How Do Environmental Impact and Gender Inequality Characterise Fast Fashion Supply Chains?

ABSTRACT

This paper investigates how environmental impact and gender inequality characterise the fast fashion supply chain, from an ecofeminist perspective. The 21st century has entered into a period of significant anthropogenic environmental challenge, powered by capitalist consumer society; in which, its impacts are inextricably burdensome for women, namely women in the global South. Fast fashion has played a contributory role; becoming renowned for its unsustainable, unethical practices that jeopardise environmental stability and threaten women's hope for gender parity. In effect, the need for this research is paramount in understanding how fast fashion can break with its ecological and feminist problems.

To do so a qualitative method was used. Thematic analysis was conducted on company reports of 75 fast fashion companies for the years 2019-2022. The companies were chosen based on the Fashion Transparency Index 2021. Further, all the companies were defined as fast fashion companies, operating in Europe's fast fashion industry.

The analysis showed that fast fashion companies' supply chains, contributed to environmental impact through air pollution, water pollution and land pollution. And contributed to gender inequality through ameliorating economic discrimination and gender-based harassment. We concluded that environmental impact and gender inequality reinforce one another both ideologically and materially, in the fast fashion supply chain.

Additionally, the study contributes an original and unique literary account regarding its use of the ecofeminism perspective. It filled a literary gap by effectively pointing out that, impacts were felt acutely in the global South by women garment workers. And, therefore,

brings to academic attention that, women garment workers are subjected to fast fashion's patriarchal governing structure and placed on the front line of the environmental crisis, which has emanated from fast fashion's supply chain practices.

Keywords: Environmental impact, gender inequality, fast fashion supply chain, ecofeminism

INTRODUCTION

Fast fashion is now the dominant consumer model within the fashion retail scape. It's conception was pioneered by retailers such as H&M and Zara (Barnes & Lea-Greenwood, 2006), who introduced low-cost clothing collections that mimicked luxury fashion trends' (Joy, Sherry, Venkatesh, Wang, & Chan, Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands, 2012), shifting consumer demand towards cheap, mass-produced clothing. The new accessibility of fashion trends 'caught retail in a revolving door of fashion' (Chapman, 2007), bringing to existence 'the concept of adding 3 to 5 mid-seasons to the existing seasons in a fashion calendar' (Bhardwaj & Fairhurst, 2010), and requiring suppliers to deliver fashion apparel in smaller batches with reduced lead time (Bhardwaj & Fairhurst, 2010). In effect, the fast fashion supply chain (SC) had to adapt conventional organisational structures and forecast-driven SCs were inadequate to meet the challenges of volatile and turbulent demand which typify fashion markets' (Christopher, Lowson, & Peck, 2004) – instead, agility and responsiveness in the logistics pipeline were subsequent to the demand for quick response capability (Christopher, Lowson, & Peck, 2004). More recently, the industry has seen the rise of ultra-fast fashion (e.g. fashion retail websites Boohoo and Shein), increasing the speed to market of high volumes of new styles, further fuelling over consumption (Camargo et al. 2020).

In advocating this ‘speed-to-market approach’ (Bhardwaj & Fairhurst, 2010) fast fashion retailers have (Brun & Castelli, 2008) developed an infrastructure along with maintaining low costs (Tyler, Heeley, & Bhamra, 2006). Hereafter, the fast fashion SC expanded its successive processes across the globe in pursuit of achieving economies of scale, with particular focus on outsourcing manufacturing and production processes to countries of the global South with low labour costs. The globally dispersed nature of fast fashion has reduced the level of transparency and traceability down the SC. Therefore, the fast fashion SC has been highlighted as having one of the most unethical and unsustainable practices (Camargo & Pereira, 2019).

The globalisation of fast fashion SCs has also given rise to environmental sustainability concerns, which have manifested along various trajectories of pollution. it has been estimated in the UK alone, 350,000 tons of clothing end up as landfill each year (WRAP, 2016); waste accumulations in landfills create instances of chemical leaching and plastic content in soil and water - adding to environmental woe. In response, fast fashion retailers have onboarded environmental concerns and adopted sustainable supply chain management (SSCM) practices. However, sustainability has been operationalised by the business sphere and monetised for economic gains, detaching from the environmental ‘rubric of sustainability’ (Carter & Rogers, 2008). In practice, the causal relationship between fast fashion SC and environmental impact remains pervasive.

In confluence with environmental impacts, the fast fashion SC has also been held responsible for social sustainability violations. Fast fashion’s negligence has been under media microscope, with unethical practices and violations of social norms seemingly originating from higher tier suppliers in their far-flung supply chains (Lotfi, Walker, & Rendon-Sanchez, 2021). To illustrate, The Rana Plaza retail and apparel manufacturing complex collapse, which led to mass fatalities of garment workers with 1,134 dead and 2,500 injured (Hoskins, 2015), was a

notorious exemplification of the industry's negligence to provide safe working conditions. Demonstrating that fast fashion SCs 'may ignore, or attempt to co-opt, the human rights agenda' (Lotfi, Walker, & Rendon-Sanchez, 2021). Further, as widely posited by scholars (Chang, 2020; Vijeyarasa and Liu, 2021; Mezzadri, 2016; Sikdar et al, 2014), the fast fashion SC is inherently feminised, with this in mind, social sustainability remains challenging, including violations of human rights and labour rights, child labour, forced labour, discrimination, low wages, poor health and safety, and sexual harassment (Govindan, Shaw, & Majumdar, 2021). For women garment workers gendered inequalities have been seen to manifest across two predominant strains: economic discrimination and gender-based harassment.

Clearly, environmental impact and gender inequality present a 'wicked problem' in the sense they cannot be successfully understood in any way that is not intersectional (Kings, 2017). Thus, the purpose of this study is to analyse how environmental impact and gender inequality characterise the fast fashion SC: from an eco-feminism perspective. There exists a seminal contribution to this research area, which has been brought to our attention: Bick et al (2018) present fast fashion as a global environmental injustice issue – the environmental and occupational burdens associated with mass production are disproportionately experienced by those who produce clothing in low-and-middle-income-countries (LMICS) (Bick, Halsey, & Ekenga, The Global Environmental Injustice of Fast Fashion, 2018). But the breadth and depth of environmental and social abuses in the fast fashion SC still remain scantly addressed in SCM literature. Further, SCM literature has failed to consider the fast fashion SC's twin domination of nature and women, often focusing on one issue. Thus, the deeply entrenched relationship between the capitalist destruction of nature and patriarchal oppression of women, is ignored and lacks literary understanding, rendering a research gap. Therefore, the research question encapsulates the purpose of the study is:

How do environmental impact and gender inequality characterise fast fashion supply chains, reinforcing one another both ideologically and materially?

The paper took a qualitative approach through the analysis of company reports of 75 fast fashion companies for the years 2019-2022 chosen based on the Fashion Transparency Index 2021.

The paper found that environmental impact and gender inequality characterise the fast fashion SC. Environmental impact was found to disseminate along three strains of pollution; air, water, and land; highlighting in greater depth the ways in which environmental impact manifested to its worst degree. A contributory finding reinforces a high focus on achieving economies of scale is preferred to the care and preservation of nature. We further found two themes of economic discrimination and gender-based harassment as dimension of gender inequality.

The paper contributes to sustainable supply chain management filed through interconnecting environmental impact and gender inequality as part of social debate in sustainability. Ultimately the study contributed a unique account regarding its application of ecofeminism, a theoretical lens rarely utilised in fast fashion research. Through ecofeminism the interlinked subordination of the environment and women at the hand of the fast fashion SC was evident.

The article proceeds as follows: it starts with review of the related literature, then sheds light on ecofeminism as the lens for this research. Then it presents the study methods following with findings. Lastly, findings are discussed and concluded while offering avenue for future research.

LITERATURE REVIEW

Environmental Impacts of the Fast Fashion supply chain

Academic critics of fast fashion claim 'the globalisation of fashion SCs has prevented the publication of reliable, in-depth, research on fashion's total climate impact, compared with other industries' (Peters, Granberg, & Sweet, The role of science and technology in sustainable fashion, 2015). However, a multitude of academia has identified a causal relationship between fast fashion and environmental impact.

Early and current studies focus on how the 'fast fashion business model became the norm for brands, increasing demand for large amounts of inexpensive clothing; resulting in environmental degradation along the SC' (Bick, Halsey, & Ekenga, The Global Environmental Injustice of Fast Fashion, 2018). Turker and Altuntas (2014) adopted this notion in their analysis of nine fast fashion brands. Inferring that in 'complying with new flexibility and design requirements' (Turker & Altuntas, 2014) brands expanded production operations into developing countries such as China, India and Bangladesh, wherein environmental awareness is less developed (Turker & Altuntas, 2014); allowing for environmental issues to be disregarded (Turker & Altuntas, 2014). Reinforcing the conclusion that responsiveness to demand precedes over environmental impact. Niinimäki et al's (2020) review, suggested that 'the rise of fast fashion, which relies on cheap manufacturing frequent consumption and short-lived garment use' (Niinimäki, et al., 2020), is concomitant with environmental devastation, specifically, water use, chemical pollution, CO^2 emissions and textile waste, at critical points in the textile value chain (Niinimäki, et al., 2020). The authors also delve beyond previous findings and scrutinise that 'impacts have re-located to lower-labour-cost, garment producing countries, due to the global nature of fast fashion SCs' (Niinimäki, et al., 2020). In our literature review, we considered that environmental impact from fast fashion supply chains are through air, water land pollution.

In regard to the literature, **air pollution** arising from the fast fashion industry is referred to in terms of carbon (CO^2) and greenhouse gas (GHG) emissions. Academics have examined this negative externality embodied in the garment manufacturing stage, henceforth 'the scholarly chain of fashion manufacturing research' (Anguelov, 2016) is ample. Numerous researchers' have contributed to work regarding the fashion's carbon footprint. Anguelov's (2016) examination of the international fashion trade highlighted 'fibre production and supply add a large global carbon footprint of high direct fuel costs and their indirect pollution impact in the form of CO^2 emissions'. Supporting this finding is Niinimäki et al's (2020) academic review. The authors reiterate scientific claims that the 'fast fashion industry causes 8 to 10% of global greenhouse gas emissions, equating to 4 - 5 billion tonnes annually' (Niinimäki, et al., 2020), and expand this, suggesting that 'the fashion industry's high carbon footprint comes from high energy use and is influenced by the source of the energy used' (Niinimäki, et al., 2020) during manufacturing. The paper illustrates such, for example, 'in China, textile manufacturing depends on coal-based energy and, as a result, has a 40% larger carbon footprint than textiles made in Turkey or Europe' (Niinimäki, et al., 2020).

In extant literature the theme of **water scarcity** is recurrent; as highlighted by the United Nations (2022) 'water scarcity already affects every continent, with an increasing number of regions reaching the limit at which water services can be sustainably delivered, especially in arid regions'. In response 'water footprint assessment has become a rapidly evolving research field' (Aivazidou, Tsolakis, Lakovouc, & Vlachosa, 2016). For the fast fashion industry, Chapagain et al (2006) evidenced water footprints of some nations particularly press in other parts of the world, and impacts, related to evaporation of infiltrated rainwater for cotton growth, and withdrawal of ground- or surface water for irrigation or processing, are typically cross border (Chapagain, Hoekstra, & Savenije, 2006). Specifically,

‘84% of fashion’s water footprint of cotton consumption in the EU25 region is located outside Europe, with major impacts in India and Uzbekistan’ (Chapagain, Hoekstra, & Savenije, 2006).

‘**Polluted land** is defined as land within or upon which substances are present at concentrations that may cause harm to the health of humans, living organisms and to the functioning of ecosystems (Bishop & Flack, 1997). Due to its scope, the subject area receives diverse academic attention, and is often considered with water pollution in fast fashion research. Addressing the theme of land pollution and wastewater, numerous works have specifically studied Bangladesh. Dey and Islam’s (2015) review found dyestuffs produced by Bangladeshi textile mills to be major sources of heavy metals absorbed in the river’s soil and sediments. As the textile dyes comprise of complex chemical structures that show low level of biodegradability, during the dry season water evaporation exposed them to the environment, exposing regions situated in the river basin to food contamination (Dey & Islam, 2015). This impact was also observed by Hossain et al (2018) in the textile dyeing industries of Bangladesh between 2011–2021. Findings suggested, ‘excessive groundwater extraction may increase the salinity of ground water and soil, affecting aquatic ecosystems, reducing the productivity of crops and aquatic life’ (Hossain, Sarker, & Khan, 2018). Recent research has attempted to credit the fashion industry’s impact on soil infertility and soil degradation, from a global rather than regional perspective. Dhir (2021) suggested the fashion industry has a proactive role in degrading soil in different ways, particularly through its massive usage of chemicals, such as pesticides and fertilizers, to grow cotton.

Inequality of Women Garment Workers in Fast Fashion

The feminisation of the garment sector has been discussed extensively in early literature (Kabeer & Mahmud, Globalization, gender and poverty: Bangladeshi women workers in export and local markets, 2004). Elson and Pearson (1981) indicate, ‘young women overwhelmingly

constitute the labour force of world market factories'. Reinforcing such, Nash and Fernandez-Kelly (1983) argue that the 'role of gender in the configuration of this new international arrangement should not be underestimated', for 'young women in developing countries are the labour force of this frontier'. Recent literary observation from Khanna (2011) recognised, Bangladesh's 'Ready-Made-Garment (RMG) sector is built upon the bedrock of inexpensive female labour, which has increased over time'; 25% of female workers entering the labour market in the 1990's were working in garment manufacturing' (Khanna, 2011).

Responsively, a considerable number of authors have assessed how 'socially constructed gender roles and stereotypes of women' (Chang, 2020) in third world countries, subjugate women into 'inferior labour roles' (Lim, 1978) within world market factories. Elson and Pearson (1981) term this 'natural differentiation, produced by innate capacities and personality traits of women and men'. And thus, 'women are considered to have naturally nimble fingers, to be naturally more docile and willing to accept tough work discipline, than men; and to be naturally more suited to tedious, repetitious work'. In parallel, Kabeer's (1994) *Reversed Realities,* identifies the 'preference for hiring women, as an employer preference for a compliant and low-cost workforce'; contesting 'it's the docility and dispensability of women that makes them attractive' (Kabeer, Reversed Realities: Gender Hierarchies in Development Thought, 1994) employees. Both pieces of literature remain seminal contributions to the field, despite being conducted prior to the emergence of the fast fashion industry; for instance, Chang (2020) found that 'as a result of gender construction in their culture', women garment workers are trapped or susceptible to exploitation, in the new era of fast fashion sweatshops. Echoing Elson and Pearson's (1981), and Kabeer's (1994) findings.

In view of social constructions of the feminine body and articulated gender relations. Gender inequality has been found to be a key factor in shaping forms of sexual exploitation (Crane et al, 2019) in garment factories. For instance, Siddiqi (2003) revealed 24 % of

respondents (female industrial workers) had been sexually harassed inside factories, due to 'sexual coercion and verbal abuse belonging to the general spectrum of traditional methods of labour discipline found in Bangladesh' (Siddiqi, 2003); creating 'a hostile, intimidating and sexually charged environment (Siddiqi, 2003). Similarly, a survey by Ali et al (2008) found, of 90 female garment workers across 30 Dhaka factories 27.8% of respondents had been raped by male colleagues inside the factory. Despite empirical evidence, researchers have been relatively silent on the topic of sexual harassment (Siddiqi, 2003); with discussions of sexual harassment in feminist, and legal scholarship often taking harassment to be a workplace phenomenon (Siddiqi, 2003). Hence, a knowledge gap exists. However, recently, Vijeyarasa and Liu (2021) highlighted the experiences of women workers in Cambodia and Bangladesh; the fashion industries' informal, vulnerable factory conditions, characterised by overcrowded rental areas, inadequate hygiene and sanitation, and poor lighting, was found to 'increase the risk of sexual violence' (Vijeyarasa & Liu , 2021). Furthermore, the specific conditions of employment associated with globalization create 'enabling' environments for employers to get away with sexual harassment (Siddiqi, 2003).

In addition, some 'studies have explored how gender and capitalist relations are articulated on the global shop floor, leading to managerial practices of labour control and to the formation of new gendered labour subjectivities' (Mezzadri, 2016). Early research from Frobel et al (1979) regards 'women's wages in world market factories are 20-50% lower than wages paid for men in comparable jobs. Nash and Fernandez-Kelly (1983) review draws a similar conclusion; studies of third world women in multinational export factories, often cited absolutely low wages as evidence of the exploitation of these women by their employers (Nash & Fernandez-Kelly, 1983). Over time, extensive literature has developed to emphasise that female workers in Bangladesh's RMG sector simultaneously face the constant worry of job insecurity and suspension on top of an 'impersonal cash nexus' (Elson & Pearson, 1981).

Khanna (2011) highlighted that 'women are fired for delaying production due to ill-health'. Similarly, Sikdar, Sarker and Sadeka's (2014) survey of 80 female garment workers in Dhaka city of Bangladesh, found, women faced the constant worry of job suspension and problems of attaining salary on time (Sikdar, Sarkar, & Sadeka, 2014). The scholarships' discussion concerning various manifestations of gender-orientated abuse, draws a holistic image of the inequality women garment workers bear.

Gender Inequality and Environmental Impact

Gender inequality, understood in this study as, 'allowing people different opportunities due to perceived differences based solely on gender' (Kolb, 2008), remains a challenging area of development in SCs. As gendered inequalities persist across sectors, extensive research (Chang, 2020; Vijeyarasa and Liu, 2021; Mezzadri, 2016; Sikdar et al, 2014) has drawn attention to the inextricable relationship that has forged between gender-inequality and women, in a SC context.

Environmental impact as a gender-sensitive issue is under-researched – a gap exists 'regarding women-centric dimensions of climate change' (Patel, et al., 2020). In response, several authors have conducted disaster studies to highlight the 'nexus of climate change and gender equality in developing states' (Eastin, 2018).

Women's vulnerability is ascribed to cultural and gender mores in many texts (Arora-Jonsson, 2011). The studies communicate that diverse customary, attitudinal and other socio-cultural prohibitions accentuate women's difficulties during and after climate change induced disasters (Nellemann, Verma, & Hislop, 2011); (Yavinsky, 2012) so the climate crises is felt acutely along gender lines.

Scholarship also depicts women's livelihoods as 'climate sensitive' (Patel, et al., 2020) by virtue of their responsibilities in the private sphere. Yadav and Lal (2018) noted, women of the underprivileged labour class, living in arid regions *(e.g., India and South Asia),* bear a heavy

reliance on agricultural production; when climate change prompts crop yield decline, soils degrade and water reservoirs deplete or pollute, women's lives are the most disrupted because of scarcity in fuel, wood, and water. Prior literature reinforces this, underscoring the deep relationship between water and women in South Asia. Sultana (2014) suggests, as a result, of fetching drinking water befalling women in most South Asian societies, when climatic changes generate changes in water quantity and quality, women must travel greater distances and spend greater amounts of time collecting water; disarming their ability to engage in income-generating activities *(e.g., running cottage industries and selling hand-made products and crafts)* and realise economic empowerment (Sultana, Gendering Climate Change: Geographical Insights, 2014). Heeding such, Kher et al (2015) draw attention to how semi-urban women in Delhi spend on average 30 minutes to two and a half hours fetching water for the family; illustrating that human-induced droughts, floods, and heat episodes, pose a serious threat to the availability of water resources, making the lives of women, harder as they must travel further to fetch water (Kher, Aggarwal, & Punhani, Vulnerability of Poor Urban Women to Climate-linked Water Insecurities at the Household Level: A Case Study of Slums in Delhi, 2015). The precarity of this impact has been alluded to; Abid et al (2018) stated that environmental degradation pushes women to faraway fields to collect water, wherein they are prone to falling victims to sexual harassment.

In the voluminous literature on climate change only disaster studies have offered insight into the causal drivers of gender disparities in climate change vulnerability (Eastin, 2018). However, overcoming this gap and aiding this research is Gloor et al's (2022) recent article, which has substantiated that, gender equity and environmental sustainability are in fact closely intertwined – on account of 'women being disproportionately impacted by the global climate crisis' (Gloor, Mestre, Post, & Ruigrok, 2022).

THEORETICAL LENS: ECOFEMINISM

Coined by French feminist Françoise d'Eaubonne in the 1974 publication of *'Feminism or Death'*, ecofeminism, is an intersectional lens bringing together the separate philosophies of feminism and environmentalism. The term's central tenet was intended to effectuate that 'parallels exist between the subordination of women and the domination of nature' (d'Eaubonne, Hottell, Merchant, Bahaffou, & Gorecki, 2022). Arguing that 'exploitation from Western patriarchal society lies at the root of both the environmental crisis and women's systemic oppression worldwide' (d'Eaubonne, Hottell, Merchant, Bahaffou, & Gorecki, 2022).

Since then, the shared premise about the twin domination of women and nature has been developed in theoretical and practical additions. Influential texts including, Merchant's (1980) *'The Death of Nature'*, challenged the hegemony of mechanistic science as a marker of progress. Illustrating that, 'traditional cultural constraints on human action toward earth (e.g., mining) are transformed into cultural sanctions for the scientific, technological, and economic exploitation of nature' (Merchant, 2006); in effect, 'disorderly feminine nature becomes mastered by the man of science for human benefit' (Merchant, 2006). Generating a man-made industrial world embedded with gendered systems of oppression (d'Eaubonne, Hottell, Merchant, Bahaffou, & Gorecki, 2022).

Broadening feminist critiques Plumwood (1993) explains the relation between ecofeminism and other feminist, radical green theories such as deep ecology, showing how the hierarchical, male-dominated, Western world subjugates the feminine and the natural. For example, Plumwood (1993) terms the most common form of denial of women and nature, backgrounding. Women are most strongly backgrounded in their traditional roles and in their roles as mothers; this labour is systematically omitted from account in the economic system, and often provides the environment against which male achievement takes place (Plumwood, 1993).

Importantly, *Ecofeminism* by Mies and Shiva was the first publication to analyse the relationship between capitalist destruction of nature and patriarchal oppression, from a unique North-South perspective (Mies & Shiva, 2014). The authors attest that 'the economic, social and ecological costs of unending growth and profit in industrialised countries have been shifted to colonised countries of the South' (Mies & Shiva, 2014). For example, 'when natural resources are being used by nature to maintain production of renewable resources, and by women for sustenance and livelihood, their diversion to the market economy generates a scarcity condition for ecological stability, creating forms of poverty for women as their work co-operates with nature's processes' (Mies & Shiva, 2014).

Majority of ecofeminism literature dates to the 1980's and 1990's. However, in response to increased attention from environmental activism to climate change through the 2000s, ecofeminism has received renewed scholarly interest. Gaard (2015) focused on case-specific events to illustrate how issues that women traditionally organise around are marginalised by a gender-blind analysis adopted in 21st century climate change policy discussions. During Hurricane Katrina 'rapes were reported by dozens of survivors and mentioned in news stories, but there was no discussion of rape support teams, nor reproductive health services that should have been made available to women victims of rape' (Gaard, 2015). Moreover, 'the likely assaults on gay, lesbian, bisexual, transgender queer persons went unreported' (Gaard, 2015). This new queer, post humanist, ecological and feminist approach is well-positioned to address structural inequalities in climate crises, and to unmask the gendered characteristics of the fast fashion industry.

The reviewed literature lacks understanding of the inequality of environmental impacts emanating from the fast fashion SC upon women garment workers, which is necessary to this research. Thus, Bick et al's (2018) presentation of fashion as a global environmental injustice is instrumental. The authors' posit that, 'low income, low-wage workers, and women, who

work in or live near textile manufacturing facilities bear a disproportionate burden of environmental health hazards' (Bick, Halsey, & Ekenga, The Global Environmental Injustice of Fast Fashion, 2018). This seminal finding frame this study's discussion surrounding environmental impact and gender inequality.

Furthermore, in response to dearth research, ecofeminism will be used as a lens to in investigate environmental impact and gender inequality in the fast fashion SC. As environmental degradation and gender inequality pervade and worsen, there is a continued need for ecofeminist analysis. 'Feminist ecologists can add much to the ongoing debates in the climate change literature, explicating the textured ways that space, place, and lived experiences are intersected by a range of processes and social relations' (Sultana, Gendering Climate Change: Geographical Insights, 2014). This analysis is critically relevant to fast fashion, for it is an industry prevalent in many developing states exacerbating gendered disparities as well as the relative difficulties women face (Eastin, 2018) in the environmental crisis. Thus, ecofeminism will underpin the interpretation of this study's findings, offering a valued theoretical lens that has not previously been applied in fast fashion SCs.

RESEARCH METHODLOGY

A qualitative approach was applied in the research. 'Qualitative research is often associated with an interpretive philosophy' (Denzin & Lincoln, The SAGE Handbook of Qualitative Research, 2018), for it generates non-numerical data that endeavours to 'provide considerable room for an interpretive inquiry' (Guest, MacQueen, & Namey, 2014). Considering this research applies an eco-feminist perspective; these associations are relevant. There is a 'disinclination of those most fully engaged with feminism to use quantitative methods' (Cohen, Hughes, & Lampard, 2011) as they are presumed to support the masculine status quo. It's argued that qualitative methods are more appropriate in the feminist discipline

as researchers *(such as Dubois, 1983)* are committed to liberating women, 'and exposing the institutions and social processes that have caused them to accept the economic dominance of men' (Travers, 2001). Thus, as a central tenet of this research was proposing that gender inequality arose from the fast fashion SC, it was applicable to reject pure objectivity to necessitate an understanding of this social, cultural, and material practice. Furthermore, a qualitative approach is particularly suitable for an abductive approach to theory elaboration (Ketokivi & Choi, 2014); by providing rich descriptions of complex phenomena, it enables patterns to be seen across the dataset (Bansal, Smith, & Vaara, 2018).

Sampling and data

Archival research has become increasingly prevalent through 'the digitalisation of data and the creation of online archives' (Saunders, Lewis, & Thornhill, Research Methods for Business Students., 2015). The breadth and depth of documents published on organisations' websites has provided researchers access to certain types of documentary sources, such as annual reports, companies results, financial highlights, press release and regulatory news (Saunders, Lewis, & Thornhill, Research Methods for Business Students., 2015). In this research, it therefore facilitated a sample of wider variety as compared to those typically available (Heng, Wagner, Barnes, & Guarana, 2018) for survey or experiment research. However, where documents are used as secondary sources, their original purpose had nothing to do with research, it was critical for us to assume a sensitive approach in which they analysed them and the generalisations that were drawn (Hakim, 2000). Furthermore, environmental impacts and gender inequality are complex, sensitive issues when regarded in relation to the fast fashion industry. Adopting an archival research approach gained our access to open and publicly available (Heng, Wagner, Barnes, & Guarana, 2018), suitable documents, without the need to obtain consent by the fast fashion companies under study; removing the concern about

data transparency and facilitating 'future attempts to replicate research findings with the same sample and procedures' (Heng, Wagner, Barnes, & Guarana, 2018).

The population for this study includes companies defined as fast fashion companies and operating in Europe's fast fashion industry. In order to obtain a comparable dataset, the sample was chosen from companies listed on the Fashion Transparency Index 2021[1]. This 'Index ranks 248 of the world's biggest fashion brands and retailers based on their public disclosure of human rights and environmental policies, practices, and impacts, in their operations and in their SCs' (Fashion Revolution, 2021). The Index provides an adequate selection of companies for they are selected on the basis that, 'annual turnover is over USD $400 million' and representative of a 'spread of market segments including high street, luxury, sportswear, accessories, footwear, and denim from across Europe, North America, South America, Asia and Africa' (Fashion Revolution, 2021). Although in view of the heterogeneous sample base some companies were eliminated from the analysis.

The data covers the reports published by the 75 fast fashion companies for the years 2019-2022. The data collection process comprised a manual search of the companies' corporate websites for the; Annual Reports, Corporate Social Responsibility (CSR) Reports, Environmental, Social and Governance (ESG) Reports, Gender Equality Reports, Modern Slavery Reports and Sustainability Reports. Through our search, it was evident that 3 of the fast fashion companies consolidated information into Integrated Reports; 'integrated reporting brings together material information about an organisation's strategy, governance, performance, and prospects in a way that reflects the commercial, social, and environmental context within which it operates' (Deloitte, 2022). In the event that an integrated report was published, it was incorporated in the dataset.

[1] https://www.fashionrevolution.org/about/transparency-index-2021/

Analysis

'Abductive research is neither data-driven nor hypothesis-driven but conducts parallel and equal engagement with empirical data and extant theoretical understanding' (Hurley et al., 2021; Rinehart, 2021; Timmermans & Tavoy, 2012) in the intent to find the most logical solution for phenomena. Thus, we adopted a thematic analysis (TA) approach to critically explore the reports. TA is a qualitative data analysis technique (Thompson, 2022) that was efficiently suitable 'for identifying, analysing, and reporting themes within the data (Braun & Clarke, 2006).

Primarily, reports were analysed qualitatively using the Nvivo software tool enabling the methodical management of the dataset (Thompson, 2022). In the case of abductive thematic analysis, latent themes should always be the outcome as theorisation is central to abductive reasoning. Development of the themes were also informed by the RQ and concepts used in the supporting literature. Thus, they can be referred to as latent themes – 'going beyond the data and using theory to conceptually explain the findings' (Campbell, et al., 2021). Resultantly, the two main themes were: (1) environmental impact (2) gender inequality. Under (1) environmental impact, were the subthemes (a) air pollution, (b) water pollution, (c) land pollution. Under (2) gender inequality, through the abductive approach subthemes (a) economic discrimination, (b) gender-based harassment were emerged through the analysis.

The research design considered reliability and validity (Guba & Lincoln, 1989); (Halldorsson & Aastrup, 2003). With regards to data collection, the use of company reports had 'limitations related to the fact that they are representations of organisational routines and decision-making processes' (Monciardini, Bernaz, & Andhov, 2021). Although it was assumed that the information provided in the reports was correct due to their official capacity, we considered that compliance professionals may use them as tools for 'impression management' (Soloman, Soloman, Joseph, & Norton, 2013) upon the implied fast fashion consumer and

therefore omit critical information. To minimise this issue of 'biased selectivity' (Yin, 1994) we sought to represent the research material comprehensively and fairly, ensuring reliability. It is also common in the use of thematic anaylsis, for researchers to 'verify their accuracy in terms of form and context with constant comparison' (George & Apter, 2004), through a secondary researcher, here the second author. Finally, validation was achieved through our 'demonstrating clarity in terms of thought processes during data analysis and subsequent interpretations' (Sandelowski, 1993). Furthermore, the themes and subthemes that emerged in the data were derived from associations in the established literature, which allowed us to move forwards formulating valid conclusions and an explanatory theory (Miles, Huberman, & Saldana, 2014).

FINDINGS

This section summarises key aspects of the evidence from the analysis, divided into environmental impact; air pollution, water pollution, land pollution; and gender inequality; economic and non-economic discrimination, and gender-based harassment.

Environmental Impact

The majority of reports broadly discussed environmental impacts as a threat to current business operations. We found evidence for air, water, and land pollution from our analysis.

For ***Air Pollution***, CO^2 emissions were the direct result of growth in companies' product sales and consequent business expansion. This was exemplified in reports published by, JD Sports, Nike, Jordan, and Patagonia.

> *'Our growth has contributed to our FY21 emissions footprint increasing by 17% versus the FY15 baseline'. (Nike; parent company) (Jordan)*

CO^2 emissions were directly linked to companies' use of fossil fuels to generate energy used for garment manufacturing. Adidas, Calvin Klein, H&M, Jack & Jones, Reebok, and Vero

Moda, published such statements:

> *'Air pollution comes second with 31% of our total impacts. The main reasons can be found in the energy-intensive process for synthetic material production and burning of fossil fuels for energy production'. (Adidas; parent company) (Reebok)*

For ***Water Pollution,*** Majority of companies referred to the chemically intense nature of fast fashion production, and some acknowledged that facilities within their extended SC 'carry a particular high risk of water contamination where untreated effluent can be discharged into rivers. Further, some companies recognised that the traditional wet processes of denim production could be harmful to the environment. For instance, Jack & Jones and Vero Moda explained:

> *'Traditional methods of denim production can be harmful to the environment due to the significant amounts of water and chemicals involved'.*

Companies (Adidas, Banana Republic, Bosindeng, Fila, Gap, H&M, JD Sports, Levi Strauss & Co, Next, OVS, Reebok) communicated excessive water consumption associated with manufacturing, and the consequent issue of water scarcity that spans across their SCs. For example, Bosindeng captured the interconnected complexity of this issue:

> ***'****The Group's total water consumption was 268,000 cubic meters, with a water intensity of 27.5 cubic meters/million RMB revenue'. 'The Group discharged a total of 132,000 cubic meters of wastewater, and the wastewater discharge intensity was 13.5 cubic meters/million RMB revenue'.*

For ***Land Pollution ,*** in reports published by Lindex, OVS, Primark, Puma, and Wrangler, 'soil infertility and soil degradation' (Dhir, 2021) were stated as land-related impacts resulting from cotton cultivation in their SC. For instance, Lindex, noted:

> *'Cotton cultivation can be highly resource intensive, requiring irrigation, artificial fertilisers, and pesticides – all leading to soil depletion'.*

Despite the chemical intensity of cotton to be known across the sample, it continued to be the most utilised virgin-fibre in fashion products; companies, such as Puma, estimated to use '50,000 tons of cotton' per year. It was also underscored that, cotton, other virgin materials, and synthetic fibres are eventually landfilled or burned; Levi Strauss & Co's and Espirit's reports were significant here:

> *'Cotton is the most used raw material in LS&Co. products. Unfortunately, nearly three-quarters of all virgin materials used in the apparel industry are eventually landfilled or burned'. (Levi Strauss & Co)*

In consequence, to companies' utilisation of landfill and incineration processes land holdings are contaminated, resulting in long-term land pollution.

Gender Inequality

Gender inequality was found to be inherent in companies' garment factories in the global South. We found evidence for two main themes of discrimination and harassment.

Companies (Dressmann, H&M, Hema, Jack & Jones, Jordan, Nike, Speedo, United Colors of Benetton, and Vero Moda) identified that women's vulnerability and risk of discrimination in the workplace was heightened in locations, which remain steeped in patriarchal attitudes.

With regards to ***Discrimination (economic and non-economic),*** Women held occupations in sewing areas, whilst their male counterparts dominated areas, such as cutting, laundry, finishing, and top management positions. For a minority of companies, the issue of women's underrepresentation was a realisable concern, as the gendered implications of discriminatory employment practices manifested into 'sexual harassment and excessive working hours'. For instance, Levi Strauss & Co, suggested:

> *'Women are more likely to work in sewing areas, which tend to offer lower wages than the areas dominated by men, such as cutting, laundry and finishing. Women also have fewer opportunities to move out of their initial jobs, while men are more likely to receive promotions. As a result, women's well-being at work is often lower than that of men'.*

In other cases, there were evidence of pregnancy test as a sign of discrimination for female workers:

> *'Discrimination and marginalization of religious minorities, women, people with disabilities, and sexual minorities is common in the workplace. Pregnancy testing of new recruits was found during one audit in Myanmar in 2016'. (Mammut)*

Gender-Based Harassment (GBH) was recognised as a severe risk facing women garment workers across the fast fashion industry as a whole. For instance, Kathmandu stated:

> *'Women's vulnerability within the globalisation of supply chains; women remain at particular risk of human rights abuses. (…) Women make up approximately 80% of the world's garment workers and are exposed to high levels of violence, including sexual harassment and abuse'.*

Any form of GBH had to be mandatorily disclosed in the reports. Instances of verbal

gender-based harassment were common and were revealed in Banana Republic, Gap, Jordan, Mammut, Nike, Primark, The North Face, and Under Armour's SCs. Specifically, Mammut found:

> *'Harassment of women is a serious concern. The auditors raised concerns about supervisors shouting at workers' (…). 'Discrimination and marginalization of religious minorities, women, people with disabilities, and sexual minorities is common in the workplace'.*

Environmental Impacts and Gender Inequalities

We found less evidence of the relation between environmental impacts and gender inequalities. However, some reports have reflected on this curial issue. Banana Republic and Gap highlighted that access to water, sanitation and hygiene services are major challenges for women working in key sourcing countries; thus, they bear a disproportionate burden when it comes to water stress. In practice, water-related environmental impacts are felt acutely along gender lines, serving as an added stressor that aggravates women's vulnerability:

> *'The majority of people who make our clothes are women, and access to and the affordability of water, sanitation, and hygiene (WASH) services is a major challenge for many women in our key sourcing countries. As women in those communities are largely responsible for household duties such as cooking, cleaning, and collecting water, they bear a disproportionate burden when it comes to water stress'. (Gap; parent company) (Banana Republic)*

DISCUSSION AND CONCLUSION

The paper identified that environmental impact and gender inequality characterise the

fast fashion SC. Hence, answering the central RQ of **How *do environmental impact and gender inequality characterise fast fashion supply chains, reinforcing one another both ideologically and materially?***

Environmental impact was found to disseminate along three strains of pollution: air, water, and land. Significantly, CO^2 and GHG emissions were found to be coupled with fast fashion companies' growth. Further, the findings showed companies' withdraw municipal water resources for cotton cultivation in water-scarce regions of the global South (e.g., Bangladesh). Such proves important to advance contextual understanding in water footprint assessments, which have become a rapidly evolving research field (Aivazidou, Tsolakis, Lakovouc, & Vlachosa, 2016). Additionally, in highlighting that, water and land pollution (e.g., soil infertility, degradation) emanated from untreated textile effluents discharged into rivers; the findings contributed to existing SCM research (Bailey, Basu, & Sharma, 2022); (Chequer, et al., 2013) influenced by the scientific field, whilst also adding to understanding in the scholarly chain of fashion manufacturing research (Anguelov, 2016); which originally identified the dyeing and washing process of manufacturing as an area of high environmental risk. Importantly, the research contributed to the growing literary conclusion that manufacturing in the fast fashion SC is concomitant with environmental devastation.

With regards to gender-inequality, two themes recurred in the findings, economic and non-economic discriminations, and GBH. As described, the findings revealed that companies' failed to provide women garment workers a living wage, thus they cited low wages as evidence of exploitation by employers (Nash & Fernandez-Kelly, 1983); (Frobel, Heinrichs, & Kreye, 1979); confirming Elson and Pearson's (1981) 'impersonal cash nexus' theory, which originally indicated that Western forms of capitalism and associated profit are prioritised over people's wellbeing in the global South. Negative impacts on women's wages were also sustained by gender disparity in factory-level managerial roles. Critically, this finding causes

Lim's (1978) existing inferiorization theory, which was generated in the era of world market factories, to be revaluated in a new light, the era of fast fashion.

Most significantly, we found gender inequality to be a key factor in shaping forms of exploitation (Crane, Matten, Glozer, & Spence, 2019). Patriarchal gendered stereotypes in Bangladesh, Vietnam, and Indonesia, made women garment workers inside companies' factories, vulnerable to GBH. Further as discussed, companies' SCM decisions, reverberated pressures down the SC, thus, heightening the existent risk of GBH. The research moves beyond to fill the withstanding knowledge-gap; showing that products of Western capitalism and globalisation, such as fast fashion, create 'enabling environments' (Siddiqi, 2003) for GBH.

Environmental Impacts

Several companies reported an upward trajectory of their CO^2 and GHG emissions, publishing quantitative information on their carbon footprint. For example, in the calendar year 2021, the boohoo group's *(boohoo, PrettyLittleThing, The Warehouse)* market-based carbon footprint increased from 791,252 tCO^2 to 1,018,964 tCO^2 (29%) since the previous reporting year. However, a significant proportion of companies were only extending their reporting attention towards Scope 1 and Scope 2 emissions; 'which arise respectively from a company's in-house operations and the energy it purchases' (Bauck, 2021). Scope 3 emissions, produced from the rest of the SC including 'those from cut-and-sew factories, dye houses, fabric mills and farms' (Bauck, 2021); were not measured, despite recognition that *'*70% of a products' footprint comes from the production phase' *(Next).* 'Ignoring Scope 3 can result in deceptively low emission totals' (Bauck, 2021). Thus, the carbon-intense nature of manufacturing has largely been omitted from reports, providing we limited evidence of the relationship between manufacturing and air pollution, which previous findings have proved.

In wider sustainability literature air pollution is an unavoidable externality of modern-day capitalist business expansion. In this context the findings mirror such; JD Sports, Nike,

Jordan and Patagonia, quoted that, CO^2 emissions are intrinsically coupled with growth in their production capacity. This adds support to Anguelov's (2016) study, which proposed that growth in 'fibre production and supply would add a large global carbon footprint of high direct fuel costs and indirect pollution impact'. This impact is possibly intensified due to the heavily dominant use of fossil fuel energy (Sandin, Roos, Spak, Zamani, & Peters, 2019). As mentioned in Section 3.1.1 many of the reports underlined this; Adidas and Reebok illustrated that the 'energy-intensive process for synthetic material production and burning of fossil fuels for energy production' in China, generated an emission hotspot within their SC. According to Niinimaki et al (2020), China's dependency on coal-based energy for textile manufacturing, results in 'a 40% larger carbon footprint than textiles made in Turkey or Europe' (Niinimäki, et al., 2020). From a theoretical ecofeminism position, the economic, social, and ecological costs of unending growth have been shifted to colonised countries of the South (Mies & Shiva, 2014). As asserted by Mies and Shiva (2014), when natural resources being used by nature to maintain production of renewable resources, and by women for sustenance and livelihood, their diversion to the SC generates a scarcity condition for ecological stability. Thus, the fast fashion SC is an archetype of 'patriarchal oppression and the capitalist destruction of nature' (Mies & Shiva, 2014). In effect the proposition was generated:

P1. Fast fashion's growth and subsequent inability to curb fossil fuel use amplifies CO^2 and GHG emissions.

The analysis found evidence of companies, such as Espirit, failing to 'accurately extract hazardous waste data such as the amount of sludge generated during production of goods'. In failing to be completely transparent, these companies remained blind to the substantive risk of wastewater pollution in their manufacturing operations. However, some like Dressmann, admitted to issues of non-compliance related to wastewater treatment systems in manufacturing

facilities. This finding supports research on fast fashion and water quality; mirroring a study from Chequer et al (2013), which evidenced how 'fashion industries produce coloured wastewater with a high organic load, adding to the environmental pollution of surface water'.

Further, we found evidence of companies' denim production carrying high risk of water contamination and associated deteriorating water quality, due to the 'significant amounts of chemicals involved' *(Jack & Jones, Vero Moda).* According to scientifically influenced literature, companies that continue to emit wastewater face a chemical dilemma. Bailey et al (2022) predicted, 'textile effluents to have higher pH than typically allowed, as well as total suspended solids, chemical oxygen demand and turbidity levels' (Bailey, Basu, & Sharma, 2022). Due to the nature of the reports, evidence remained scant regarding the precise chemical composition of companies' wastewater impacts. However, it did emerge that companies' 'extended SC, including operations such as laundries, mills, dye houses and tanneries, carried a high risk of chemically intense water contamination where untreated effluent was discharged into rivers used by local communities' *(Next).* Previous research suggests, 'ingestion of water contaminated with textile dyes exhibited serious damage to the health of humans' (Chequer, et al., 2013). From a theoretical perspective, as women's livelihoods co-operate with nature's processes (Mies & Shiva, 2014), they are predisposed to drink contaminated water, increasing their risk of contracting water-related diseases (Rossini, 2019). The findings demonstrate that water pollution and resultant gender inequality are inherent to the fast fashion SC; proving that the phenomena reinforce one-another, ideologically and materially.

Despite the need for further in- depth investigations, we found evidence of the risk of water scarcity in the fast fashion SC; whereby companies *(Banana Republic, Decathlon, Gap, Jack & Jones, Jordan, Lindex, Lululemon, Next, Nike, OVS, The North Face, Vero Moda*) consumption of freshwater was excessive, for cotton-related processes. What emerged from the data was companies' continuing to withdraw municipal water resources for cotton

cultivation in water scarce regions of the global South, such as Bangladesh. ‘So even though the cotton plants get the water they need, the people living there may not’ *(Lindex).* This finding is coherent with Chapagain et al (2006), who noted how ‘impacts, related to evaporation of infiltrated rainwater and withdrawal of ground- or surface water for cotton growth and irrigation, are typically cross border’, pressing in developing nations of India and Uzbekistan’ (Chapagain, Hoekstra, & Savenije, 2006). In light of this the following proposition was proposed:

P2. Fast fashion affects water pollution and scarcity through toxic wastewater from unsustainable denim production and cotton cultivation.

As wastewater contains chemically intensive textile dyes it was found to contribute to land pollution. What emerged was that the use and subsequent discharge of hazardous chemicals within companies’ *(Banana Republic, Gap, OVS, Wrangler)* SCs damaged soil wealth. As in previous studies (e.g., Dey and Islam, 2015), textile dyestuffs are major sources of heavy metals absorbed in river’s soil and sediments; due to the dyestuffs complex chemical structures and low degradability function, during Bangladesh’s dry season water evaporation exposes them to the environment (Dey & Islam, 2015). The findings also provided evidence of SC activities generating land pollution. Excessive groundwater extraction by companies *(Lindex, OVS, Puma, Primark, Wrangler) for* cotton cultivation directly reduced biodiversity and soil quality. These findings are in accordance with Hossain et al (2018) who suggested; ‘in the Bangladeshi textile dyeing industries excessive groundwater extraction increased the salinity of groundwater and soil, affecting aquatic ecosystems’ (Hossain, Sarker, & Khan, 2018) and critically ‘reducing crop productivity’ (Hossain, Sarker, & Khan, 2018).

Additionally, as predicted land pollution emanated from companies’ depositing textile waste in landfills in supplier locations of the global South. Some reports cited the occurrence

of large amounts of waste to landfill as a direct result of fashion-consumption practices *(Wrangler).* This result parallels Bhardwaj and Fairhurst's (2010) earlier findings; 'fashion retailers encourage consumers to visit their stores more frequently with the idea of 'Here Today, Gone Tomorrow' (Bhardwaj & Fairhurst, 2010); a stimulant which motivates consumers to buy multiples of garments that are lower quality and then throw old merchandise away as quickly as they bring in new ones (Bhardwaj & Fairhurst, 2010). Thus, Bhardwaj and Fairhurst's (2010) concept of 'throwaway fashion' was believed to be a mutually reinforcing factor to companies' scenario of waste in the global South. What positively surprised us was evidence highlighting the chemical intensity of cotton. Cotton is largely non-biodegradable and achieves its function through the addition of synthetic chemicals (Young, 2021). Therefore, companies' continued use of cotton contributed to the 'addition of textile waste in landfills, whilst, creating instances of chemical leaching' (Dhir, 2021). In light of this the following proposition was proposed:

P3. Fast fashion affects land pollution through wastewater expulsion and groundwater extraction derived from textile dyeing industries. More, it is salient with overproduction through excess use of landfill.

Gender Inequality

Previous research argued that Bangladesh's RMG sector is built upon the bedrock of inexpensive female labour' (Khanna, 2011). Supporting evidence emerged, of companies choosing to outsource production to 'offshore places with low labour costs' (Tyler, Heeley, & Bhamra, 2006) in pursuit of economies of scale. Consequently, companies *(ASOS; Cotton On; Dressmann; Jack & Jones; Lululemon; The North Face; Topshop; Topman; Vero Moda)* cited that minimum wage violations remained a risk for women 'in all countries they source from, in particular in China, Bangladesh and India' *(Dressmann).* From the perspective of Elson and

Pearson's (1981) impersonal cash nexus theory, this identification proves that women are implicated in economic exploitation, and thus, 'the role of gender in the configuration of international business arrangements should not be underestimated' (Nash & Fernandez-Kelly, 1983).

The data also revealed that the employment of 'poor purchasing practices have been linked to negative social impacts in factories through increasing time pressures' *(New Look).* In the case that a company *(Dressmann, C&A, Kathmandu, New Look)* made last-minute changes in design, production, or delivery timings, it pressurised suppliers to meet intangible production targets, leading to 'excessive overtime, failure to pay wages, unauthorised subcontracting, and increased use of temporary labour' *(New Look);* to which, women garment workers bore the cost. This finding provides an additional insight into the economic-gender nexus and reconfirms Nash and Fernandez-Kelly's (1983) proposition that, low wages are evidence of exploitation by employers. In addition to economic discrimination, the research indicated that, women garment workers faced job insecurity. Hence, the following proposition was presented:

P4. Fast fashion brings about discrimination in both forms of economic and no-economic for female workers as a result of its poor purchasing practices.

GBH was found to be an inherent risk for women garment workers in companies' SCs. The reports cited information obtained from monitoring and auditing activities, which had detected acute violations committed by suppliers inside factories in Bangladesh, Vietnam, and Indonesia. Specifically, companies *(Banana Republic, Dressmann, Gap, Kathmandu, Mango, Primark)* found women garment workers routinely 'exposed to high levels of violence, including sexual harassment and abuse' *(Kathmandu).* This may be due to a hierarchy of power; the majority of leadership roles in manufacturing facilities are held by men, thus they

configure the dominant group. As theory suggests (e.g., DeMarrais et al, 1996), male-dominating groups are likely to instil power strategies that reflect their patriarchal worldview, 'subjugating the feminine' (DeMarrais, Castillo, & Earle, 1996).

In general, cases of 'verbal harassment by male production floor management' *(Primark)* were found in greater prominence; for instance, The North Face reported '201 allegations of discrimination / harassment' in their SC in 2019. Based on the findings of similar studies (Siddiqi, 2003); (Chang, 2020), a plausible explanation is that harassment is a symptom of underlying gender inequities. As Siddiqi (2003) noted, verbal abuses are part of the traditional methods of labour discipline found in Bangladesh, creating a hostile, intimidating, and sexually charged environment (Siddiqi, 2003). From a theoretical perspective, women are most strongly backgrounded in their traditional roles (Plumwood, 1993) within the 'private sphere' (Patel, et al., 2020). In the context of fast fashion, this behaviour translates into methods of verbal discipline on the factory floor, employed to reinforce women's marginalisation, and preserve their backgrounding. Further, the recent literary contribution of Vijeyarasa and Liu (2021) argued, 'the fashion sector's informal factory conditions, characterised by overcrowded rental areas, poor hygiene and sanitation, and poor lighting', heightened women's risk of sexual violence'. The results did not reflect this, instead, it was demonstrated that, deadlines and production targets set by the companies prompted supervisors to shout at workers *(Mammut).* Thus, the following proposition was generated:

P5. Gender-based harassment (verbal and non-verbal) is inherent to fast fashion SCs due to male-dominate power hierarchy and cultural gender constructions which subordinate women into inferior positions.

Environmental Impacts and Gender Inequalities

Contrary to conventional theory, which is limited in its discussion of women-centric dimensions of climate change (Patel, et al., 2020), the findings highlight environmental impact

as a gender-sensitive issue. For instance, Banana Republic and Gap highlighted that access to water, sanitation and hygiene services are major challenges for women working in key sourcing countries; thus, they bear a disproportionate burden when it comes to water stress. In practice, water-related environmental impacts are felt acutely along gender lines, serving as an added stressor that aggravates women's vulnerability. This finding lends theoretical support to burgeoning research on the 'nexus of climate change and gender equality in developing states' (Eastin, 2018).

Existing research provides limited insights about the relationship between fast fashion, environment and female workers. The findings identified that; women employed by the garment factories were more likely to live close to their workplace, and thus, were vulnerable to local watersheds risks (e.g., drought) associated with Banana Republic and Gap's fabric mills use of water. Further, the findings averred that impacts were localised to river basins surrounding garment factories, where the pollution is constituted heavily by garment workers. As garment workers are predominantly women, they are impacted severely due to their private responsibilities relying on nature (Yadav & Lal, 2018). This extends previous literature that has considered land pollution from an environmental perspective only and contributes to the ecofeminism standpoint. On the other hand, Kher et al (2015) illustrated that when human-induced climatic changes impact water quantity and quality, women must travel greater distances and spend greater amounts of time collecting water; disarming their ability to engage in income-generating activities (Sultana, Gendering Climate Change: Geographical Insights, 2014) and exacerbating their risk to sexual harassment (Abid, Abid, Zafar, & Mehmood, 2018).

Specifically, in Mammut's SC, the pregnancy testing of new recruits was found during one audit in Myanmar in 2016. This discriminatory practice underlined the precarious terms of employment women are subjected to, whilst highlighting how, employer's preference for

hiring women stems from a preference for a compliant and dispensable workforce (Kabeer, Reversed Realities: Gender Hierarchies in Development Thought, 1994).

P6. Environmental impact and gender inequality are inherent to the fast fashion supply chains, reinforcing one-another, ideologically and materially.

Conceptual Contribution

The study contributes to the sustainability literature by investigating how aspects of social sustainability (gender inequality) and environmental sustainability (environmental impact) are related to each other in the fast fashion supply chains. Ultimately the study contributed to the ecofeminism *theory*. Mirroring previous work of d'Eaubonne, et al. (2022) and Eastin (2018) the findings had theoretical implications for feminist understanding; fast fashion can be understood as a 'patriarchal social and legal institution prevalent in many developing states exacerbating both gendered disparities in vulnerability as well as the relative difficulties women face in adapting to climate change'. In demonstrating this relationship, the research unearths a critical gender perspective on climate change in the context of the fast fashion SC; closing the literature gap regarding women-centric dimensions of environmental issues.

Managerial Contribution

This paper highlights to managerial bodies their distinct lack of and need for 'intersectional sustainability practices' (Gloor, Mestre, Post, & Ruigrok, 2022) in the SC. 'Intersectional sustainability' (Gloor, Mestre, Post, & Ruigrok, 2022) could be achieved by 'narrowing the gender data gap in reports' (Gloor, Mestre, Post, & Ruigrok, 2022). This refers to managers working with suppliers who flagrantly violate standards to include data on gender in areas that might seem gender neutral. Such as when analysing the impact of policies that mandate long work hours, because deeply embedded gender norms and structures can

contribute to gender inequalities in ways that can be hard to predict or detect (Gloor, Mestre, Post, & Ruigrok, 2022). Long-term, companies' capabilities to detect, report and remediate violations such as, GBH should enhance, due to increased SC knowledge. Managerial bodies must 'find new ways of being sustainable along the chain' (Turker & Altuntas, 2014), either by 'introducing more stringent procurement policies' (Lotfi, Walker, & Rendon-Sanchez, 2021) engaging fashion consumers in the 'circular economy' (Gazzola, Pavione, Pezzetti, & Grechi, 2020)

Limitations and Future Research

The study was reliant on company reports' (Turker & Altuntas, 2014). Thus, social desirability bias was of concern, due to 'the statutory focus on publishing statements, rather than their content, generating a space for companies to transfer and limit their responsibility' (Kinderman, 2013). For example, we had to acknowledge that GBH, might have been purposely omitted from the reports in order for companies to construct their own narrative (Siegle, 2013) and preserve public reputation. Given these challenges, future case study research should be conducted, to investigate the phenomena of environmental impact and gender inequality in a fast fashion company's SC. This strategy would offer the opportunity for in-depth interviews with women garment workers. Contributing 'empirical evidence' (Goh, 2012) regarding sensitive topics (e.g., GBH); which, are currently limited by a lack of researcher 'focus on sexual harassment and sexual violence against women as workers in SCs' Lotfi et al (2021). Thus, helping to 'identify what is happening and why, and progress understanding of the implications for action, in the SCM field' (Saunders, Lewis, & Thornhill, Research Methods for Business Students., 2015).

Further, the study only included European based companies in its sample. However, the sample did include some of the biggest players in the industry and therefore the findings do provide insight into the key recurrent issues that are present in the industry's overlapping

supply chains. It does therefore raise the concern of Eurocentrism. The majority of the reports were written by a European CEO and therefore possibly espoused a biased European narrative. Thus, their ability to accurately articulate the socio-cultural experience of women garment workers in the global South is limited. In consideration, future research should include all companies listed on the Fast Fashion Transparency Index 2021, widening the sample to American, Asian, and African fast fashion companies.

Finally, the findings can only be understood within the context of the ecofeminism perspective. Therefore, our propositions should be investigated through an environmental ethics lens to explore gender relations and domination in fast fashion companies' approach to environmental protection. Or through the stakeholder theory to explore the dynamics between actors in the SC. Both would be welcome avenues for future research.

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