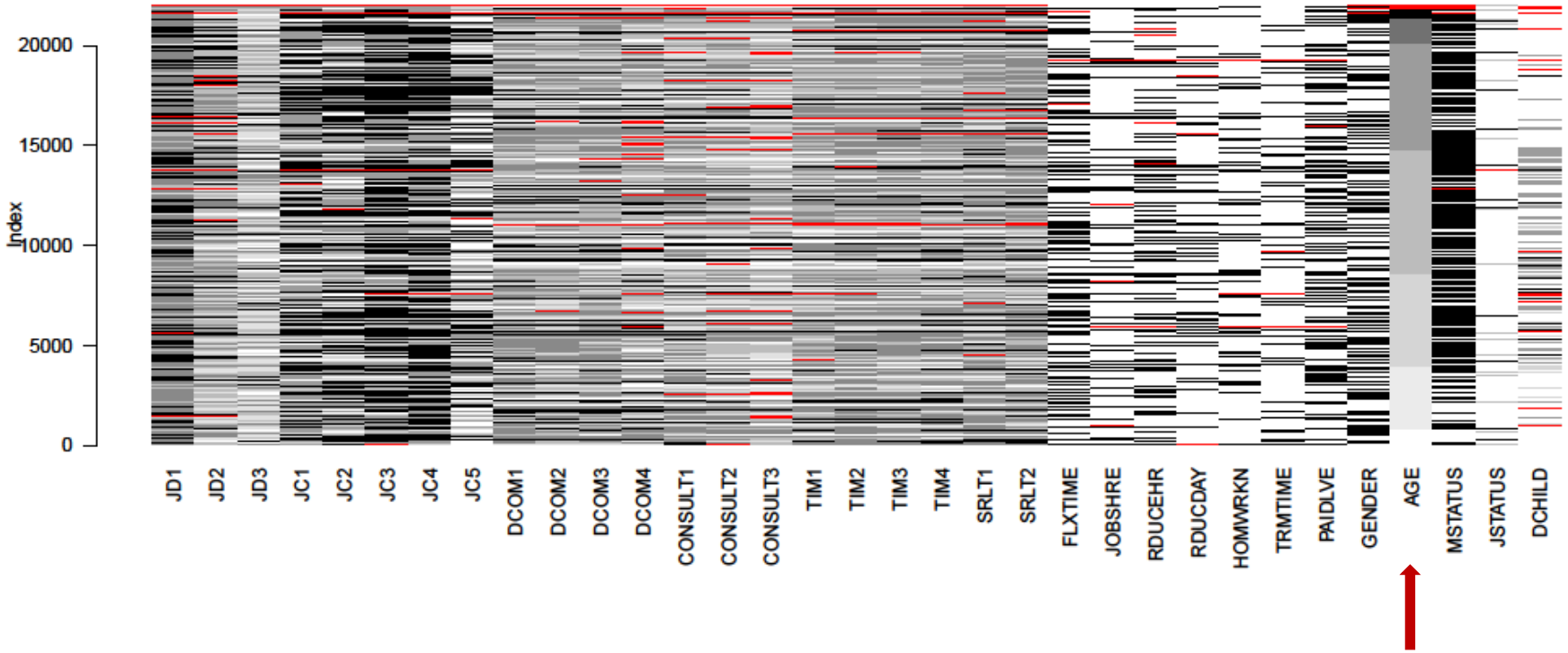


Figure D-2b - Matrix Plot sorted by Age

Figure D-2b illustrates that employees who have not indicated their age, have also consistently not answered questions on perceived job demands, job control, managerial support, gender, marital status and dependent children (continuous red line). Majority of the respondents fall between ages 30 years - 59 years (3 rectangles of shades of light to medium grey) and relatively few are between ages 60 years – 64 years and 65 years and above (dark grey and black rectangle) or younger (22 years - 29 years, or younger; lightest grey and white rectangles). Notably, younger employees (white rectangle) have very few missing responses. Respondents in other age groups highlight missing responses randomly on all aspects of job demands (JD1-3), job control (JC1-5), managerial support (DCOM1-SRLT2) and family support (FLXTIME - PAIDLVE). However, most of the missing values are noted for aspects of downward communication (DCOM1-4), consultation (CONSULT1-3) trust in management (TIM1-4) and managerial relations (SRLT1-2).

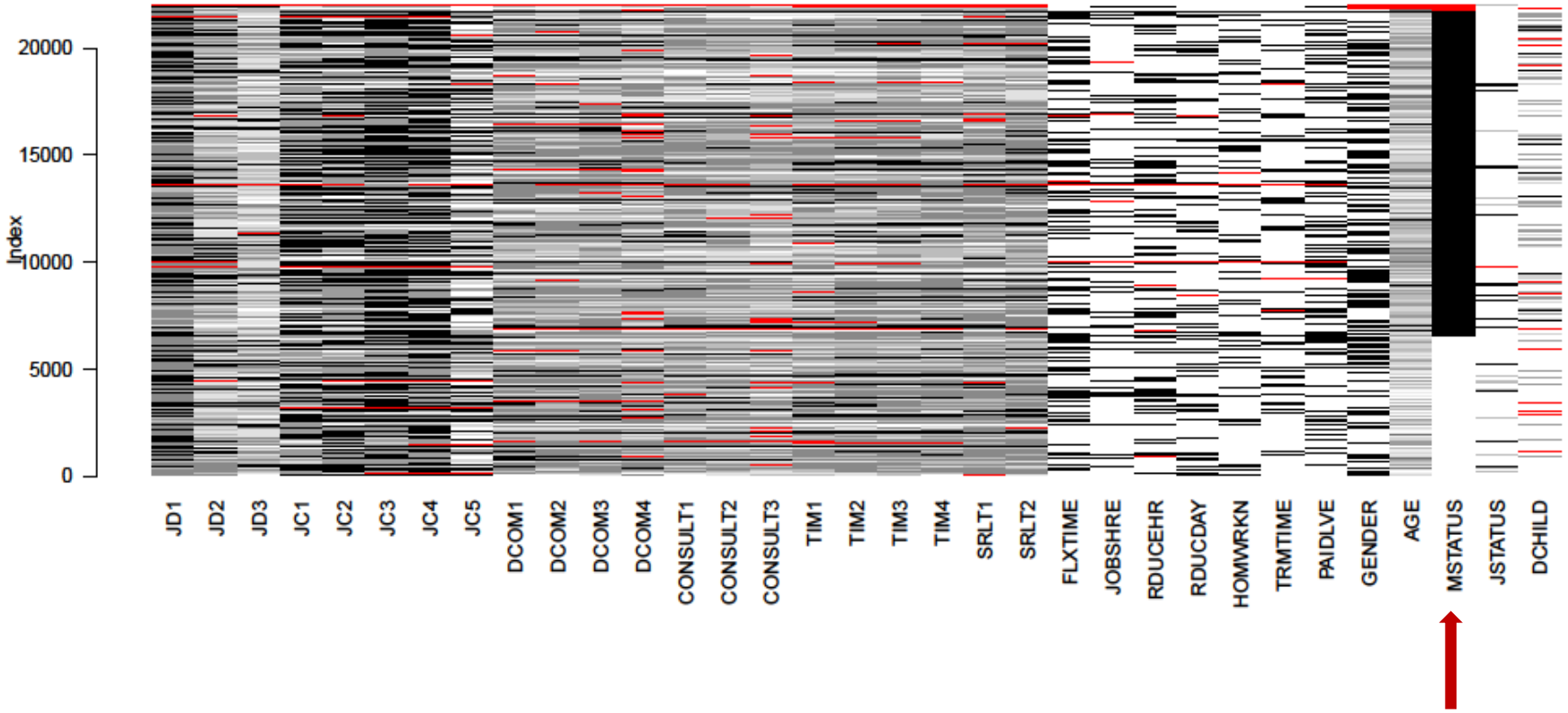


Figure D-2c - Matrix Plot sorted by Marital Status

Figure D-2c reflects that there are more married (bigger black rectangle) than unmarried respondents in our data. Largely, married employees have not answered questions on perceived job demands, job control and family support, whereas both married and unmarried employees have consistently omitted responses on perceived managerial support (red lines/rectangles). Majority of the respondents who have not identified their marital status have also not identified their gender and age. Overall, no major change is seen in the structure or distribution of missing values due to marital status.

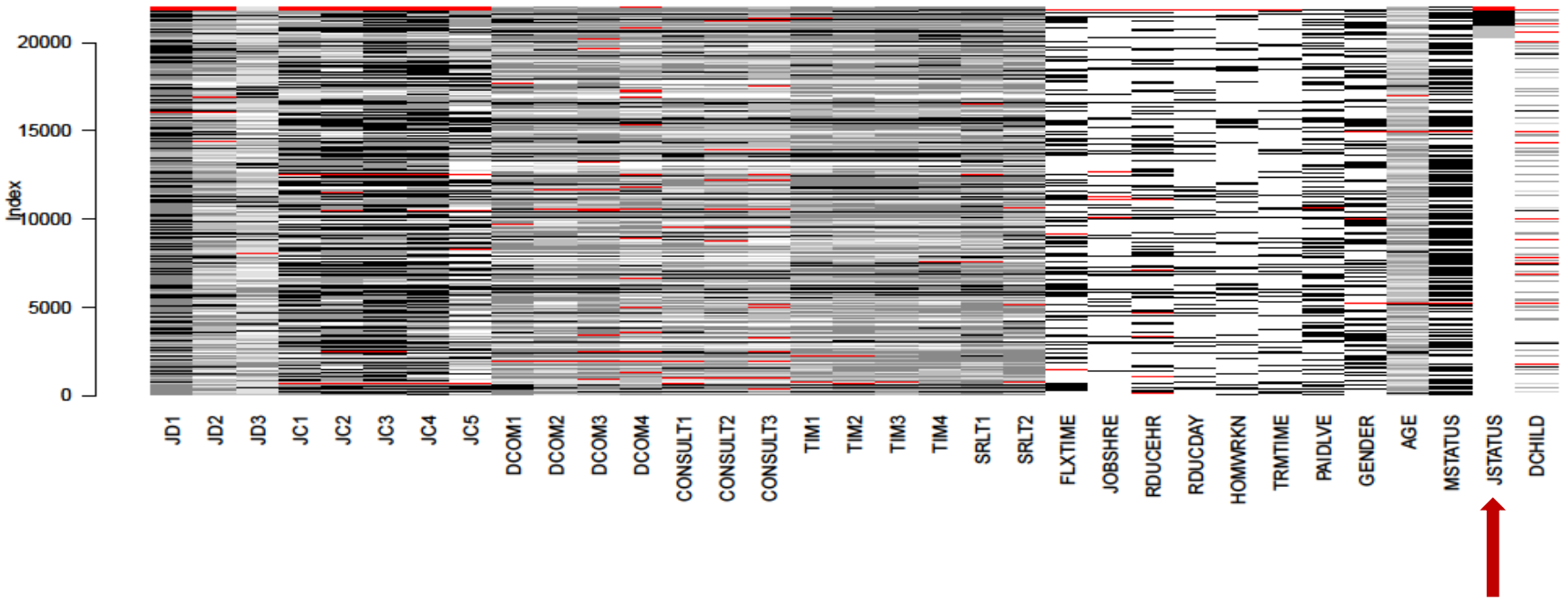


Figure D-2d - Matrix Plot sorted by Job Status

Figure D-2d identifies that a majority of our respondents have permanent contracts (large white rectangle). Employees working on temporary (grey rectangle) and fixed term contracts (black rectangle) are few, and somewhat equal in number. Generally, individuals who have not indicated the type of their contract, have also not shown their opinion on aspects of perceived job demands, job control and family support (red lines/rectangles). Type of contract is seen to marginally affect structure or patterns missing data. Two important observations are noted for employees working on fixed/temporary contract. First, lack of opinion/insufficient knowledge on perceptions of downward-communication and consultation, indicated by a band of missing values on communication and consultation aspects. Second, limited access to family support measures (other than paid leave to care for dependents, and flexitime, in case of fixed-term employees), indicated by white scale of the gradient on perceived family support measures. This implies that employees working on fixed-term/temporary contracts have limited exposure to managerial/family support at work. Notably, permanent employees seem to have a number of missing values on perceived availability of flexitime, job share and chance to reduce working hours, indicating that many permanent employees do not seem to have sufficient information on availability of these family-friendly measures in their workplaces. Contrarily, relatively few permanent employee have missing data on aspects of trust in management and general managerial relations, indicating that, generally, permanent employees have a definite view on these aspects.

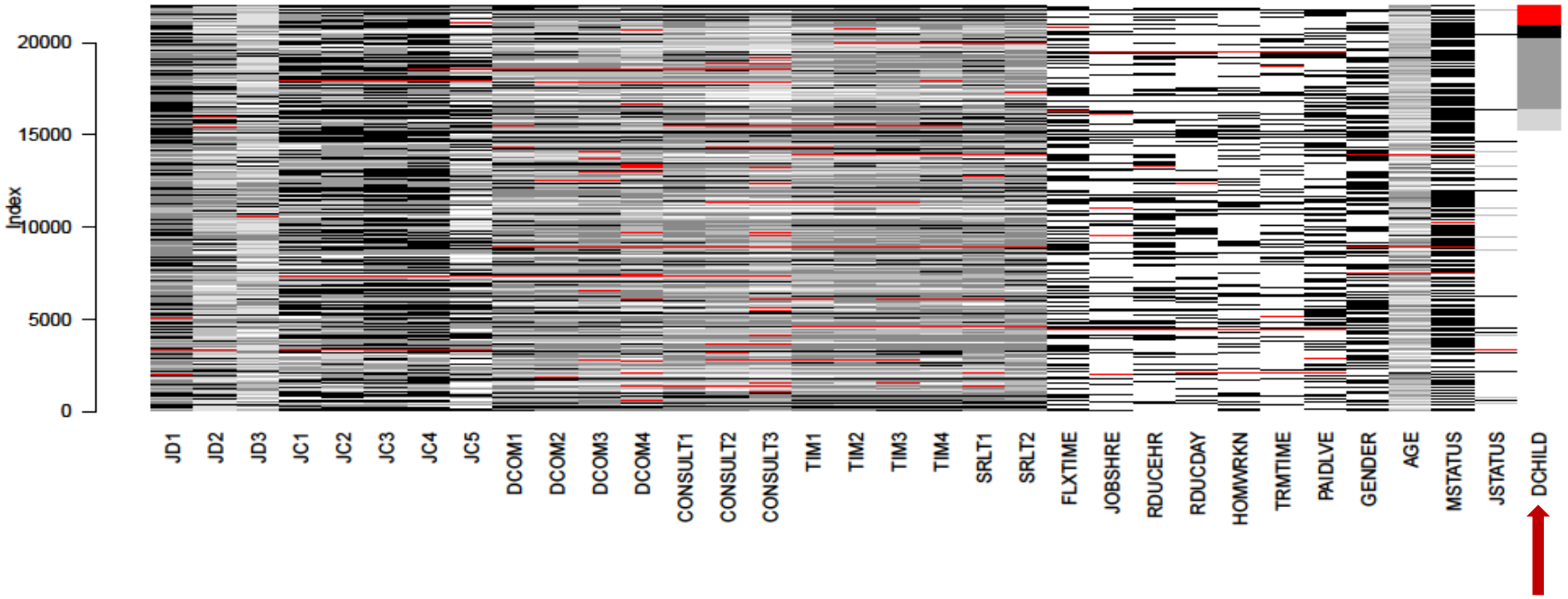


Figure D-2e - Matrix Plot sorted by Dependent Children

Figure D-2e indicates that a majority of our respondents have no dependent children (large white rectangle). Employees with school age children (medium grey rectangle) are noted to be the second major category. Generally, employees who have no dependent children have omitted responses on aspects of perceived job demands. Otherwise, having dependent children neither seem to impact the structure and pattern of missing values, nor cause variation in perceptions of employees on job control, managerial and family support.

Figure D-3a – e: Matrix Plots for Outcome Variables

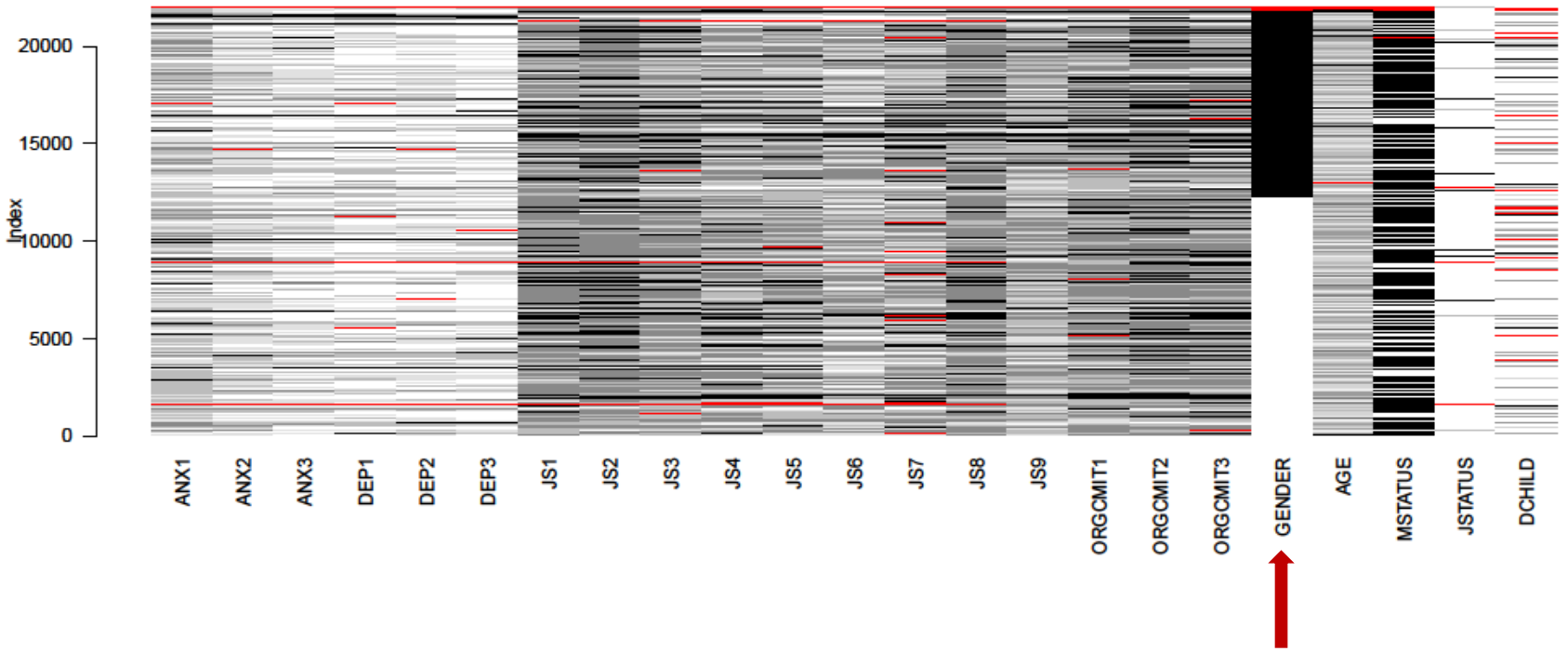


Figure D-3a - Matrix Plot sorted by Gender

Figure D-3a illustrates that relatively more females (white rectangle) have not expressed their opinions on perceived anxiety, depression and job satisfaction. Contrastingly, few men have not expressed their opinion/response on being tense (ANX1), worried (ANX2), depressed (DEP1), gloomy (DEP2), and satisfied with their jobs (JS8). With regards to organisational commitment, there seems some variability in trend of missing responses between men and women. Women seem not to have an opinion/knowledge on whether they share many values with the organisation (ORGCMIT1), whereas men have not expressed their opinion on whether they feel proud to tell others who they work for (ORGCMIT3). Interestingly, men and women seem to have similar level of agreement on perceived anxiety, depression, job satisfaction and organisational commitment (depicted by similar colours of gradients in the respective categories).

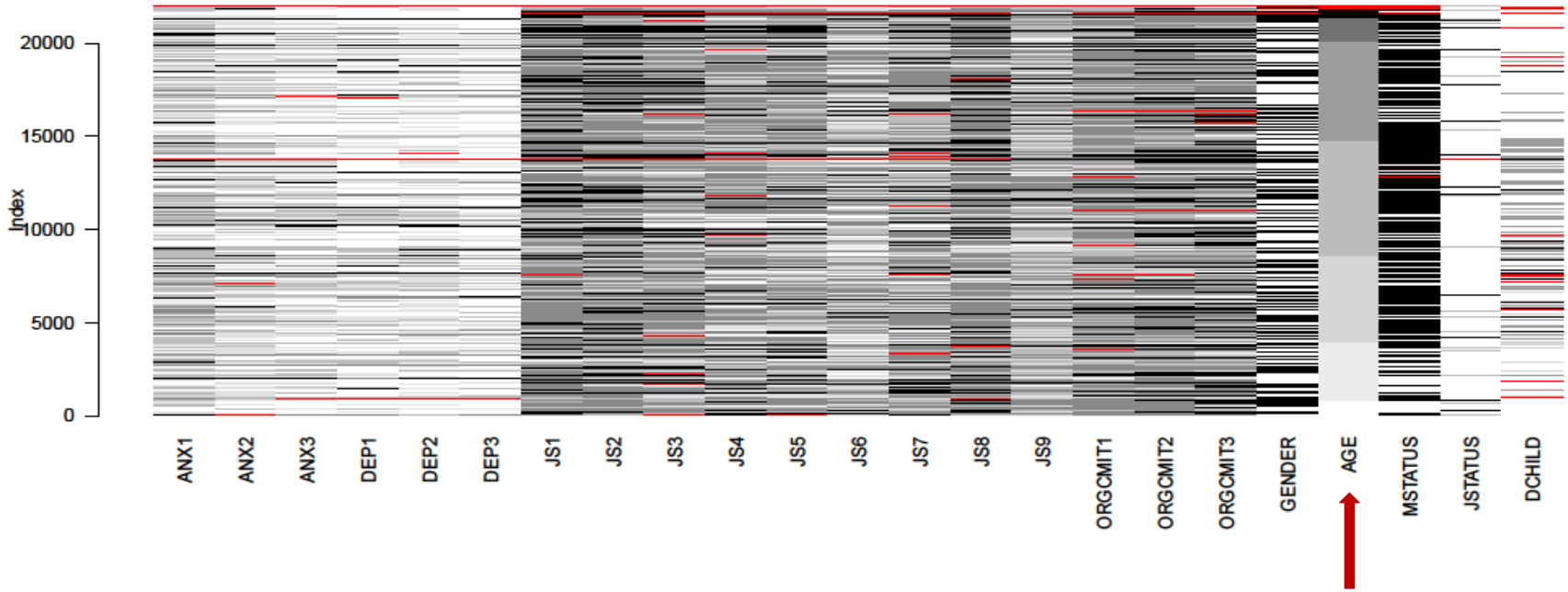


Figure D-3b - Matrix Plot sorted by Age

Figure D-3b illustrates that employees who have not indicated their age, have also consistently not answered questions pertaining to their well-being and demographics, other than the type of their contract. Notably, older employees (65 years and above; black rectangle) have consistently omitted responses pertaining to job satisfaction (JS1-8) and organisational commitment (ORGCMIT1-3), but do not have any missing values on satisfaction with involvement in decision making (JS9) and perception of anxiety and depression. Respondents in other age groups highlight missing responses on all aspects of their well-being randomly.

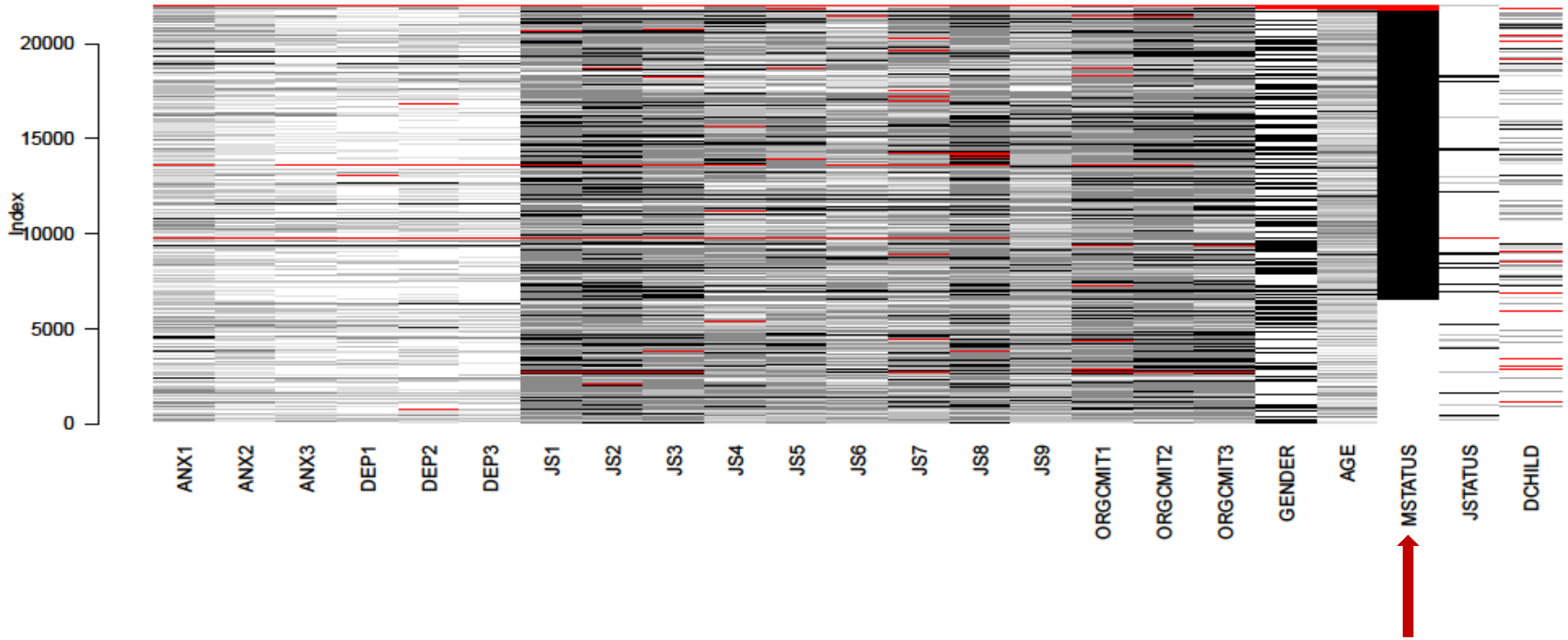


Figure D-3c - Matrix Plot sorted by Marital Status

In Figure D-3c missing values are noted more for married respondents (black rectangle) than unmarried ones, and relatively more on job satisfaction than on anxiety, depression or organisational commitment. Unmarried respondents have missing responses only on being gloomy (DEP2), satisfaction with sense of achievement (JS1), using initiative (JS2), influence over job (JS3), training (JS4), job security (JS7), work itself (JS8) and organisational commitment (ORGCMIT1-3). This suggests that unmarried employees, generally, have a definite opinion on their well-being, and seem to be less anxious/depressed and want more from their jobs, but are less sure on their level of organisational commitment. As noted previously, majority of the respondents who have not reported their marital status have also not identified their gender and age.

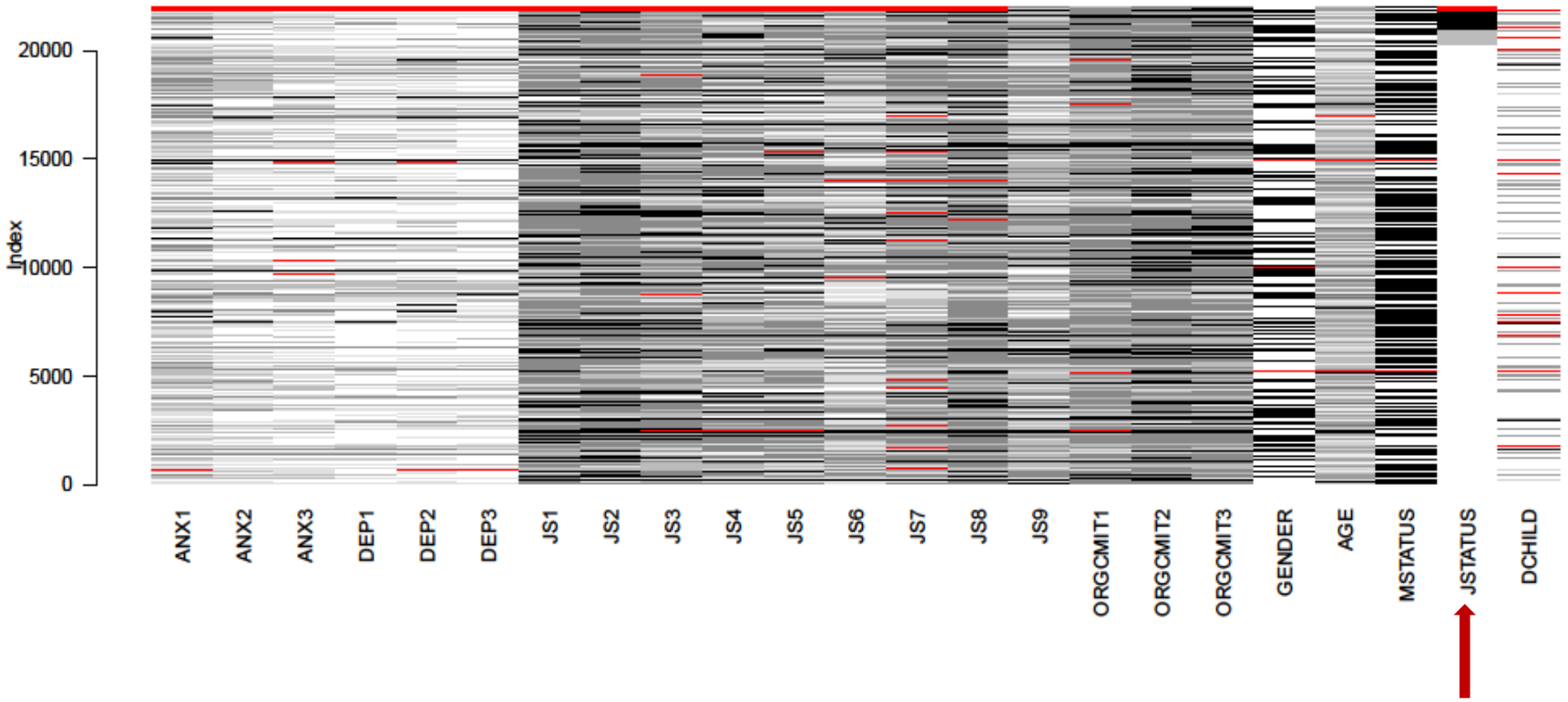


Figure D-3d - Matrix Plot sorted by Job Status

Figure D-3d illustrates that respondents who have not indicated the type of their job-contract, have also not shown their opinions on perceived anxiety, depression and job satisfaction (JS1-JS8). Interestingly, no missing data is noted for fixed-term and temporary employees, who also seem to have low anxiety/depression, and high job satisfaction and organisational commitment (light grey gradient for anxiety/depression and dark grey/black gradient for job satisfaction/organisational commitment). Employees on permanent contracts, largely, have missing values on aspects of job satisfaction and sharing many values with the organisation (ORGCMIT1).

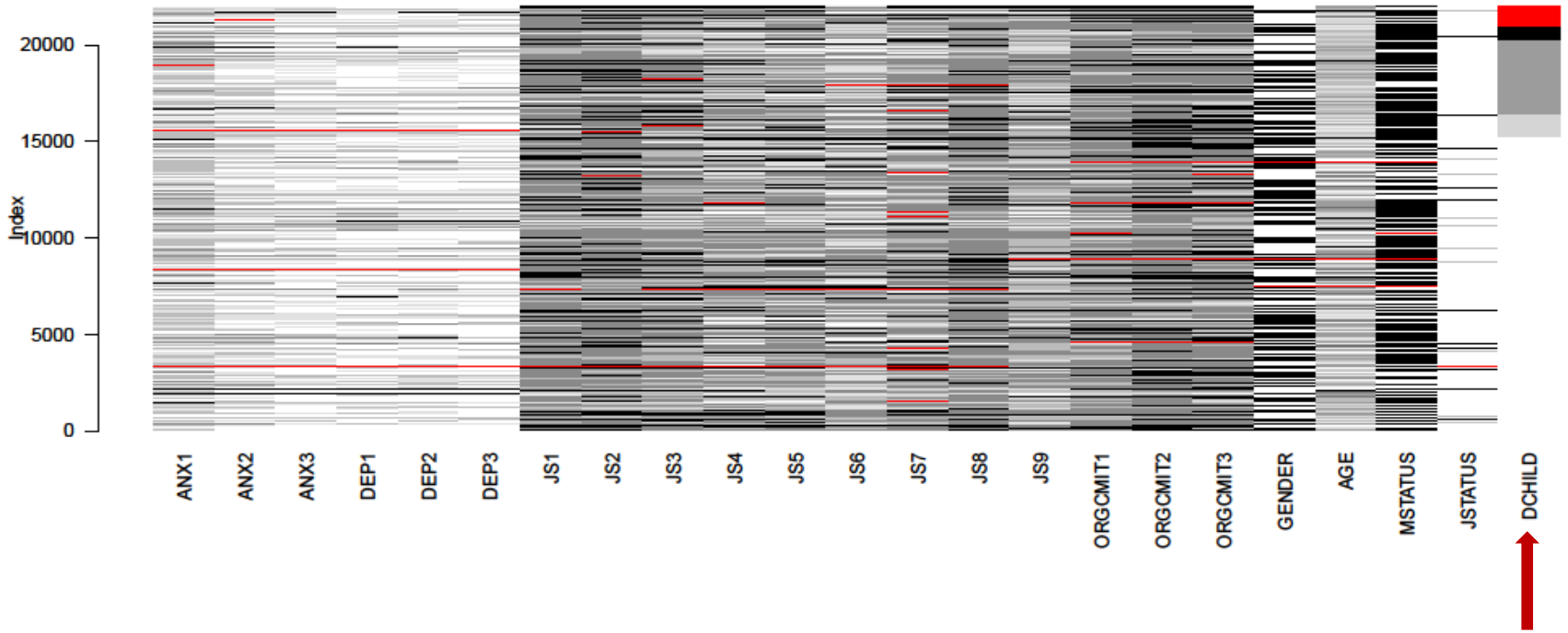
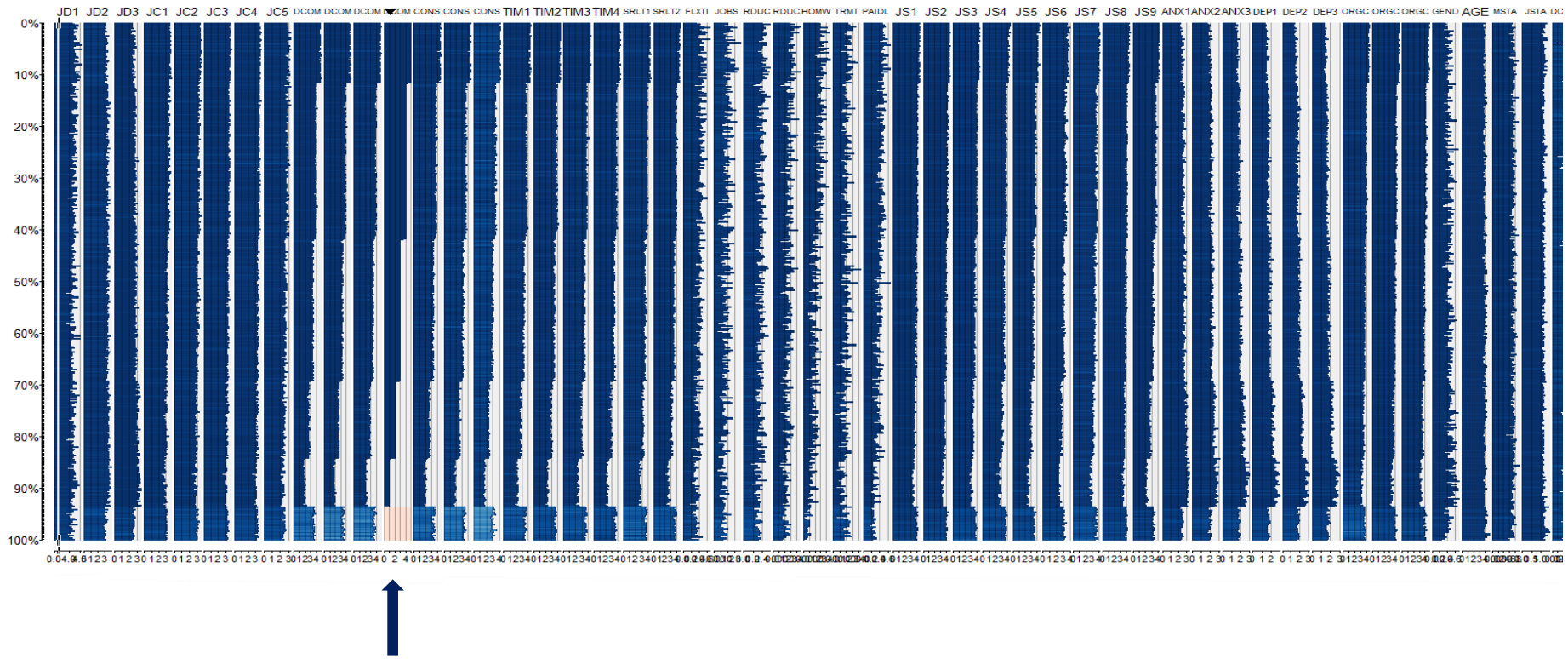


Figure D-3e - Matrix Plot sorted by Dependent Children

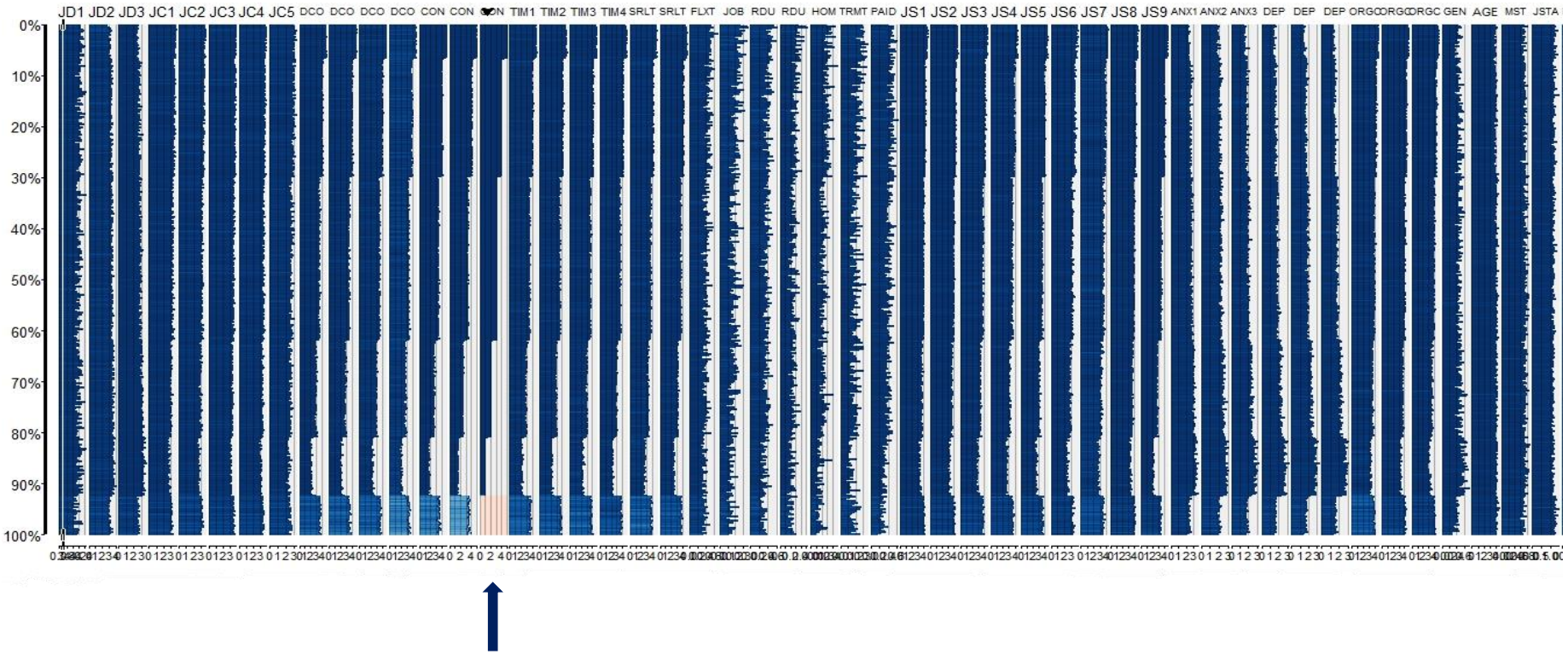
Figure D-3e indicates that employees with no dependent children (white rectangle) have the most cases of missing values on aspects relating to their well-being. Bands of missing values (red lines) are noted for anxiety, depression, job satisfaction and organisational commitment for employees with no dependent children, although this does not seem to suggest a consistent structure in missing values. Employees who have dependent children (of any age group) have omitted responses to job-related anxiety (ANX1-2) and job satisfaction (JS3, JS6-8). Interestingly, these employees have no missing values on any aspect of organisational commitment and seem, generally, committed to their organisation (presence of black and dark grey colour gradient). Only employees with pre-school age and school age children (black rectangle) appear not to have missing responses to their well-being. There is no evidence to suggest that respondents who have not answered to the question of having dependent children, have also omitted questions relating to their well-being or other demographics.

Figure D-4a : Table Plot for Missing Values Structure in Survey of Employee Data sorted by DCOM4



Pink represents the proportion of missing values in DCOM4. Light blue represents the proportion of missing values in other variables when there are missing values in DCOM4. Largest proportion of missing values are observed for CONSULT3 when values are missing in DCOM4. Other prominent bands of missing values are observed for DCOM1-3 and CONSULT1-2 and a few for TIM1-4 and SRLT1-2 in relation to missingness in DCOM4. The missing value structure for the remaining variables do not seem to be greatly affected by missing values in DCOM4 (i.e. proportion of light blue is not very prominent in other variables). This suggests that employees who do not answer one aspect of downward communication (DCOM4), usually do not reply to other aspects of downward communication (DCOM1-3) and consultation (CONSULT1-3), and to some extent trust in management (TIM1-4) and managerial relations (SRLT1-2). However, this trend does not substantially affect structure of missing values in other variables in the survey of employees' questionnaire, and, the magnitude of missing values remains low. Therefore, missing values in DCOM4 are of marginal concern.

Figure D-4b : Table Plot for Missing Values Structure in Survey of Employee Data sorted by CONSULT3

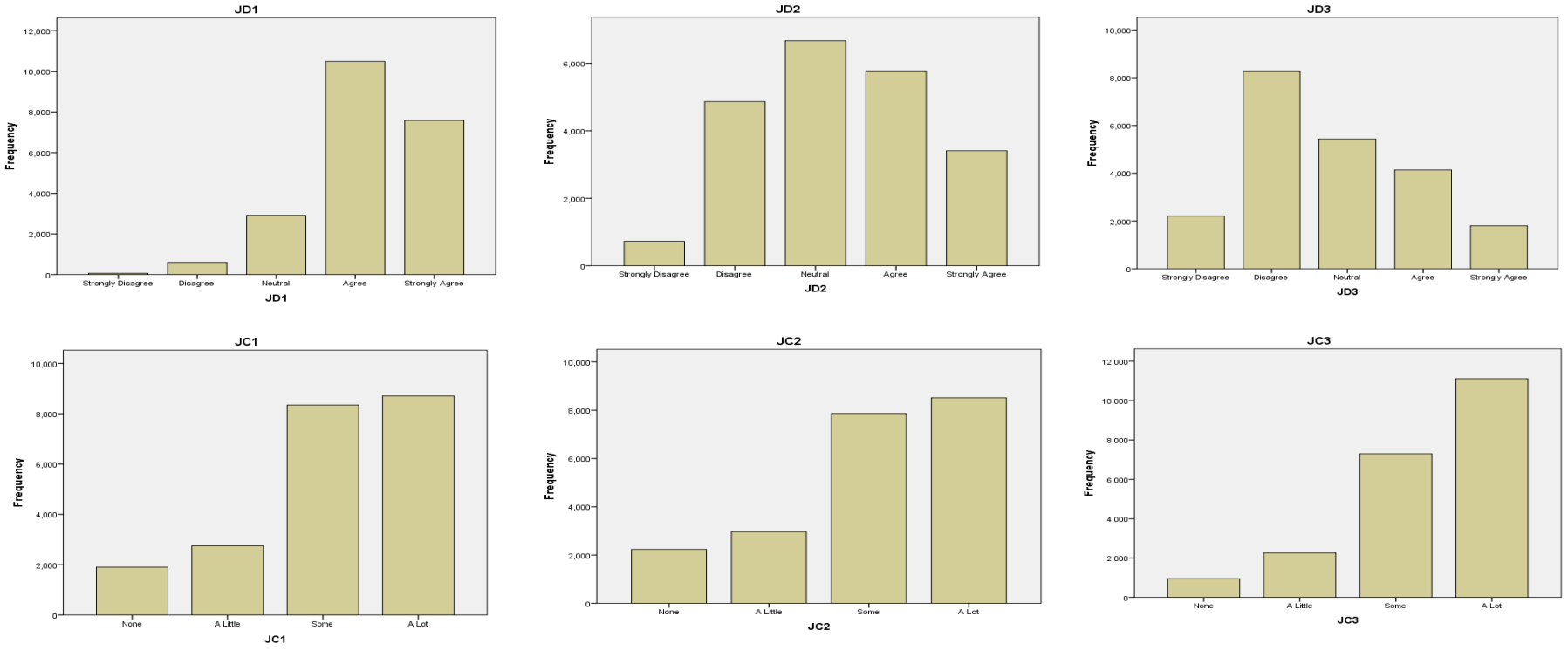


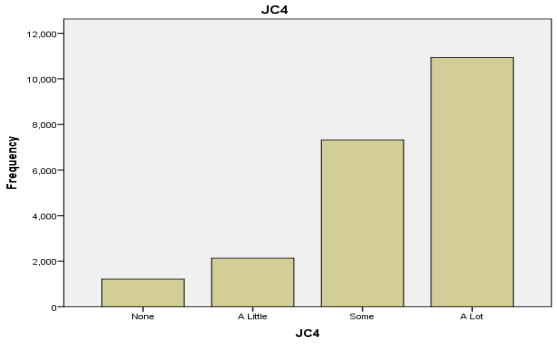
Pink represents the proportion of missing values in CONSULT3. Light blue represents the proportion of missing values in other variables when there are missing values in CONSULT3. The structure of missing values is similar to that observed for missing values in DCOM4. Values are mainly missing for CONSULT1-2 and DCOM1-4 when there are missing values in CONSULT3. TIM1-4 and SRLT1-2 also highlight some degree of missing values relative to missing values in CONSULT3. Comparing Figures 5.7 A&B, it can be seen that both the structure and magnitude of light blue colour does not change considerably in both the Figures, nor is there evidence to suggest considerable systematic missing values in other variables when there are missing values in either DCOM4 or CONSULT3. Therefore, it may be inferred that missing values in DCOM4 and CONSULT3 do not substantially affect structure of missing values in other variables in survey of employees' questionnaire, and the magnitude of missing values remains low. Therefore, missingness in DCOM4 or CONSULT3 is of marginal concern to the overall analysis.

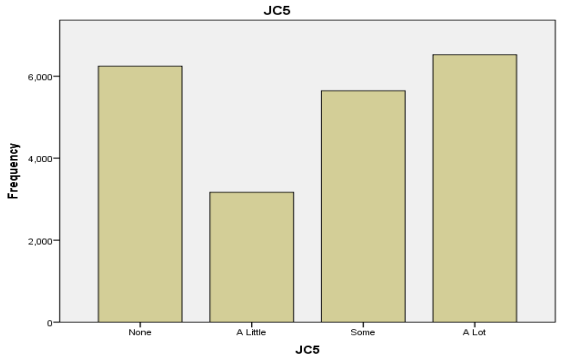
APPENDIX E

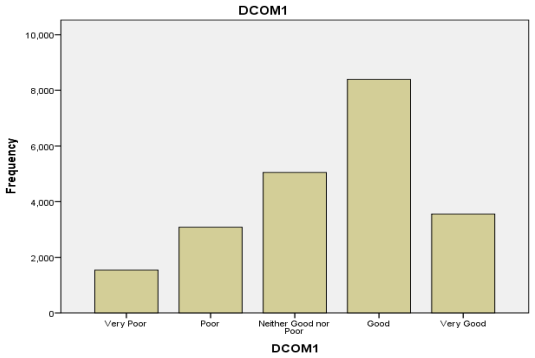
ASSESMENT of SYMMETRY for ORDINAL DATA

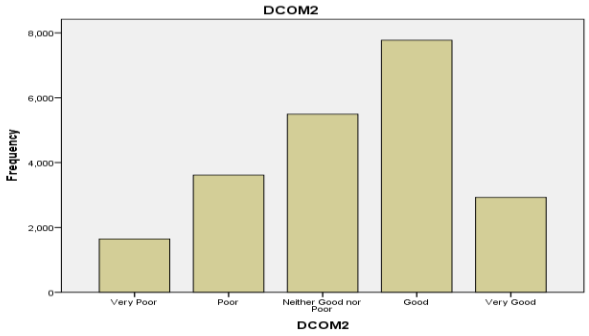
Figure E-1: Assessment of Symmetry for Ordinal Scale Variables

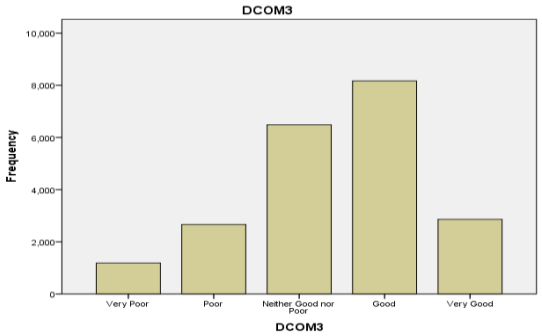


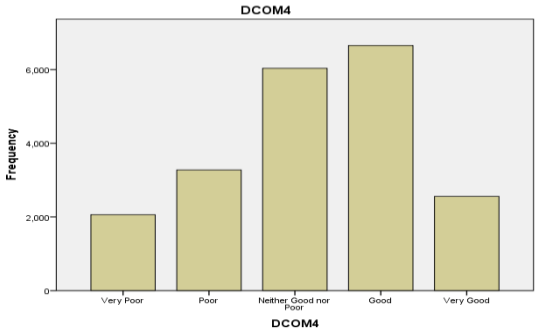

JC4
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
None
A Little
Some
A Lot
JC4

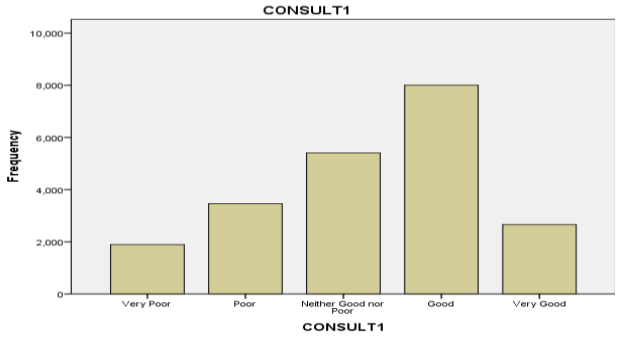

JC5
Frequency
6,000
4,000
2,000
0
None
A Little
Some
A Lot
JC5

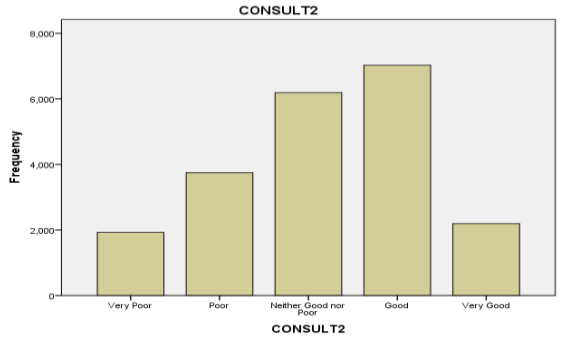

DCOM1
Frequency
10,000
8,000
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
DCOM1

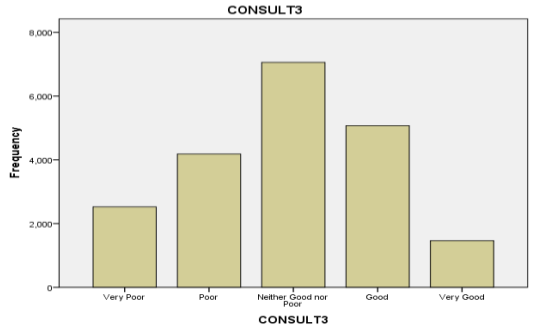

DCOM2
Frequency
8,000
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
DCOM2

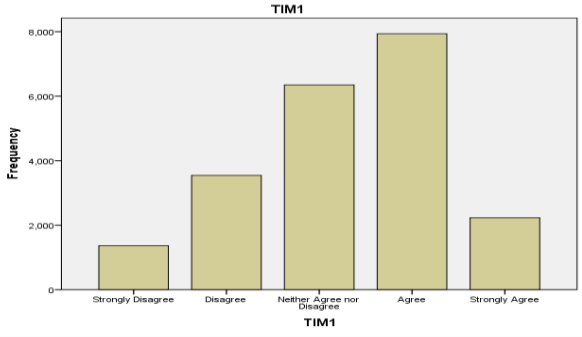

DCOM3
Frequency
10,000
8,000
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
DCOM3

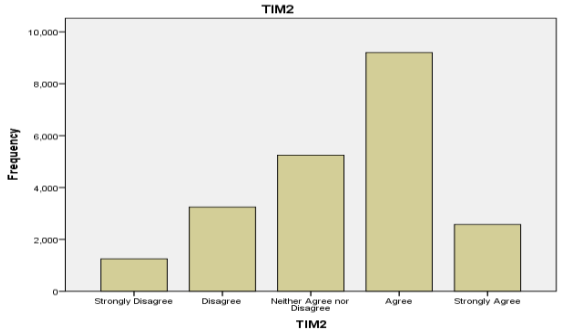

DCOM4
Frequency
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
DCOM4

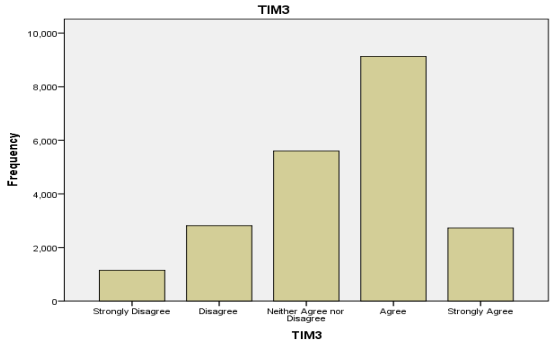

CONSULT1
Frequency
10,000
8,000
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
CONSULT1

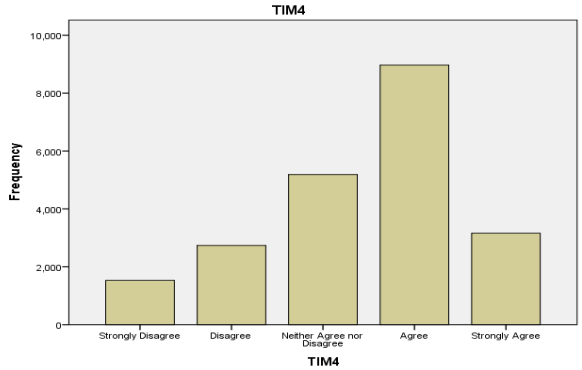

CONSULT2
Frequency
8,000
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
CONSULT2

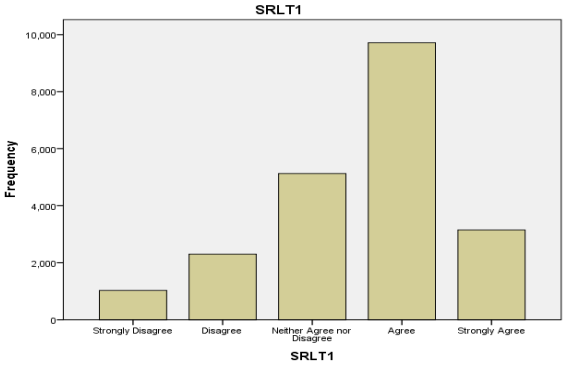

CONSULT3
Frequency
8,000
6,000
4,000
2,000
0
Very Poor
Poor
Neither Good nor Poor
Good
Very Good
CONSULT3

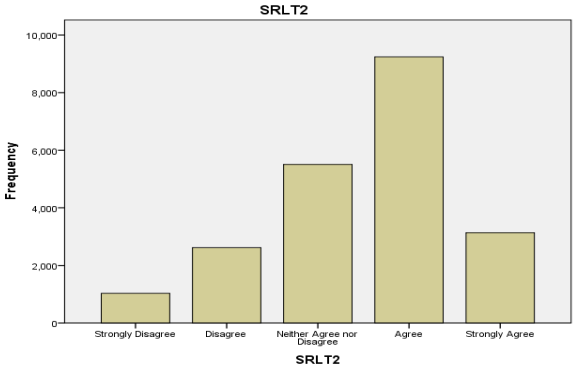

TIM1
Frequency
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
TIM1

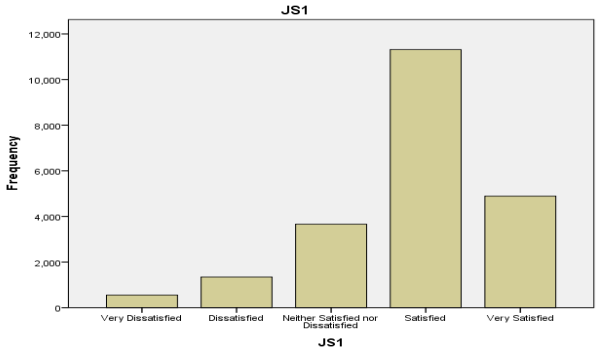

TIM2
Frequency
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
TIM2

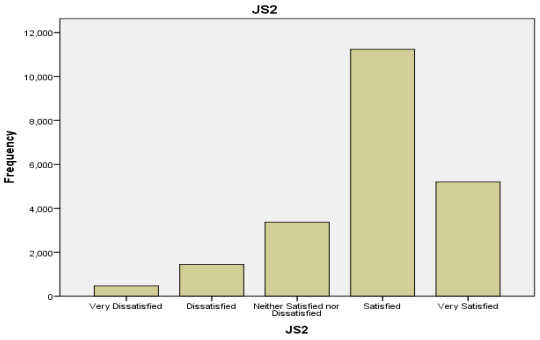

TIM3
Frequency
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
TIM3


TIM4
Frequency
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
TIM4


SRLT1
Frequency
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
SRLT1


SRLT2
Frequency
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
SRLT2


JS1
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS1


JS2
Frequency
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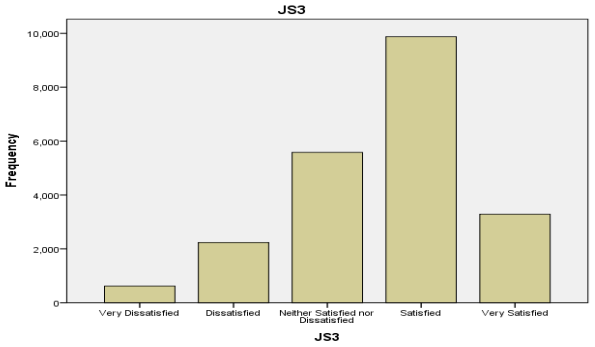
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS2


JS3
Frequency
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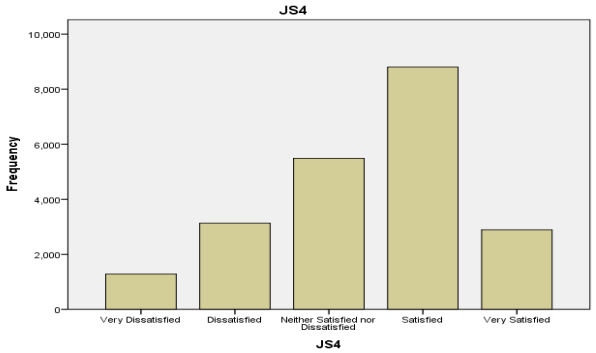
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS3


JS4
Frequency
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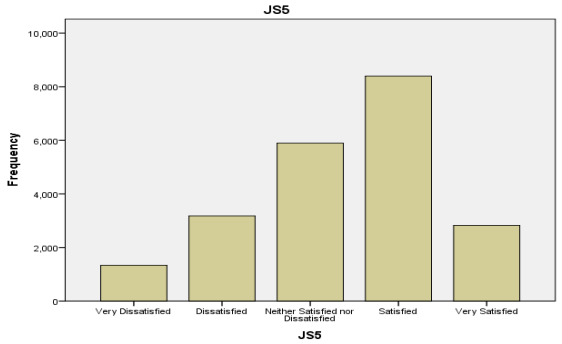
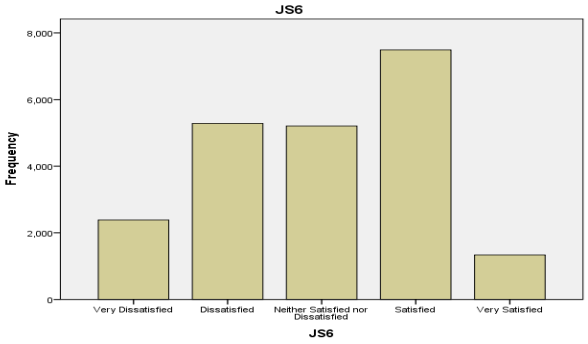
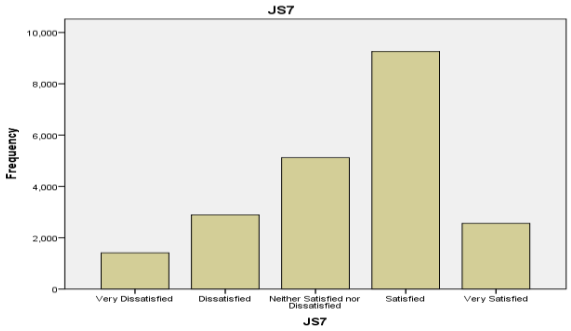
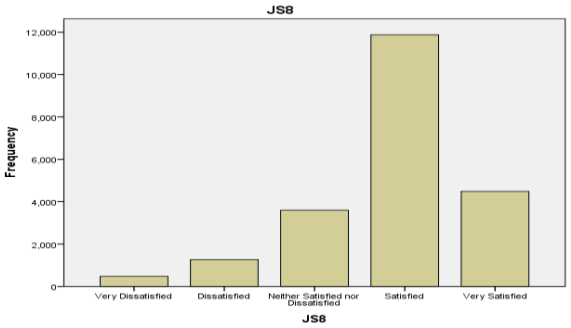
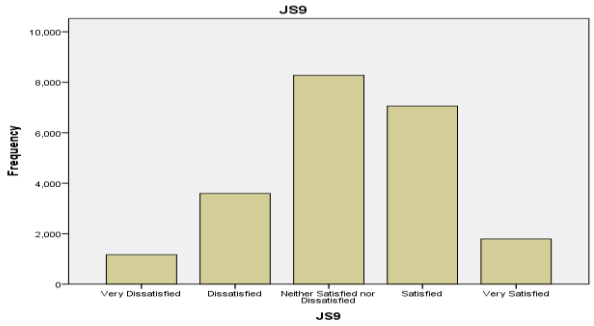
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS4

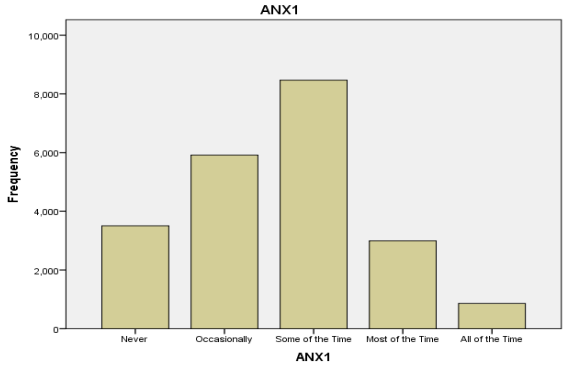

JS5
Frequency
10,000
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS5

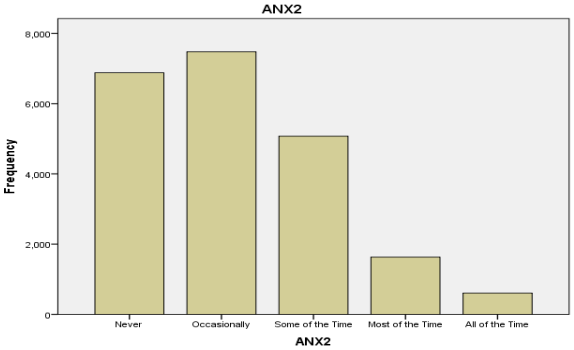

JS6
Frequency
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS6

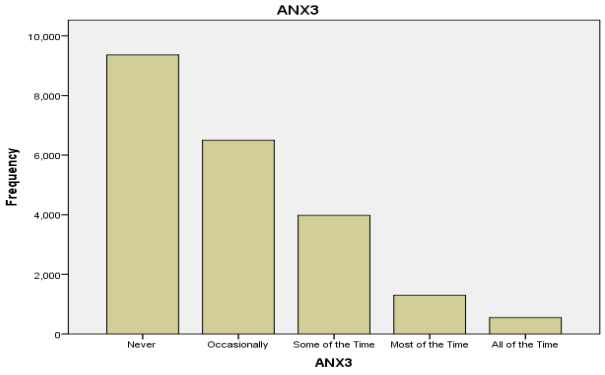

JS7
Frequency
10,000
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS7

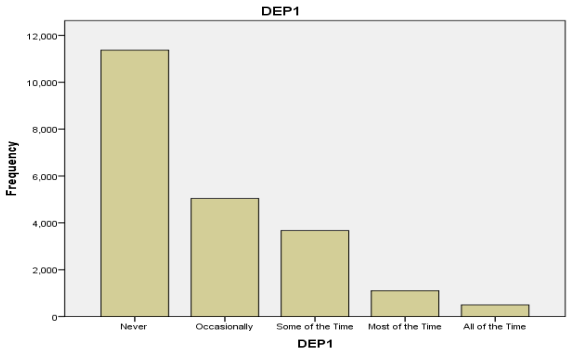

JS8
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS8

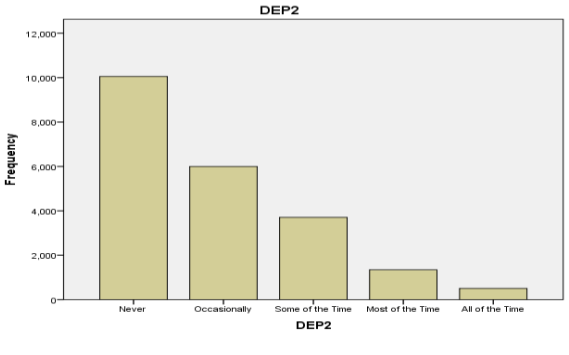

JS9
Frequency
10,000
8,000
6,000
4,000
2,000
0
Very Dissatisfied
Dissatisfied
Neither Satisfied nor Dissatisfied
Satisfied
Very Satisfied
JS9

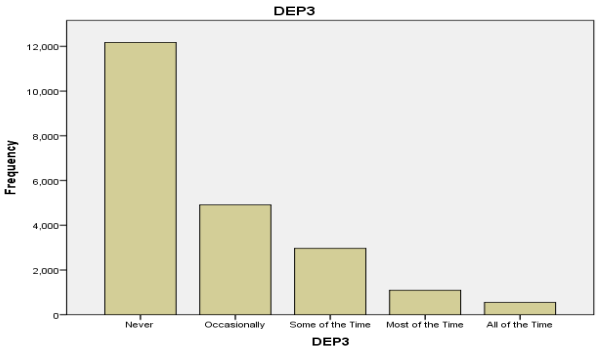

ANX1
Frequency
10,000
8,000
6,000
4,000
2,000
0
Never
Occasionally
Some of the Time
Most of the Time
All of the Time
ANX1

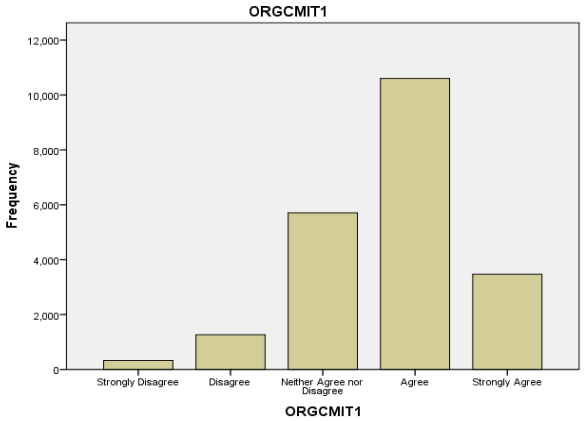

ANX2
Frequency
8,000
6,000
4,000
2,000
0
Never
Occasionally
Some of the Time
Most of the Time
All of the Time
ANX2

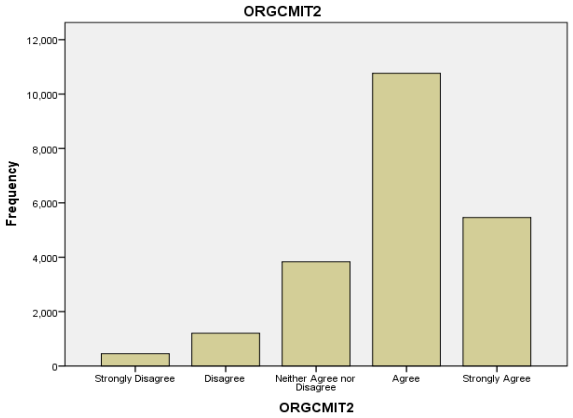

ANX3
Frequency
10,000
8,000
6,000
4,000
2,000
0
Never
Occasionally
Some of the Time
Most of the Time
All of the Time
ANX3

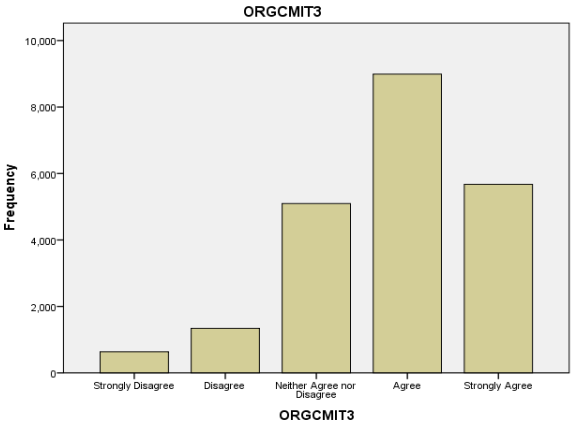

DEP1
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Never
Occasionally
Some of the Time
Most of the Time
All of the Time
DEP1


DEP2
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Never
Occasionally
Some of the Time
Most of the Time
All of the Time
DEP2


DEP3
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Never
Occasionally
Some of the Time
Most of the Time
All of the Time
DEP3


ORGCMIT1
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
ORGCMIT1


ORGCMIT2
Frequency
12,000
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
ORGCMIT2


ORGCMIT3
Frequency
10,000
8,000
6,000
4,000
2,000
0
Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree
ORGCMIT3

APPENDIX F

MAHALANOBIS D^2 DISTANCE for OUTLIERS

Table 0F-1: Mahalanobis D^2 Distance for Outliers – HP-HR Practices

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
7	187.840	.000	.000	555	187.445	.000	.000	1150	148.145	.000	.000
10	207.876	.000	.000	564	191.884	.000	.000	1151	169.989	.000	.000
12	175.801	.000	.000	590	152.464	.000	.000	1160	201.500	.000	.000
30	147.208	.000	.000	602	140.359	.000	.000	1164	173.552	.000	.000
34	142.367	.000	.000	616	193.219	.000	.000	1174	234.822	.000	.000
41	234.697	.000	.000	660	169.626	.000	.000	1180	168.900	.000	.000
64	203.069	.000	.000	677	173.515	.000	.000	1201	264.767	.000	.000
68	169.134	.000	.000	684	140.052	.000	.000	1209	140.422	.000	.000
69	179.130	.000	.000	689	219.809	.000	.000	1219	178.878	.000	.000
86	143.970	.000	.000	701	193.207	.000	.000	1226	161.585	.000	.000
114	162.573	.000	.000	702	150.365	.000	.000	1255	168.290	.000	.000
143	199.822	.000	.000	708	229.725	.000	.000	1269	143.378	.000	.000
151	210.776	.000	.000	709	208.871	.000	.000	1270	149.021	.000	.000
153	206.560	.000	.000	713	202.524	.000	.000	1282	163.583	.000	.000
155	207.989	.000	.000	729	177.419	.000	.000	1286	164.775	.000	.000
172	205.603	.000	.000	765	145.828	.000	.000	1288	134.089	.000	.000
175	148.273	.000	.000	780	151.286	.000	.000	1301	171.911	.000	.000
182	174.223	.000	.000	784	199.490	.000	.000	1302	167.191	.000	.000
193	139.686	.000	.000	792	148.795	.000	.000	1305	158.105	.000	.000
207	173.113	.000	.000	798	263.502	.000	.000	1316	304.401	.000	.000
209	273.468	.000	.000	804	224.637	.000	.000	1351	150.158	.000	.000
212	231.599	.000	.000	814	180.203	.000	.000	1355	197.148	.000	.000
216	161.545	.000	.000	821	137.754	.000	.000	1358	169.828	.000	.000
220	167.479	.000	.000	828	223.550	.000	.000	1401	170.182	.000	.000
234	145.112	.000	.000	832	149.674	.000	.000	1417	168.373	.000	.000
248	174.819	.000	.000	842	222.921	.000	.000	1419	162.318	.000	.000
257	197.016	.000	.000	851	160.555	.000	.000	1422	193.056	.000	.000
263	140.901	.000	.000	876	289.691	.000	.000	1454	153.292	.000	.000
291	262.090	.000	.000	878	161.435	.000	.000	1458	162.936	.000	.000
326	238.259	.000	.000	891	165.557	.000	.000	1460	203.949	.000	.000
381	153.091	.000	.000	911	216.084	.000	.000	1468	151.682	.000	.000
406	137.862	.000	.000	912	176.734	.000	.000	1476	148.570	.000	.000
412	192.533	.000	.000	923	154.850	.000	.000	1477	175.513	.000	.000
421	133.898	.000	.000	935	206.679	.000	.000	1487	189.665	.000	.000
423	177.683	.000	.000	955	133.847	.000	.000	1503	184.374	.000	.000
425	204.907	.000	.000	966	154.236	.000	.000	1523	139.144	.000	.000
443	178.305	.000	.000	1003	183.236	.000	.000	1533	263.421	.000	.000
454	209.115	.000	.000	1009	133.787	.000	.000	1627	242.866	.000	.000
487	188.037	.000	.000	1021	140.573	.000	.000	1636	134.445	.000	.000
490	178.772	.000	.000	1039	134.253	.000	.000	1640	172.551	.000	.000
494	183.255	.000	.000	1044	201.907	.000	.000	1643	148.102	.000	.000
500	148.655	.000	.000	1064	142.380	.000	.000	1663	172.676	.000	.000
502	188.195	.000	.000	1066	238.075	.000	.000	1670	300.111	.000	.000
510	283.987	.000	.000	1087	238.075	.000	.000	1675	144.075	.000	.000
550	176.617	.000	.000	1095	133.600	.000	.000	1682	236.602	.000	.000
553	134.771	.000	.000	1011	161.761	.000	.000	1690	149.689	.000	.000

p1 = 1-Cdf.Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 2680

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
1696	165.049	.000	.000	2281	184.121	.000	.000				
1717	170.421	.000	.000	2284	211.563	.000	.000				
1725	134.928	.000	.000	2285	152.100	.000	.000				
1733	175.202	.000	.000	2309	159.870	.000	.000				
1736	243.838	.000	.000	2324	2333.000	.000	.000				
1737	212.833	.000	.000	2325	524.456	.000	.000				
1739	145.780	.000	.000	2326	529.225	.000	.000				
1743	136.962	.000	.000	2327	530.729	.000	.000				
1786	183.041	.000	.000	2329	512.324	.000	.000				
1791	171.189	.000	.000	2333	541.752	.000	.000				
1792	228.895	.000	.000	2350	142.956	.000	.000				
1806	210.702	.000	.000	2363	154.324	.000	.000				
1813	161.828	.000	.000	2368	186.213	.000	.000				
1820	190.147	.000	.000	2378	302.670	.000	.000				
1826	189.021	.000	.000	2382	144.714	.000	.000				
1844	201.378	.000	.000	2396	134.687	.000	.000				
1845	271.640	.000	.000	2401	174.547	.000	.000				
1849	145.137	.000	.000	2415	181.681	.000	.000				
1861	183.839	.000	.000	2430	177.656	.000	.000				
1866	198.802	.000	.000	2456	171.605	.000	.000				
1875	198.797	.000	.000	2460	182.777	.000	.000				
1878	134.233	.000	.000	2488	168.329	.000	.000				
1939	135.080	.000	.000	2497	197.838	.000	.000				
1969	181.291	.000	.000	2500	180.696	.000	.000				
1978	171.444	.000	.000	2501	157.589	.000	.000				
2005	175.797	.000	.000	2511	163.374	.000	.000				
2008	196.967	.000	.000	2512	172.324	.000	.000				
2010	226.523	.000	.000	2519	144.618	.000	.000				
2015	198.076	.000	.000	2541	184.638	.000	.000				
2018	144.528	.000	.000	2552	169.189	.000	.000				
2019	151.282	.000	.000	2560	162.049	.000	.000				
2022	135.901	.000	.000	2568	195.891	.000	.000				
2026	185.019	.000	.000	2586	201.246	.000	.000				
2046	234.696	.000	.000	2604	216.045	.000	.000				
2067	198.263	.000	.000	2609	147.165	.000	.000				
2070	149.405	.000	.000	2632	138.851	.000	.000				
2093	208.178	.000	.000	2644	163.632	.000	.000				
2094	178.035	.000	.000	2649	204.666	.000	.000				
2108	268.938	.000	.000	2652	179.348	.000	.000				
2121	215.808	.000	.000	2667	180.216	.000	.000				
2161	179.899	.000	.000								
2182	145.685	.000	.000								
2188	333.315	.000	.000								
2198	155.790	.000	.000								
2269	161.011	.000	.000								
2280	225.576	.000	.000								

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 2,680

Table F-2: Mahalanobis D^2 Distance for Outliers – Survey of Employees Questionnaire

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
34	102.273	.000	.000	1096	82.594	.000	.000	2052	81.735	.000	.000
35	100.586	.000	.000	1108	88.096	.000	.000	2066	111.311	.000	.000
62	146.816	.000	.000	1148	87.785	.000	.000	2070	105.666	.000	.000
67	83.472	.000	.000	1217	84.757	.000	.000	2131	84.289	.000	.000
78	97.384	.000	.000	1278	90.353	.000	.000	2141	94.332	.000	.000
84	107.873	.000	.000	1290	89.125	.000	.000	2176	83.816	.000	.000
120	89.465	.000	.000	1363	97.916	.000	.000	2180	83.666	.000	.000
132	100.539	.000	.000	1364	94.983	.000	.000	2207	120.704	.000	.000
141	96.071	.000	.000	1380	92.227	.000	.000	2245	95.610	.000	.000
144	92.644	.000	.000	1381	105.535	.000	.000	2268	96.002	.000	.000
151	100.900	.000	.000	1418	89.023	.000	.000	2299	81.902	.000	.000
188	113.357	.000	.000	1438	94.513	.000	.000	2304	134.256	.000	.000
210	92.697	.000	.000	1458	89.624	.000	.000	2319	90.531	.000	.000
214	86.837	.000	.000	1461	96.275	.000	.000	2322	85.244	.000	.000
268	104.626	.000	.000	1477	120.324	.000	.000	2352	90.584	.000	.000
301	123.394	.000	.000	1489	102.641	.000	.000	2363	87.504	.000	.000
327	89.488	.000	.000	1528	97.178	.000	.000	2382	99.178	.000	.000
329	105.492	.000	.000	1566	81.886	.000	.000	2383	107.641	.000	.000
332	133.798	.000	.000	1583	174.655	.000	.000	2390	98.426	.000	.000
340	91.205	.000	.000	1591	92.134	.000	.000	2392	84.962	.000	.000
349	102.173	.000	.000	1596	84.468	.000	.000	2419	83.423	.000	.000
356	84.904	.000	.000	1603	95.774	.000	.000	2465	124.739	.000	.000
385	120.798	.000	.000	1611	99.671	.000	.000	2473	130.832	.000	.000
419	84.155	.000	.000	1638	90.819	.000	.000	2498	83.789	.000	.000
446	94.029	.000	.000	1649	87.025	.000	.000	2542	92.877	.000	.000
553	99.905	.000	.000	1658	105.616	.000	.000	2545	96.284	.000	.000
560	91.203	.000	.000	1711	98.984	.000	.000	2554	81.440	.000	.000
632	83.456	.000	.000	1754	83.192	.000	.000	2567	81.859	.000	.000
640	96.599	.000	.000	1758	101.623	.000	.000	2571	82.136	.000	.000
677	85.539	.000	.000	1781	97.565	.000	.000	2577	89.556	.000	.000
708	89.437	.000	.000	1782	83.812	.000	.000	2658	111.533	.000	.000
756	88.140	.000	.000	1808	90.155	.000	.000	2662	90.875	.000	.000
769	86.994	.000	.000	1818	87.836	.000	.000	2716	85.460	.000	.000
773	95.124	.000	.000	1837	129.138	.000	.000	2737	101.007	.000	.000
777	92.615	.000	.000	1851	84.979	.000	.000	2803	84.861	.000	.000
784	85.780	.000	.000	1860	105.283	.000	.000	2900	101.251	.000	.000
809	102.339	.000	.000	1868	97.571	.000	.000	2904	95.134	.000	.000
845	112.720	.000	.000	1873	94.736	.000	.000	2924	89.702	.000	.000
894	81.967	.000	.000	1894	94.736	.000	.000	2932	81.546	.000	.000
911	86.246	.000	.000	1900	94.032	.000	.000	2944	87.170	.000	.000
933	98.894	.000	.000	1901	83.523	.000	.000	2952	89.885	.000	.000
945	84.821	.000	.000	1914	91.275	.000	.000	2959	117.167	.000	.000
989	83.400	.000	.000	1918	87.103	.000	.000	2986	157.770	.000	.000
994	87.504	.000	.000	1924	104.842	.000	.000	3065	102.438	.000	.000
1007	83.233	.000	.000	1958	90.979	.000	.000	3115	152.029	.000	.000
1017	87.134	.000	.000	1973	92.575	.000	.000	3121	88.803	.000	.000
1026	83.071	.000	.000	2014	114.263	.000	.000	3130	88.282	.000	.000
1031	86.042	.000	.000	2029	88.177	.000	.000	3139	91.583	.000	.000
1044	84.200	.000	.000	2041	84.708	.000	.000	3170	93.162	.000	.000
1089	85.657	.000	.000	2048	86.566	.000	.000	3224	82.457	.000	.000

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 21,980

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
3225	101.670	.000	.000	4586	84.714	.000	.000	6227	84.827	.000	.000
3245	86.329	.000	.000	4656	87.641	.000	.000	6271	95.156	.000	.000
3260	82.293	.000	.000	4639	129.021	.000	.000	6301	91.465	.000	.000
3265	84.817	.000	.000	4692	82.930	.000	.000	6302	87.005	.000	.000
3275	82.451	.000	.000	4732	83.444	.000	.000	6313	105.569	.000	.000
3295	82.603	.000	.000	4777	88.685	.000	.000	6340	122.945	.000	.000
3299	83.226	.000	.000	4793	91.470	.000	.000	6360	108.273	.000	.000
3316	142.804	.000	.000	4891	87.431	.000	.000	6362	91.489	.000	.000
3416	126.596	.000	.000	4908	86.063	.000	.000	6516	148.108	.000	.000
3418	89.464	.000	.000	4985	95.414	.000	.000	6641	83.022	.000	.000
3431	90.478	.000	.000	4986	91.908	.000	.000	6655	82.393	.000	.000
3460	100.035	.000	.000	5005	100.481	.000	.000	6719	87.650	.000	.000
3462	109.853	.000	.000	5025	111.340	.000	.000	6724	93.722	.000	.000
3466	100.304	.000	.000	5137	120.706	.000	.000	6725	84.085	.000	.000
3477	106.764	.000	.000	5144	88.646	.000	.000	6746	93.588	.000	.000
3489	122.281	.000	.000	5151	116.422	.000	.000	6806	86.407	.000	.000
3493	83.081	.000	.000	5199	86.782	.000	.000	6813	86.821	.000	.000
3494	151.907	.000	.000	5224	93.196	.000	.000	6889	99.828	.000	.000
3534	93.357	.000	.000	5259	91.690	.000	.000	7010	83.266	.000	.000
3550	106.714	.000	.000	5302	123.744	.000	.000	7194	92.785	.000	.000
3562	91.414	.000	.000	5313	91.979	.000	.000	7200	82.986	.000	.000
3589	89.244	.000	.000	5382	132.039	.000	.000	7203	85.528	.000	.000
3635	96.003	.000	.000	5415	100.420	.000	.000	7267	102.970	.000	.000
3679	126.854	.000	.000	5488	95.174	.000	.000	7284	122.237	.000	.000
3772	122.076	.000	.000	5524	95.058	.000	.000	7319	103.028	.000	.000
3820	92.568	.000	.000	5533	102.244	.000	.000	7320	98.759	.000	.000
3881	96.242	.000	.000	5546	96.102	.000	.000	7325	92.681	.000	.000
3932	87.001	.000	.000	5569	147.054	.000	.000	7382	114.452	.000	.000
3962	89.855	.000	.000	5591	83.916	.000	.000	7425	84.460	.000	.000
3963	92.758	.000	.000	5592	101.297	.000	.000	7448	122.834	.000	.000
3978	123.711	.000	.000	5654	87.613	.000	.000	7457	86.163	.000	.000
3985	92.648	.000	.000	5658	94.774	.000	.000	7484	90.961	.000	.000
4006	115.278	.000	.000	5679	101.783	.000	.000	7485	105.721	.000	.000
4008	93.880	.000	.000	5697	81.468	.000	.000	7508	95.790	.000	.000
4024	90.529	.000	.000	5725	123.154	.000	.000	7536	109.232	.000	.000
4047	112.434	.000	.000	5753	92.073	.000	.000	7539	87.961	.000	.000
4065	107.119	.000	.000	5795	82.295	.000	.000	7586	106.873	.000	.000
4079	92.555	.000	.000	5828	102.881	.000	.000	7624	84.007	.000	.000
4198	86.202	.000	.000	5861	87.035	.000	.000	7635	107.538	.000	.000
4294	100.366	.000	.000	5864	84.611	.000	.000	7638	82.008	.000	.000
4341	97.581	.000	.000	5902	93.930	.000	.000	7653	112.268	.000	.000
4366	122.010	.000	.000	5924	85.804	.000	.000	7672	85.973	.000	.000
4373	85.612	.000	.000	5928	82.707	.000	.000	7704	105.986	.000	.000
4388	86.410	.000	.000	5936	131.587	.000	.000	7723	99.542	.000	.000
4393	122.636	.000	.000	6018	82.884	.000	.000	7725	92.263	.000	.000
4421	93.210	.000	.000	6038	81.566	.000	.000	7866	85.921	.000	.000
4425	96.159	.000	.000	6059	83.033	.000	.000	7867	89.396	.000	.000
4426	82.514	.000	.000	6083	104.977	.000	.000	7882	99.440	.000	.000
4430	94.514	.000	.000	6086	120.745	.000	.000	7896	101.072	.000	.000
4444	89.290	.000	.000	6100	97.528	.000	.000	7902	85.980	.000	.000
4458	114.891	.000	.000	6138	104.462	.000	.000	7916	103.639	.000	.000
4561	89.869	.000	.000	6181	81.716	.000	.000	7917	91.835	.000	.000
4562	83.754	.000	.000	6197	102.318	.000	.000	7941	108.665	.000	.000
4580	86.110	.000	.000	6207	98.596	.000	.000	7980	106.571	.000	.000

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 21,980

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
8026	93.638	.000	.000	10002	89.881	.000	.000	12134	103.757	.000	.000
8070	88.117	.000	.000	10028	107.044	.000	.000	12144	113.915	.000	.000
8074	85.603	.000	.000	10029	94.882	.000	.000	12209	84.224	.000	.000
8149	96.295	.000	.000	10041	108.120	.000	.000	12263	126.695	.000	.000
8151	87.469	.000	.000	10103	99.047	.000	.000	12264	96.625	.000	.000
8172	110.441	.000	.000	10105	92.443	.000	.000	12282	101.460	.000	.000
8214	90.420	.000	.000	10106	129.086	.000	.000	12331	90.003	.000	.000
8226	103.286	.000	.000	10133	108.087	.000	.000	12378	111.819	.000	.000
8308	102.103	.000	.000	10176	123.448	.000	.000	12478	102.083	.000	.000
8335	99.890	.000	.000	10207	133.397	.000	.000	12693	117.923	.000	.000
8385	123.369	.000	.000	10311	207.805	.000	.000	12859	86.120	.000	.000
8399	109.968	.000	.000	10349	99.485	.000	.000	12901	102.374	.000	.000
8400	82.517	.000	.000	10350	92.037	.000	.000	12974	95.911	.000	.000
8422	96.138	.000	.000	10391	130.657	.000	.000	12998	81.920	.000	.000
8441	104.974	.000	.000	10436	83.298	.000	.000	13045	81.663	.000	.000
8442	89.431	.000	.000	10474	120.334	.000	.000	13113	109.279	.000	.000
8559	128.105	.000	.000	10487	103.394	.000	.000	13139	106.595	.000	.000
8697	85.314	.000	.000	10570	124.589	.000	.000	13309	91.749	.000	.000
8698	102.012	.000	.000	10687	94.139	.000	.000	13310	86.984	.000	.000
8718	82.355	.000	.000	10777	96.308	.000	.000	13311	86.134	.000	.000
8737	92.528	.000	.000	10780	116.246	.000	.000	13316	86.705	.000	.000
8783	94.711	.000	.000	10831	105.810	.000	.000	13317	98.803	.000	.000
8830	116.607	.000	.000	10867	89.924	.000	.000	13504	138.487	.000	.000
8831	83.743	.000	.000	10877	130.592	.000	.000	13600	87.309	.000	.000
8838	103.798	.000	.000	10935	107.520	.000	.000	13683	91.194	.000	.000
8876	81.989	.000	.000	10961	120.861	.000	.000	13700	133.971	.000	.000
8903	99.082	.000	.000	10996	88.176	.000	.000	13714	117.137	.000	.000
8904	82.433	.000	.000	11038	81.556	.000	.000	13748	104.179	.000	.000
8927	97.971	.000	.000	11067	85.714	.000	.000	13751	114.582	.000	.000
8928	147.322	.000	.000	11126	133.290	.000	.000	13754	102.444	.000	.000
8019	82.756	.000	.000	11196	105.147	.000	.000	13779	105.421	.000	.000
9027	84.499	.000	.000	11271	93.986	.000	.000	13844	95.819	.000	.000
9040	34.924	.000	.000	11374	83.911	.000	.000	13895	119.941	.000	.000
9078	81.831	.000	.000	11402	125.221	.000	.000	13951	111.781	.000	.000
9136	88.074	.000	.000	11424	106.046	.000	.000	13978	97.233	.000	.000
9139	113.441	.000	.000	11454	100.866	.000	.000	14011	83.206	.000	.000
9166	170.333	.000	.000	11469	115.583	.000	.000	14026	99.244	.000	.000
9180	91.689	.000	.000	11564	90.498	.000	.000	14027	87.536	.000	.000
9197	107.663	.000	.000	11589	122.970	.000	.000	14040	82.983	.000	.000
9305	112.059	.000	.000	11615	121.496	.000	.000	14083	130.510	.000	.000
9341	113.437	.000	.000	11720	81.932	.000	.000	14093	84.501	.000	.000
9475	92.421	.000	.000	11747	118.449	.000	.000	14136	102.918	.000	.000
9476	98.375	.000	.000	11757	82.822	.000	.000	14246	108.796	.000	.000
9500	122.710	.000	.000	11804	103.737	.000	.000	14264	82.993	.000	.000
9631	124.402	.000	.000	11826	82.248	.000	.000	14265	109.491	.000	.000
9633	102.083	.000	.000	11848	84.849	.000	.000	14267	122.642	.000	.000
9652	134.412	.000	.000	11853	97.920	.000	.000	14321	116.904	.000	.000
9654	81.593	.000	.000	11864	102.759	.000	.000	14337	107.350	.000	.000
9719	88.002	.000	.000	11912	82.687	.000	.000	14380	108.114	.000	.000
9771	90.117	.000	.000	11943	107.080	.000	.000	14404	100.607	.000	.000
9804	84.030	.000	.000	11996	114.303	.000	.000	14416	101.501	.000	.000
9880	86.734	.000	.000	12009	88.280	.000	.000	14566	95.605	.000	.000
9903	81.612	.000	.000	12106	81.417	.000	.000	14612	91.058	.000	.000
9905	83.551	.000	.000	12120	100.535	.000	.000	14640	97.804	.000	.000

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 21,980

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
14674	100.347	.000	.000	16518	89.030	.000	.000	18246	114.352	.000	.000
14693	90.089	.000	.000	16533	105.173	.000	.000	18318	92.890	.000	.000
14700	94.615	.000	.000	16542	108.610	.000	.000	18321	83.469	.000	.000
14726	106.698	.000	.000	16614	86.493	.000	.000	18323	103.969	.000	.000
14777	103.834	.000	.000	16698	94.760	.000	.000	18371	112.685	.000	.000
14780	86.699	.000	.000	16732	87.320	.000	.000	18429	113.559	.000	.000
14802	89.603	.000	.000	16816	120.290	.000	.000	18435	96.059	.000	.000
14924	86.624	.000	.000	16865	91.327	.000	.000	18469	86.032	.000	.000
14982	81.410	.000	.000	16880	99.399	.000	.000	18482	88.066	.000	.000
15023	91.680	.000	.000	16881	92.140	.000	.000	18510	97.219	.000	.000
15031	121.321	.000	.000	16911	96.555	.000	.000	18517	119.015	.000	.000
15032	94.843	.000	.000	16919	105.258	.000	.000	18529	86.606	.000	.000
15033	98.765	.000	.000	17012	97.722	.000	.000	18600	96.095	.000	.000
15058	87.287	.000	.000	17046	86.987	.000	.000	18606	96.313	.000	.000
15101	105.513	.000	.000	17087	97.364	.000	.000	18654	88.667	.000	.000
15113	115.005	.000	.000	17088	95.298	.000	.000	18656	86.062	.000	.000
15133	103.420	.000	.000	17180	109.402	.000	.000	18657	94.852	.000	.000
15140	87.314	.000	.000	17185	108.885	.000	.000	18665	102.500	.000	.000
15215	179.842	.000	.000	17199	83.484	.000	.000	18756	116.471	.000	.000
15283	95.461	.000	.000	17219	85.062	.000	.000	18766	99.098	.000	.000
15295	117.718	.000	.000	17220	86.957	.000	.000	18777	112.995	.000	.000
15319	85.507	.000	.000	17254	102.188	.000	.000	18784	85.019	.000	.000
15320	99.103	.000	.000	17290	99.240	.000	.000	18794	91.949	.000	.000
15344	89.571	.000	.000	17325	87.109	.000	.000	18804	94.546	.000	.000
15414	95.108	.000	.000	17376	92.315	.000	.000	18860	81.640	.000	.000
15432	109.470	.000	.000	17400	96.505	.000	.000	18893	82.548	.000	.000
15461	115.611	.000	.000	17435	102.472	.000	.000	18934	82.056	.000	.000
15559	132.914	.000	.000	17490	91.767	.000	.000	18960	91.279	.000	.000
15591	85.592	.000	.000	17521	83.238	.000	.000	18973	86.382	.000	.000
15794	120.320	.000	.000	17560	114.834	.000	.000	18979	108.140	.000	.000
15828	121.242	.000	.000	17579	101.641	.000	.000	18980	129.755	.000	.000
15851	107.106	.000	.000	17580	90.804	.000	.000	18995	88.138	.000	.000
15957	113.677	.000	.000	17593	116.273	.000	.000	18998	83.049	.000	.000
15989	93.793	.000	.000	17620	105.807	.000	.000	19036	138.439	.000	.000
16012	90.776	.000	.000	17679	99.235	.000	.000	19038	111.895	.000	.000
16049	125.959	.000	.000	17716	87.975	.000	.000	19058	86.323	.000	.000
16066	93.121	.000	.000	17767	115.178	.000	.000	19074	91.985	.000	.000
16106	82.331	.000	.000	17838	93.062	.000	.000	19089	143.643	.000	.000
16117	86.828	.000	.000	17877	106.334	.000	.000	19102	97.546	.000	.000
16134	99.708	.000	.000	17905	122.500	.000	.000	19111	84.048	.000	.000
16135	86.236	.000	.000	17918	141.428	.000	.000	19119	85.352	.000	.000
16136	136.256	.000	.000	17921	97.763	.000	.000	19123	89.721	.000	.000
16137	82.469	.000	.000	17922	91.206	.000	.000	19129	108.814	.000	.000
16138	128.485	.000	.000	17939	113.810	.000	.000	19141	201.048	.000	.000
16158	81.879	.000	.000	17968	89.387	.000	.000	19193	112.695	.000	.000
16231	91.657	.000	.000	17975	84.885	.000	.000	19215	134.110	.000	.000
16237	84.150	.000	.000	17997	99.600	.000	.000	19220	111.551	.000	.000
16254	126.904	.000	.000	17983	113.053	.000	.000	19271	82.051	.000	.000
16281	101.479	.000	.000	17984	108.265	.000	.000	19286	100.613	.000	.000
16288	103.421	.000	.000	18003	116.415	.000	.000	19314	96.083	.000	.000
16313	100.393	.000	.000	18197	136.158	.000	.000	19316	101.636	.000	.000
16321	104.342	.000	.000	18200	85.258	.000	.000	19325	106.904	.000	.000
16370	86.577	.000	.000	18217	131.131	.000	.000	19330	84.022	.000	.000
16444	92.892	.000	.000	18236	100.920	.000	.000	19332	101.861	.000	.000

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 21,980

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
19339	101.246	.000	.000	20395	91.486	.000	.000	21700	87.949	.000	.000
19341	99.781	.000	.000	20410	128.303	.000	.000	21712	93.298	.000	.000
19361	95.548	.000	.000	20412	87.284	.000	.000	21725	111.192	.000	.000
19364	84.753	.000	.000	20442	103.896	.000	.000	21748	94.574	.000	.000
19389	113.662	.000	.000	20443	85.502	.000	.000	21776	81.647	.000	.000
19390	93.889	.000	.000	20482	108.225	.000	.000	21782	107.837	.000	.000
19394	87.748	.000	.000	20534	105.707	.000	.000	21784	81.455	.000	.000
19422	89.791	.000	.000	20593	84.146	.000	.000	21786	84.345	.000	.000
19433	86.402	.000	.000	20610	115.462	.000	.000	21823	92.181	.000	.000
19441	90.783	.000	.000	20669	96.026	.000	.000	21837	84.656	.000	.000
19449	87.783	.000	.000	20670	129.513	.000	.000	21844	89.658	.000	.000
19462	105.407	.000	.000	20679	93.718	.000	.000	21858	90.587	.000	.000
19467	83.466	.000	.000	20715	88.665	.000	.000	21875	85.841	.000	.000
19547	106.564	.000	.000	20724	91.624	.000	.000	21876	87.828	.000	.000
19632	92.921	.000	.000	20732	97.018	.000	.000	21888	124.373	.000	.000
19652	85.000	.000	.000	20733	124.796	.000	.000	21937	89.327	.000	.000
19670	148.648	.000	.000	20762	100.015	.000	.000	21962	85.352	.000	.000
19675	93.328	.000	.000	20790	87.757	.000	.000				
19696	84.741	.000	.000	20832	89.366	.000	.000				
19735	97.870	.000	.000	20867	245.059	.000	.000				
19741	99.926	.000	.000	20878	105.431	.000	.000				
19747	81.752	.000	.000	20879	99.305	.000	.000				
19775	90.828	.000	.000	20913	108.726	.000	.000				
19788	92.991	.000	.000	20922	106.199	.000	.000				
19800	115.907	.000	.000	20938	141.809	.000	.000				
19852	83.329	.000	.000	20939	96.327	.000	.000				
19861	91.927	.000	.000	20940	82.614	.000	.000				
19885	100.541	.000	.000	20995	119.029	.000	.000				
19893	83.134	.000	.000	21021	106.272	.000	.000				
19900	84.945	.000	.000	21089	106.577	.000	.000				
19913	88.009	.000	.000	21092	100.898	.000	.000				
19923	85.421	.000	.000	21169	108.251	.000	.000				
19955	84.610	.000	.000	21215	87.044	.000	.000				
19970	89.509	.000	.000	21218	83.582	.000	.000				
19975	83.382	.000	.000	21224	94.068	.000	.000				
20005	93.927	.000	.000	21243	97.799	.000	.000				
20009	149.700	.000	.000	21265	91.548	.000	.000				
20036	90.366	.000	.000	21271	95.858	.000	.000				
20038	127.691	.000	.000	21323	88.108	.000	.000				
20067	110.252	.000	.000	21332	92.315	.000	.000				
20074	102.557	.000	.000	21440	104.574	.000	.000				
20081	112.037	.000	.000	21442	91.580	.000	.000				
20096	84.928	.000	.000	21443	83.963	.000	.000				
20107	95.186	.000	.000	21472	82.726	.000	.000				
20125	88.530	.000	.000	21491	88.605	.000	.000				
20148	123.022	.000	.000	21514	97.275	.000	.000				
20158	132.533	.000	.000	21537	84.170	.000	.000				
20200	129.738	.000	.000	21557	134.519	.000	.000				
20292	87.799	.000	.000	21610	88.546	.000	.000				
20315	87.003	.000	.000	21617	146.805	.000	.000				
20364	92.279	.000	.000	21624	82.725	.000	.000				
20368	132.392	.000	.000	21637	116.858	.000	.000				
20373	82.356	.000	.000	21639	104.018	.000	.000				
20375	85.836	.000	.000	21661	109.178	.000	.000				

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)
N = 21,980

Table F-3: Mahalanobis D^2 Distance for Outliers – Merged Data

Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2	Case #	Mahalanobis D^2 Distance	p1	p2
334	32.983	.000	.000	10774	40.601	.000	.000	19600	49.041	.000	.000
594	38.978	.000	.000	11088	34.215	.000	.000	19733	49.458	.000	.000
784	33.839	.000	.000	11137	79.743	.000	.000	19828	34.826	.000	.000
1021	45.265	.000	.000	11445	33.140	.000	.000	19870	37.052	.000	.000
1090	37.118	.000	.000	11595	37.724	.000	.000	19899	34.432	.000	.000
1595	33.152	.000	.000	11995	39.458	.000	.000	20007	33.802	.000	.000
1662	36.733	.000	.000	12189	34.968	.000	.000	20444	33.254	.000	.000
1718	33.654	.000	.000	12563	47.100	.000	.000	21180	37.908	.000	.000
1750	33.199	.000	.000	12564	34.393	.000	.000	21188	33.604	.000	.000
2204	47.646	.000	.000	12985	37.268	.000	.000	21217	33.205	.000	.000
2228	42.588	.000	.000	12986	38.775	.000	.000	21900	39.919	.000	.000
3375	46.113	.000	.000	13221	35.187	.000	.000	21901	34.805	.000	.000
3516	37.695	.000	.000	13250	34.396	.000	.000	21929	40.786	.000	.000
3631	34.503	.000	.000	13399	37.281	.000	.000				
3640	37.972	.000	.000	13469	38.779	.000	.000				
3793	37.176	.000	.000	13737	41.801	.000	.000				
3864	55.180	.000	.000	13973	40.952	.000	.000				
3872	45.143	.000	.000	14196	38.738	.000	.000				
4423	33.009	.000	.000	14197	37.354	.000	.000				
4670	49.748	.000	.000	14206	34.626	.000	.000				
4758	41.024	.000	.000	14678	34.690	.000	.000				
4852	34.664	.000	.000	14709	33.596	.000	.000				
5765	38.450	.000	.000	14697	39.767	.000	.000				
5815	55.347	.000	.000	15007	34.635	.000	.000				
6171	44.664	.000	.000	15179	38.637	.000	.000				
6234	45.262	.000	.000	15551	43.242	.000	.000				
6334	36.880	.000	.000	15861	57.309	.000	.000				
6526	36.295	.000	.000	15869	39.275	.000	.000				
6646	49.001	.000	.000	15870	36.682	.000	.000				
6703	34.048	.000	.000	15885	33.819	.000	.000				
6970	37.141	.000	.000	15909	33.769	.000	.000				
7289	39.007	.000	.000	16105	40.232	.000	.000				
7343	36.769	.000	.000	16704	36.528	.000	.000				
7557	33.988	.000	.000	16872	49.546	.000	.000				
7640	33.830	.000	.000	17153	35.485	.000	.000				
7733	34.527	.000	.000	17525	47.898	.000	.000				
7931	33.202	.000	.000	17586	35.577	.000	.000				
8398	33.755	.000	.000	18142	37.895	.000	.000				
8438	38.254	.000	.000	18184	38.613	.000	.000				
8463	47.814	.000	.000	18308	45.963	.000	.000				
8972	41.620	.000	.000	18369	33.460	.000	.000				
9117	44.732	.000	.000	18490	34.357	.000	.000				
9623	33.465	.000	.000	18551	36.386	.000	.000				
9779	38.862	.000	.000	18884	33.459	.000	.000				
10114	33.398	.000	.000	19038	34.743	.000	.000				
10178	37.283	.000	.000	19550	35.555	.000	.000				

p1 = 1-Cdf. Chisq (Mahalanobis D^2 distance, df), where Cdf. Chisq = Cumulative distribution function for Chi-square
p2 = sig. (Mahalanobis D^2 distance, df)

APPENDIX G
ASSESMENT of DISCRIMINANT VALIDITY

Table G-1: Comparison of 2-Factors vs. 1-Factor Models

LEVEL 1 DEPENDENT CONSTRUCTS	Model Fit Information		DIFFTEST Information			Absolute & Comparative Fit Statistics		
JOB DEMANDS & JOB CONTROL	**(χ^2) Fit**	**df**	**$\Delta\ \chi^2$ Fit**	**Δ df**	**P-Value**	**RMSEA**	**CFI**	**TLI**
2 Factors - H1	752.728*	9				0.061	0.994	0.991
1 Factor - H0	6584.761*	10	4489.911*	1	p<0.001	0.173	0.950	0.926
JOB DEMANDS & MANAGERIAL SUPPORT								
2 Factors - H1	44303.321*	90				0.150	0.967	0.961
1 Factor - H0	48065.373*	91	3633.666*	1	p<0.001	0.155	0.964	0.959
JOB DEMANDS & FAMILY SUPPORT								
2 Factors - H1	781.763*	14				0.050	0.966	0.949
1 Factor - H0	6469.456*	15	4658.384*	1	p<0.001	0.140	0.712	0.597
JOB DEMANDS & ANXIETY								
2 Factors - H1	395.211*	5				0.060	0.996	0.993
1 Factor - H0	1534.400*	6	1132.327*	1	p<0.001	0.108	0.986	0.976
JOB DEMANDS & DEPRESSION								
2 Factors - H1	273.533*	5				0.05	0.999	0.998
1 Factor - H0	2496.126*	6	1939.268*	1	p<0.001	0.137	0.989	0.981
JOB DEMANDS & JOB SATISFACTION								
2 Factors - H1	16914.422*	35				0.148	0.943	0.927
1 Factor - H0	21653.059*	36	3825.862*	1	p<0.001	0.165	0.927	0.909
JOB DEMANDS & ORGANISATIONAL COMMIT								
2 Factors - H1	415.983*	5				0.061	0.997	0.995
1 Factor - H0	5942.520*	6	4401.098*	1	p<0.001	0.212	0.962	0.936
JOB CONTROL & MANAGERIAL SUPPORT								
2 Factors - H1	48783.171*	118				0.137	0.963	0.958
1 Factor - H0	133915.961*	119	12405.543*	1	p<0.001	0.226	0.899	0.885
JOB CONTROL & FAMILY SUPPORT								

2 Factors - H1	1136.751*	26				0.044	0.992	0.989
1 Factor - H0	24646.123*	27	7139.629*	1	p<0.001	0.204	0.826	0.768
JOB CONTROL & ANXIETY								
2 Factors - H1	848.692*	13				0.054	0.995	0.992
1 Factor - H0	35997.193*	14	10198.941*	1	p<0.001	0.343	0.794	0.691
JOB CONTROL & DEPRESSION								
2 Factors - H1	321.746*	13				0.033	0.999	0.998
1 Factor - H0	30516.104*	14	8530.628*	1	p<0.001	0.316	0.884	0.826
JOB CONTROL & JOB SATISFACTION								
2 Factors - H1	24775.563*	53				0.146	0.932	0.916
1 Factor - H0	53441.851*	54	6976.474*	1	p<0.001	0.212	0.854	0.822
JOB CONTROL & ORGANISATIONAL COMMIT								
2 Factors - H1	420.624*	13				0.038	0.998	0.997
1 Factor - H0	27020.557*	14	7887.736*	1	p<0.001	0.296	0.882	0.824
MANAGERIAL SUPPORT & FAMILY SUPPORT								
2 Factors - H1	38803.284*	134				0.115	0.973	0.969
1 Factor - H0	82259.752*	135	6909.998*	1	p<0.001	0.166	0.943	0.935
MANAGERIAL SUPPORT & ANXIETY								
2 Factors - H1	52969.009*	103				0.153	0.960	0.953
1 Factor - H0	120767.364*	104	13721.531*	1	p<0.001	0.230	0.908	0.894
MANAGERIAL SUPPORT & DEPRESSION								
2 Factors - H1	52838.641*	103				0.153	0.961	0.954
1 Factor - H0	101502.467*	104	8758.709*	1	p<0.001	0.211	0.924	0.913
MANAGERIAL SUPPORT & JOB SATISFACTION								
2 Factors - H1	94336.025*	188				0.151	0.934	0.926
1 Factor - H0	140307.972*	189	9959.707*	1	p<0.001	0.184	0.902	0.891
MAN. SUPPORT & ORG. COMMITMENT								
2 Factors - H1	56074.355*	103				0.157	0.957	0.950
1 Factor - H0	91780.322*	104	8703.305*	1	p<0.001	0.200	0.930	0.920
FAMILY SUPPORT & ANXIETY								

2 Factors - H1	620.823*	19				0.038	0.994	0.991
1 Factor - H0	22956.460*	20	7655.110*	1	p<0.001	0.228	0.776	0.687
FAMILY SUPPORT & DEPRESSION								
2 Factors - H1	629.159*	19				0.038	0.999	0.996
1 Factor - H0	21480.630*	20	6763.711	1	p<0.001	0.221	0.903	0.864
FAMILY SUPPORT & JOB SATISFACTION								
2 Factors - H1	13835.907*	64				0.099	0.955	0.946
1 Factor - H0	43364.418*	65	7110.660*	1	p<0.001	0.174	0.86	0.832
FAMILY SUPPORT & ORG.COMMITMENT								
2 Factors - H1	1032.328*	19				0.049	0.994	0.991
1 Factor - H0	20486.552*	20	6433.422*	1	p<0.001	0.216	0.872	0.821
ANXIETY & DEPRESSION								
2 Factors - H1	2466.655*	8				0.119	0.992	0.986
1 Factor - H0	6882.737*	9	2313.662*	1	p<0.001	0.107	0.979	0.964
ANXIETY & JOB SATISFACTION								
2 Factors - H1	20319.330*	43				0.147	0.939	0.922
1 Factor - H0	61285.870*	44	10108.501*	1	p<0.001	0.252	0.815	0.769
ANXIETY & ORG. COMMITMENT								
2 Factors - H1	1047.856*	8				0.077	0.995	0.990
1 Factor - H0	28905.342*	9	10234.750*	1	p<0.001	0.382	0.858	0.763
DEPRESSION & JOB SATISFACTION								
2 Factors - H1	20441.941*	43				0.147	0.952	0.938
1 Factor - H0	48707.767*	44	7139.142*	1	p<0.001	0.224	0.884	0.856
DEPRESSION & ORG. COMMITMENT								
2 Factors - H1	521.062*	8				0.054	0.998	0.997
1 Factor - H0	21324.813*	9	7545.499*	1	p<0.001	0.329	0.930	0.883
JOB SATISFACTION & ORG. COMMITMENT								
2 Factors - H1	23167.019*	43				0.156	0.942	0.925
1 Factor - H0	43997.216*	44	6703.892*	1	p<0.001	0.213	0.889	0.861

Table G-2: Comparison of Models with Un-Constrained and Constrained Correlations between Factors

LEVEL 1 DEPENDENT CONSTRUCTS	Model Fit Information		DIFFTEST Information	
JOB DEMANDS WITH JOB CONTROL	**(χ^2)**	**(df)**	**($\Delta\ \chi^2$)**	**P-Value**
Factor Correlation Estimated Freely - H1	752.728*	9		
Factor Correlation Fixed @ 0 - H0	870.985*	10	171.263*	p<0.001
JOB DEMANDS WITH MANAGERIAL SUPPORT				
Factor Correlation Estimated Freely - H1	44303.321*	90		
Factor Correlation Fixed @ 0 - H0	39060.173*	91	1578.110*	p<0.001
JOB DEMANDS WITH FAMILY SUPPORT				
Factor Correlation Estimated Freely - H1	781.763*	14		
Factor Correlation Fixed @ 0 - H0	635.526*	15	12.394*	p<0.001
JOB DEMANDS WITH ANXIETY				
Factor Correlation Estimated Freely - H1	395.211*	5		
Factor Correlation Fixed @ 0 - H0	16847.076*	6	7971.846*	p<0.001
JOB DEMANDS WITH DEPRESSION				
Factor Correlation Estimated Freely - H1	273.533*	5		
Factor Correlation Fixed @ 0 - H0	9400.134*	6	4303.900*	p<0.001
JOB DEMANDS WITH JOBSATISFACTION				
Factor Correlation Estimated Freely - H1	16914.422*	35		
Factor Correlation Fixed @ 0 - H0	15816.107*	36	1153.977*	p<0.001
JOB DEMANDS WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	415.983*	5		
Factor Correlation Fixed @ 0 - H0	740.083*	6	243.432*	p<0.001
JOB CONTROL WITH MANAGERIAL SUPPORT				
Factor Correlation Estimated Freely - H1	48783.171*	118		
Factor Correlation Fixed @ 0- H0	44958.227	119	2736.707*	p<0.001
JOB CONTROL WITH FAMILY SUPPORT				
Factor Correlation Estimated Freely - H1	1136.751*	26		
Factor Correlation Fixed @ 0 - H0	1294.821*	27	141.583*	p<0.001

JOB CONTROL WITH ANXIETY				
Factor Correlation Estimated Freely - H1	848.692*	13		
Factor Correlation Fixed @ 0 - H0	2317.554*	14	576.088*	p<0.001
JOB CONTROL WITH DEPRESSION				
Factor Correlation Estimated Freely - H1	321.746*	13		
Factor Correlation Fixed @ 0 - H0	4924.405*	14	1341.238*	p<0.001
JOB CONTROL WITH JOB SATISFACTION				
Factor Correlation Estimated Freely - H1	24775.563*	53		
Factor Correlation Fixed @ 0 - H0	70653.335*	54	9669.176*	p<0.001
JOB CONTROL WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	420.624*	13		
Factor Correlation Fixed @ 0 - H0	10225.878*	14	2865.383*	p<0.001
MANAGERIAL SUPPORT WITH FAMILY SUPPORT				
Factor Correlation Estimated Freely - H1	38803.284*	134		
Factor Correlation Fixed @ 0 - H0	25748.264*	135	463.181*	p<0.001
MANAGERIAL SUPPORT WITH ANXIETY				
Factor Correlation Estimated Freely - H1	52969.009*	103		
Factor Correlation Fixed @ 0 - H0	56005.694*	104	3923.213*	p<0.001
MANAGERIAL SUPPORT WITH DEPRESSION				
Factor Correlation Estimated Freely - H1	52838.641*	103		
Factor Correlation Fixed @ 0 - H0	94131.874*	104	8154.497*	p<0.001
MANAGERIAL SUPPORT WITH JOB SATISFACTION				
Factor Correlation Estimated Freely - H1	94336.025*	188		
Factor Correlation Fixed @ 0 - H0	373017.489*	189	30265.619*	p<0.001
MANAGERIAL SUPPORT WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	56074.355*	103		
Factor Correlation Fixed @ 0 - H0	175211.270*	104	17524.622*	p<0.001
FAMILY SUPPORT WITH ANXIETY				
Factor Correlation Estimated Freely - H1	620.823*	19		
Factor Correlation Fixed @ 0 - H0	476.172*	20	20.043*	p<0.001

FAMILY SUPPORT WITH DEPRESSION				
Factor Correlation Estimated Freely - H1	629.159*	19		
Factor Correlation Fixed @ 0 - H0	794.055*	20	112.631*	p<0.001
FAMILY SUPPORT WITH JOB SATISFACTION				
Factor Correlation Estimated Freely - H1	13835.907*	64		
Factor Correlation Fixed @ 0 - H0	10555.209*	65	341.354*	p<0.001
FAMILY SUPPORT WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	1032.328*	19		
Factor Correlation Fixed @ 0 - H0	1282.555*	20	179.206*	p<0.001
ANXIETY WITH DEPRESSION				
Factor Correlation Estimated Freely - H1	2466.655*	8		
Factor Correlation Fixed @ 0 - H0	127402.510*	9	44570.574*	p<0.001
ANXIETY WITH JOB SATISFACTION				
Factor Correlation Estimated Freely - H1	20319.330*	43		
Factor Correlation Fixed @ 0 - H0	35096.983*	44	4543.803*	p<0.001
ANXIETY WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	1047.856*	8		
Factor Correlation Fixed @ 0 - H0	4681.960*	9	1530.307*	p<0.001
DEPRESSION WITH JOB SATISFACTION				
Factor Correlation Estimated Freely - H1	20441.941*	43		
Factor Correlation Fixed @ 0 - H0	75966.336*	44	11793.262*	p<0.001
DEPRESSION WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	521.062*	8		
Factor Correlation Fixed @ 0 - H0	15553.684*	9	5389.047*	p<0.001
JOB SATISFACTION WITH ORGANISATIONAL COMMITMENT				
Factor Correlation Estimated Freely - H1	23167.019*	43		
Factor Correlation Fixed @ 0 - H0	117804.243*	44	19177.023*	p<0.001