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**Addressing Modern Slavery in Supply Chains: An  
Awareness-Motivation-Capability Perspective**

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# Addressing Modern Slavery in Supply Chains: An Awareness-Motivation-Capability Perspective

## Abstract

**Purpose:** There is still significant variation in firms' efforts to address modern slavery issues in supply chains despite the importance of this grand challenge. Our research adopts the Awareness-Motivation-Capability (AMC) framework to investigate AMC-related factors that help to explain this variation.

**Design/methodology/approach:** We hypothesize how AMC-related factors, including media coverage of modern slavery issues, slavery risks in supply chains, and corporate sustainability performance, are related to firms' efforts to address modern slavery in supply chains. The proposed hypotheses are tested based on 201 UK firms' modern slavery statements and additional secondary data collected from Factiva, Factset Revere, The Global Slavery Index, Worldscope, and Sustainalytics.

**Findings:** Consistent with the AMC perspective, our test results show that firms put more effort into addressing supply chain modern slavery issues when there is greater media coverage of these issues, when firms source from countries with higher slavery risks, and when firms have better corporate sustainability performance. Our additional analysis further suggests that firms' financial performance is not related to their efforts to address modern slavery issues.

**Originality:** This is the first study adopting the AMC framework to investigate firms' efforts to address modern slavery in supply chains. This investigation provides important implications for researchers studying firm behaviors related to modern slavery issues and for policymakers designing policies that enable firms to address these issues, in view of their awareness, motivation, and capability.

**Keywords:** Modern slavery, social sustainability, AMC framework, secondary data analysis.

**Paper type:** Research paper.

## 1. Introduction

The COVID-19 pandemic has increased the vulnerability of workers to modern slavery, an umbrella term used to refer to “the recruitment, movement, harboring or receiving of children, women or men through the use of force, coercion, abuse of vulnerability, deception or other means for the purpose of exploitation” (Such et al., 2020, p. 217). In particular, enforced lockdowns across the globe, facility closures and massive layoffs have put workers at greater risk of exploitation, e.g. in terms of overtime, being underpaid, forced labor and other forms of modern slavery (Anti-Slavery International, 2020). Even before the pandemic, there had been various high-profile examples of modern slavery events in global supply chains, including those related to the Rana Plaza building collapse and the Tazreen factory fire in Bangladesh, and forced labor in, for example, the fishing industry in Thailand and cocoa farming in West Africa (Crane, 2013; Gold et al., 2015; Jacobs and Singhal, 2017; Stevenson and Cole, 2018). The consequences of modern slavery go far beyond reputational damage and financial penalties for focal firms (Butler, 2020; Jacobs and Singhal, 2017) – human lives are placed in jeopardy. Thus, government agencies, non-governmental organizations (NGOs) and the public are more concerned than ever about what firms are doing to address modern slavery in supply chains.

Despite the importance of addressing modern slavery in supply chains, there is still significant variation in firm efforts to address these issues. For instance, an analysis of FTSE 100 companies’ modern slavery statements conducted by the Business & Human Rights Resource Centre (BHRRC) revealed that only a small number of FTSE 100 companies reported and demonstrated rigorous actions to address modern slavery, while “the rest produced weak statements, indicating little action” (BHRRC, 2017, p. 1). Existing modern slavery-related legislation, such as the UK Modern Slavery Act (MSA), has also been criticized by practitioners for its inability to force firms to address modern slavery because it takes a soft legislative approach that encourages self-regulation rather than imposing sanctions (Ionova, 2018; Cousins et al., 2020). Although the extant literature has well documented the variation in firms’ practices and efforts to address modern slavery, little is known about why such variation occurs (Monciardini et al., 2021). This prompts our research to investigate the following question:

*RQ. What factors explain the variation in firms’ efforts to address modern slavery in supply chains?*

We leverage the Awareness-Motivation-Capability (AMC) framework (Chen, 1996) to investigate AMC-related factors that help explain the variation. The AMC framework fits our research context as it emphasizes that a firm responds to a competitive action when it is aware

of the action, motivated to respond, and capable of responding (Chen et al., 2007). In context, this suggests that the extent to which a firm addresses modern slavery issues in its supply chain may depend on whether it is aware of the importance of addressing such issues but also on whether it has the motivation and capability to address them. Considering the three dimensions of awareness, motivation, and capability also enables us to provide a more comprehensive explanation of firms' efforts to address modern slavery in supply chains.

Following the AMC framework and informed by the modern slavery literature, we theorize that firms are more aware of the importance of addressing supply chain slavery issues when there is greater media coverage of these issues. Moreover, firms should have a higher motivation and capabilities to address these issues when they source from countries with higher slavery risks and have better performance in corporate sustainability, respectively. Consequently, we hypothesize that modern slavery media coverage, supply chain slavery risk, and corporate sustainability performance are positively related to firms' efforts to address modern slavery in supply chains.

Empirically, we take advantage of the modern slavery statements issued by UK firms under the UK MSA to quantify their efforts to address modern slavery in supply chains. We supplement this with secondary data on the same firms from multiple additional sources, including Factiva, FactSet Revere, The Global Slavery Index, Worldscope, and Sustainalytics, to measure other explanatory variables such as modern slavery media coverage, supply chain slavery risk, and corporate sustainability performance. Our regression analysis based on these secondary data provides empirical support for the proposed hypotheses. Our findings are robust to alternative variable measurements and to endogeneity concerns. Moreover, our additional analysis further suggests that firms' financial performance is not related to their efforts to address the slavery issues.

Our research represents the first study adopting the AMC framework to investigate firm efforts to address modern slavery in supply chains. This investigation advances our understanding of firms' modern slavery-related behaviors and contributes to the literature that has documented the variation in firm efforts to address modern slavery but "struggle[d] to explain it" (Monciardini et al., 2021, p. 290). Our additional analysis reveals the heterogeneity of the relationships between different types of firm performance and firm efforts to address modern slavery, inspiring researchers to further examine the explanatory powers of other AMC-related factors. Moreover, our research provides important implications for policymakers, i.e. to design policies that enable firms to address modern slavery in view of their awareness, motivation, and capability.



## 2. Literature Review and Theoretical Background

### 2.1 Modern Slavery in Supply Chains

Researchers in supply chain management (SCM) have paid much attention to the management of social issues such as health and safety, human rights, gender diversity, and minority development in supply chains (Awaysheh and Klassen, 2010; Yawar and Seuring, 2017; Mani et al., 2020). For instance, Awaysheh and Klassen (2010) investigated how a firm's supply chain structure is related to its adoption of supplier socially responsible practices, while Mani et al. (2020) revealed a positive relationship between these socially responsible practices and supply chain performance. Meanwhile, Yawar and Seuring (2017) developed a conceptual framework that explains both the stakeholder-related drivers and performance outcomes of firms' responsible supply chain strategies, ranging from communication and compliance to supplier development.

More recently, and especially after the introduction of the UK MSA, SCM researchers have started to shift their focus to modern slavery, a specific type of social issue in supply chains (Gold et al., 2015; New, 2015). Different from traditional corporate social responsibility (CSR), which is understood as "doing good" or "doing more than what is required by law" (Arya and Zhang, 2009, p. 1093), modern slavery, such as forced labor, human trafficking, and other forms of worker exploitation, is "illegal, often hidden, and involves a range of labor market intermediaries" (Caruana et al., 2021, p. 258) and it is viewed as "one of the most acute abuses of human rights in contemporary business practice" (Crane, 2013, p. 49). Such a distinction makes it challenging for researchers to conduct a direct investigation of modern slavery issues in supply chains due to personal safety concerns and the difficulty of obtaining reliable primary data (Gold et al., 2015; New, 2015; Meehan and Pinnington, 2021). This has resulted in what Caruana et al. (2021, p. 251) called the "sad and sorry state of a non-field", i.e. modern slavery research in business and management.

Nevertheless, the enforcement of relevant modern slavery regulations such as the UK MSA provides a rare opportunity for researchers to examine how firms respond (or how they prepare to respond) to regulatory disclosure requirements (Benstead et al., 2018; Meehan and Pinnington, 2021; Rogerson et al., 2020). For instance, Benstead et al. (2018) found that horizontal collaboration helps retailers gain a competitive advantage in responding to modern slavery legislation, while Meehan and Pinnington (2021) identified three types of ambiguity techniques, i.e. defensive reassurance, transfer responsibility and scope reduction, that have been adopted by UK Government suppliers in response to the UK MSA's disclosure

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3 requirements. In addition to organizational responses, recent studies have also explored how  
4 other stakeholder groups, such as investors and consumers, react to the introduction of modern  
5 slavery legislation (Cousins et al., 2020; Carrington et al., 2021).  
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8 Moving beyond disclosure requirements, some researchers have further examined firms'  
9 practices and strategies to address modern slavery in supply chains (Benstead et al., 2020;  
10 Stevenson and Cole, 2018; Flynn and Walker, 2021). For instance, Benstead et al. (2020)  
11 suggested firms adopt a targeted audit approach for detecting supply chain slavery issues and  
12 to partner with local NGOs to remediate these issues. Flynn and Walker (2021) found that  
13 public firms implement various strategies, such as renewing firm policies, strengthening  
14 contract terms and establishing working groups, to reduce modern slavery risks. Although  
15 previous studies have demonstrated the heterogeneity of firm responses to disclosure  
16 requirements and the variation in firm strategies to address modern slavery in supply chains,  
17 little is known about why such heterogeneity and variation occurs. Indeed, as Monciardini et  
18 al. (2021, p. 290) observed, existing studies "only describe this phenomenon [i.e. a variety of  
19 organizational responses and strategies] but struggle to explain it". Our research aims to  
20 address this important knowledge gap by adopting the AMC framework to investigate AMC-  
21 related factors that help explain why firms put different efforts into addressing modern slavery  
22 in supply chains.  
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## 35 **2.2 The Awareness-Motivation-Capability (AMC) Framework**

36 The AMC framework was originally developed by Chen (1996) in the context of competitive  
37 dynamics to explain the conditions underpinning inter-firm competition. Built upon the  
38 concepts of social cognition and organizational change, the framework proposes three  
39 behavioral elements that influence the decision-making of a firm: awareness, motivation and  
40 capability (Chen et al., 2007). It explains that a focal firm's competitive action is driven by its  
41 awareness of threats or opportunities thereby instilling the motivation to react as well as the  
42 capability to go on the offensive and 'attack' competitors (Chen, 1996; Chen et al., 2007). Since  
43 its formulation around 25 years ago (Chen, 1996), the AMC framework has been used by  
44 researchers in various business fields, such as strategic management and international business  
45 (Chen et al., 2007; Yu and Cannella, 2007; Haleblian et al., 2012) and, more recently, in the  
46 field of operations management (Udenio et al., 2018; Craighead et al., 2020) to make sense of  
47 firms' practices and strategies. For instance, Udenio et al. (2018) applied the AMC framework  
48 to study firms' awareness, motivation, and capabilities that make them more likely to adopt  
49 inventory agility practices in the presence of demand shocks, which in turn leads them to  
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3 achieve better performance. The AMC framework has also been employed to study CSR in  
4 general and sustainable SCM in particular (Li et al., 2020; Brockhaus et al., 2019). For  
5 example, Brockhaus et al. (2019) used the AMC framework to propose a competitive dynamics  
6 model that explains how AMC-related factors drive a firm to adopt a proactive supplier code  
7 of conduct, in view of its rival's supplier code of conduct.  
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12 In line with these studies, we see substantial merit in applying the AMC framework to  
13 understand firms' practices for addressing modern slavery in supply chains. First, viewing  
14 modern slavery in supply chains as a threat to firms, the AMC framework enables us to make  
15 sense of the firms' efforts to address such a threat in terms of whether they are aware of the  
16 importance of addressing the threat as well as the motivations and capabilities to address it.  
17 Moreover, consideration of the three dimensions of awareness, motivation, and capability  
18 allows us to provide a more comprehensive explanation of the variation in firm efforts and to  
19 lay a solid theoretical foundation for future modern slavery research. Finally, the adoption of  
20 the AMC framework provides a direct response to calls for studying firm motivations and  
21 capabilities in the modern slavery context (Gold et al., 2015; Crane, 2013; Caruana et al., 2021).  
22 For example, Gold et al. (2015, p. 491) suggested that researchers can explore "which resources  
23 and capabilities need to be developed within individual companies" for addressing modern  
24 slavery in supply chains.  
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29 However, although the AMC framework enables a comprehensive theoretical explanation  
30 of firm behaviors, it is difficult to measure awareness, motivation, and capability at the firm  
31 level, especially for research that is based on secondary data. Researchers thus need to make  
32 use of other relevant, measurable variables to indicate or signal a firm's awareness, motivation,  
33 and capability. This also suggests that these variables are context-specific and vary across  
34 studies. For example, Chen et al. (2007) used the relative scale of a firm's competitors to  
35 indicate the firm's awareness of the competition, whereas Udenio et al. (2018) employed a  
36 firm's market orientation to signal its awareness of demand shocks. Similarly, regarding the  
37 capability dimension, Udenio et al. (2018) chose a firm's availability of resources, such as  
38 planners and IT systems, in their research context of inventory management, but Haleblan et  
39 al. (2012) relied on a firm's financial performance to study its participation in an acquisition  
40 wave. Despite such variation across studies, a general principle, as Yu and Cannella (2007, p.  
41 667) argued, is that the variables to be included in an AMC study have "to impact one or more  
42 dimensions of the framework." This suggests that researchers also need to provide additional  
43 theoretical explanations for why these variables are related to the specific AMC dimensions.  
44 For example, Chen et al. (2007) explained that a firm should pay more attention to its  
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3 competitors with relatively larger scales or sizes, increasing its awareness of the competition  
4 from these competitors, while Haleblian et al. (2012) theorized that it should be easier for a  
5 firm with higher financial performance to raise the required resources to finance acquisitions,  
6 equipping it with a better capability to participate in an acquisition wave.  
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10 Following the principle suggested by Yu and Cannella (2007) and taking account of the  
11 modern slavery context, our research considers AMC-related variables in terms of media  
12 coverage of modern slavery issues, slavery risks in supply chains, and firm performance in  
13 corporate sustainability. This is because we expect that firms should be more aware of the  
14 importance of addressing supply chain slavery issues when there is greater media coverage of  
15 these issues. Moreover, firms sourcing from countries with higher slavery risks should be more  
16 motivated to address the issues, while firms with better performance in corporate sustainability  
17 should be more capable of addressing them. We formulate these arguments based on the  
18 theoretical lenses of agenda-setting theory, expectancy-valence model, and the resource-based  
19 view. We provide a more detailed discussion of these arguments in the following section on  
20 the development of our hypotheses.  
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### 31 **3. Hypothesis Development**

#### 32 **3.1 Modern Slavery Media Coverage**

33 We define modern slavery media coverage as the extent to which modern slavery issues are  
34 reported by news media. As we view media coverage as an indication of a focal firm's  
35 awareness, we include media coverage of various modern slavery issues without limiting this  
36 to those occurring in the focal firm's supply chain. This is because it may be more likely for a  
37 focal firm to become aware of the specific modern slavery issues occurring in its supply chain  
38 via other means (e.g. supplier audits) rather than via news media (Benstead et al., 2020),  
39 making it more difficult to support the awareness view if we just focus on the media coverage  
40 of this focal firm's modern slavery issues.  
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48 Media coverage has long been an important research topic in the mass communication  
49 literature and well-studied through the lens of agenda-setting theory (Luo et al., 2019). Agenda-  
50 setting theory suggests that when certain issues are covered by news media more frequently  
51 and prominently, these issues will be perceived by the public as more important than other  
52 issues (McCombs and Shaw, 1972). As Coleman et al. (2009, p. 147) put it, "the more coverage  
53 an issue receives, the more important it is to people." This suggests that issue importance or  
54 salience can be transferred from the media agenda to the public agenda, which is regarded as  
55 the media's public agenda-setting effect (Luo et al., 2019). Previous studies have provided  
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3 consistent, strong empirical support for such a public agenda-setting effect. For example,  
4 McCombs and Shaw's (1972) seminal study of the 1968 US presidential election found "a  
5 nearly perfect correlation between the media's agenda of issues and the public's agenda of  
6 issues" (Coleman et al., 2009, p. 148). A recent meta-analysis conducted by Luo et al. (2019)  
7 also showed a large average effect size across different agenda-setting studies.  
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11 In addition to increasing audiences' awareness of the issues, media coverage may also make  
12 the audiences more aware of "proposed solutions" and "specific knowledge about the  
13 proposals" (Benton and Frazier, 1976, p. 261). In our research context, this suggests that media  
14 coverage of modern slavery issues may not only increase firms' awareness of the modern  
15 slavery issues but also make the firms more aware of possible solutions to address these issues  
16 as well as specific knowledge about these solutions, such as the rationales behind these  
17 solutions and the advantages and disadvantages of adopting them. This is because the  
18 information being covered may vary across news media, with some simply reporting the  
19 modern slavery issues but others discussing the possible solutions and consequences, leading  
20 to different levels of awareness. Therefore, modern slavery media coverage can be viewed as  
21 an awareness-related variable in the modern slavery context. As the AMC framework has  
22 suggested that a firm is more likely to act or respond to a threat when it is more aware of the  
23 threat (Chen, 1996), we expect modern slavery media coverage to be positively related to firm  
24 efforts to address modern slavery in supply chains. As a result, we propose:  
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36 **Hypothesis 1 (H1).** *Firms put greater effort into addressing modern slavery in supply chains*  
37 *when there is more intensive media coverage of modern slavery issues.*  
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### 40 **3.2 Supply Chain Slavery Risk**

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42 Consistent with prior research that has assessed supply chain risk in terms of the likelihood or  
43 probability of adverse supply chain events (Heckmann et al., 2015), we view supply chain  
44 slavery risk as the extent to which modern slavery incidents will occur in a focal firm's supply  
45 chain. According to the Global Slavery Index, the levels of slavery risk vary across countries  
46 (Walk Free Foundation, 2014), suggesting that firms sourcing from suppliers located in  
47 different countries should encounter different levels of slavery risks in their supply chains. In  
48 this research, we focus on a focal firm's first-tier suppliers because these suppliers, compared  
49 with other sub-tier suppliers, are more directly connected and visible to the focal firm and thus  
50 more likely to motivate it to address modern slavery. This is in line with our assertion that  
51 supply chain slavery risk is a motivation-related variable.  
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60 We explain the relationship between supply chain slavery risk and firm motivation to

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3 address modern slavery in supply chains based on Vroom's (1964) expectancy-valence model  
4 of motivation. As indicated by its name, this model suggests that an actor's motivation to act  
5 is determined by both valence and expectancy. Valence indicates the perceived reward value  
6 associated with an action, while expectancy is the expected probability of earning a reward  
7 (Chen and Miller, 1994; Pacheco and Dean, 2015). Therefore, an actor is more motivated to  
8 act if it values the potential reward and believes its action can lead to the reward. As Yu and  
9 Cannella (2007, p. 666) summarized, "the motivation to respond will be greatest when the  
10 potential responder feels that something important is at stake."

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12 In our research context, the outcome valence is greater when a firm faces higher slavery risk  
13 in its supply chain. This is because modern slavery incidents are more likely to occur in a high-  
14 risk supply chain, and these incidents, once occurring, may result in a significant negative  
15 reputational and financial impact on the focal firm (Butler, 2020; Jacobs and Singhal, 2017).  
16 This indicates high "potential losses from inaction" (Pacheco and Dean, 2015, p. 1095) in such  
17 a supply chain. In contrast, the potential losses from inaction should be lower if there is limited  
18 slavery risk in a supply chain. Therefore, the perceived reward value of addressing modern  
19 slavery in supply chains is greater for a supply chain with high (rather than low) slavery risk.

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21 Moreover, the effort-outcome expectancy is also greater in a high-risk supply chain. It  
22 should be easier for a firm to encounter modern slavery issues in a supply chain with high  
23 slavery risk, providing opportunities for the firm to take actions to address the issues and reduce  
24 potential losses due to these issues. A firm thus sees a clearer effort-outcome connection in  
25 such a supply chain. By contrast, in a supply chain with low slavery risk, modern slavery issues  
26 are less likely to occur, making the effort-outcome relationship less clear. Taken together, a  
27 firm should be more likely to feel that "something important is at stake" and thus motivated to  
28 act when there is high slavery risk in its supply chain. As the AMC framework has linked firm  
29 motivation to action (Chen, 1996), we expect a firm to put more effort into addressing modern  
30 slavery in a high-risk supply chain. This leads to our second hypothesis:

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33 **Hypothesis 2 (H2).** *Firms sourcing from countries with higher modern slavery risks put*  
34 *greater effort into addressing modern slavery in supply chains.*

### 3.3 Corporate Sustainability Performance

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36 Following previous studies that have conceptualized sustainability in terms of the three pillars  
37 of people, planet, and profits (Pagell and Gobeli, 2009; Sodhi and Tang, 2021), we regard  
38 corporate sustainability performance as a combination or integration of a firm's social,  
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3 environmental, and financial performance. This notion is in line with the resource-based view  
4 that “considers a firm as a unique bundle of tangible and intangible resources and capabilities”  
5 (Chen, 1996, p. 107), enabling us to view corporate sustainability performance as a capability-  
6 related variable in the modern slavery context.  
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10 Our explanation of the relationship between corporate sustainability performance and firm  
11 capability to address modern slavery in supply chains is grounded on the well-established  
12 resource-based view (Barney, 1991). The resource-based view emphasizes that only those  
13 resources that are valuable, rare, imperfectly imitable, and non-substitutable (VRIN) can enable  
14 firms to gain a competitive advantage (Barney, 1991; Barney and Clark, 2007; Lam et al.,  
15 2019). Resources are valuable if they allow firms to exploit opportunities or neutralize threats.  
16 Resources are rare if only a small number of firms possess them. Resources are imperfectly  
17 imitable if it is costly for firms to acquire or develop them. Finally, resources are non-  
18 substitutable if they cannot be simply replaced by other strategically equivalent resources.  
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25 In this research, we follow Cousins et al. (2020, p. 5283) by viewing “the ability to  
26 demonstrate low slavery risk as a competitive advantage for firms.” We thus explain why  
27 superior performance in corporate sustainability is more likely to lead to the VRIN resources  
28 required for firms to achieve this competitive advantage (i.e. low slavery risk in supply chains).  
29 First, the resources arising from a firm’s superior corporate sustainability performance are  
30 valuable for the firm to address modern slavery in its supply chain. For example, firms with  
31 good social performance should have more knowledge, experience and skills in resolving social  
32 sustainability-related issues (Kim and Davis, 2016), enabling them to apply or adapt the  
33 resources they already possess in-house<sup>1</sup> to address modern slavery issues in supply chains.  
34 Similarly, the resources that help firms to improve environmental performance may be  
35 transferable to the modern slavery context. Moreover, this environmental knowledge and  
36 experience may enable firms to avoid possible unintended environmental consequences  
37 resulting from addressing modern slavery issues. Finally, it should be easier for firms with  
38 good financial performance to access both internal (e.g. from sales and operations) and external  
39 (e.g. from banks and shareholders) financial resources (Haleblian et al., 2012), supporting the  
40 firms’ investments in addressing modern slavery in supply chains.  
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53 The resources discussed above are also rare in the sense that it is uncommon for firms to  
54 achieve high performance in all three dimensions of sustainability (social, environmental, and  
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58 <sup>1</sup> Our measure of social performance excludes supply chain-related data items thereby reducing possible overlaps  
59 with modern slavery in supply chains. Please see section 4.2.4 for a more detailed discussion.  
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3 financial). Previous research has also highlighted the tensions among social, environmental,  
4 and financial performance (McWilliams and Siegel, 2000; Li et al., 2020), indicating the  
5 difficulty for firms to balance the three dimensions of corporate sustainability. This also makes  
6 these resources imperfectly imitable as the development of the superior corporate sustainability  
7 performance and the resultant resources could be path dependent (e.g. the development follows  
8 a unique pathway based on the firm's historical conditions) and socially complex (e.g. the  
9 development is embedded in the firm's complex, idiosyncratic relationships with different  
10 stakeholders). Finally, it is difficult to substitute these resources because the bundle of these  
11 social, environmental, and financial resources is important for firms to address modern slavery  
12 in supply chains, as discussed above. Taken together, the resources arising from superior  
13 performance in corporate sustainability can be regarded as VRIN resources, making firms more  
14 capable of addressing modern slavery in supply chains and leading to a competitive advantage  
15 in terms of low slavery risk. As the AMC framework has suggested that a firm is more likely  
16 to act when it is more capable of acting (Chen, 1996), we expect that a firm is more likely to  
17 address modern slavery in its supply chain when it has superior performance in corporate  
18 sustainability. This leads to our final hypothesis:

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31 **Hypothesis 3 (H3).** *Firms with better corporate sustainability performance put greater effort*  
32 *into addressing modern slavery in supply chains.*

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35 A conceptual framework summarizing the three proposed hypotheses is shown in Figure 1.

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## 41 **4. Research Method**

### 42 **4.1 Sample and Data Collection**

43 We constructed our sample based on firms included in the FTSE All-Share Index for several  
44 reasons. First, consistent with prior CSR studies that have relied on the CSR or sustainability  
45 reports published by firms to assess their CSR efforts or performance (Crilly et al., 2016; Li  
46 and Lu, 2020), we relied on firms' modern slavery statements to quantify their efforts to address  
47 modern slavery in supply chains. According to the UK MSA, a UK firm with an annual  
48 turnover  $\geq$ £36 million is required to publish an annual modern slavery statement (UK  
49 Government, 2015). As firms included in this index are publicly listed on the London Stock  
50 Exchange (LSE), they are more likely to meet this turnover threshold and enable us to obtain  
51 their modern slavery statements for this research. The accounting and financial data of these  
52 UK firms are publicly available while these firms are also more likely to be covered by other  
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3 databases concerned with firms' supply chains and sustainability performance, enabling us to  
4 use these data sources to measure the relevant variables investigated in this research.  
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6 Moreover, this index covers over 600 UK firms across different manufacturing and service  
7 industries, representing about 98% of the market value of all UK firms listed on the LSE and  
8 ensuring the generalizability of our research findings (FTSE Russell, 2019). We included firms  
9 from service industries in this research because it is common for service firms, especially those  
10 listed on the stock markets, to source goods and/or services from overseas suppliers. For  
11 example, BT Group, a telecommunications company, stated that it buys "products and services  
12 -- such as IT equipment, cables, design and disposal services -- from thousands of suppliers  
13 worldwide" (BT Group, 2006). Similarly, HSBC, a large bank, had outsourced parts of its IT  
14 support and call centers to suppliers located in developing countries (Griffiths, 2013).  
15 Therefore, service firms also need to address modern slavery in their supply chains.  
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24 As the UK MSA came into force in 2015 (UK Government, 2015), we started with all 639  
25 firms included in the FTSE All-Share Index in 2015. We searched for these firms' modern  
26 slavery statements via BHRRC's Modern Slavery Registry website  
27 ([www.modernslaveryregistry.org](http://www.modernslaveryregistry.org)), one of the largest modern slavery statement registers in the  
28 world with more than 10,000 statements available. We conducted the data collection in mid-  
29 2019 when we were able to identify 470 firms (among the 639 firms) with statements available  
30 via the website.  
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36 We then collected data from multiple additional sources to measure other research variables.  
37 In particular, we relied on news articles from Factiva to measure modern slavery media  
38 coverage. Factiva aggregates news articles from various UK media outlets such as The  
39 Financial Times, Telegraph, and Guardian, enabling us to quantify the annual coverage of  
40 modern slavery issues by the UK media (Liu et al., 2014; Chandler et al., 2020). We combined  
41 the supply chain relationship data obtained from Factset Revere with the Global Slavery Index  
42 published by the Walk Free Foundation to measure supply chain slavery risk. Factset Revere  
43 covers the historical supply chain relationships of over 32,000 firms around the world (FactSet,  
44 2014) while the Global Slavery Index ranks the severity of slavery issues across more than 100  
45 countries (Walk Free Foundation, 2014). Taken together, they allowed us to estimate the  
46 slavery risk in a sample firm's international supply chain. We aggregated social and  
47 environmental performance data from Sustainalytics and financial performance data from  
48 Worldscope to measure corporate sustainability performance, which takes account of the three  
49 pillars of people, planet, and profits (Sodhi and Tang, 2021). We also used the accounting and  
50 financial data from Worldscope to measure other control variables concerned with firm  
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3 characteristics.

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5 After combining the data obtained from these sources, 201 firms without missing data across  
6 all research variables remained. The descriptive statistics for these 201 firms are shown in  
7 Table I. Panel A of the table indicates that about 90% of the firms published their first modern  
8 slavery statement in the 2015 or 2016 fiscal year, while Panel B demonstrates that our sample  
9 firms are from various industries. Finally, Panel C shows that the minimum sales among the  
10 sample is £72.2 million, which is greater than the £36 million threshold stated in the UK MSA.  
11 Although the FTSE All-Share Index does include firms with sales lower than £72.2 million,  
12 these firms were dropped due to missing data from some of the other data sources used in this  
13 research, such as Factset Revere and/or Sustainalytics.  
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21 -----Table I about here-----  
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## 23 **4.2 Variable Measurements**

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25 The measurements for all the variables investigated in this research, including the dependent,  
26 independent, and control variables, are summarized in Table II with more details given below.  
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29 -----Table II about here-----  
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### 31 *4.2.1 Modern Slavery Statement Score*

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33 We quantified firms' efforts to address modern slavery in supply chains based on their first  
34 modern slavery statements published after the introduction of the UK MSA, for several reasons.  
35 First, due to the "illegal, often hidden" (Caruana et al., 2021, p. 258) nature of modern slavery,  
36 it is challenging to collect reliable primary data to study modern slavery. A firm's modern  
37 slavery statement is the best data source available for us to make sense of its effort to address  
38 modern slavery issues. This is because such a statement, issued under the UK MSA, should  
39 document the steps taken by a firm to "ensure that slavery and human trafficking is not taking  
40 place in any of its supply chains" (Home Office, 2017, p. 5). Prior CSR research (e.g. Crilly et  
41 al., 2016; Li and Lu, 2020) has also relied on firms' CSR or sustainability reports to assess their  
42 CSR efforts or performance. For instance, Crilly et al. (2016) measured Chinese firms' efforts  
43 to "do good" and "do no harm" by analyzing the content of these firms' sustainability reports.  
44 Similarly, we analyzed the content of firms' modern slavery statements to quantify their efforts  
45 to address modern slavery, but our analysis was based on a Python program rather than human  
46 judgment. This can help avoid human bias or preference and ensure an objective assessment of  
47 the modern slavery statements. Moreover, as firms may learn from one another as they gain  
48 more experience in issuing modern slavery statements, leading to possible homogenization in  
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3 documenting efforts to address modern slavery (Stevenson and Cole, 2018), our analysis  
4 focused on firms' first modern slavery statements to reduce this potential bias.  
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6 The UK MSA suggests that a firm's modern slavery statement can include information  
7 about its: (1) structure, business and supply chains; (2) policies related to slavery and human  
8 trafficking; (3) due diligence processes related to slavery and human trafficking in the business  
9 and supply chains; (4) the parts of the business and supply chains where there is a risk of slavery  
10 and human trafficking taking place, and the steps taken to assess and manage that risk; (5) its  
11 effectiveness in ensuring that slavery and human trafficking is not taking place in the business  
12 or supply chains; and, (6) the training about slavery and human trafficking available to staff.  
13 We thus analyzed our sample firms' modern slavery statements based on these six suggested  
14 categories. Specifically, we first formulated coding principles for these six categories, as shown  
15 in the Appendix, and developed a Python program using these principles to auto-code our  
16 sample firms' statements. For instance, for category (f) regarding modern slavery and human  
17 trafficking training, our program assigned 2 points to a firm if its statement mentioned training  
18 and modern slavery/human trafficking-related keywords in a sentence. If only the training  
19 keyword was mentioned without modern slavery/human trafficking-related keywords in the  
20 same sentence, 1 point was assigned by the program. Finally, the program assigned 0 points to  
21 a firm if the training keyword could not be found across the text of its statement.  
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34 A firm's score in each category was calculated as the percentage of the number of points  
35 obtained by the firm in this category divided by the maximum number of points available in  
36 the same category. For example, as the maximum number of points available in category (f) is  
37 2, if a firm obtains 1 point in this category, its score in this specific category will be 50% (i.e.  
38 1 divided by 2). Finally, we computed the statement score for each sample firm as its average  
39 percentage score across the six categories. We found that the average statement score across  
40 the 201 sample firms is 50%, with a very high standard deviation of 20%. In fact, the statement  
41 scores for these firms ranged from 0% to 91%, demonstrating the heterogeneity of firms' efforts  
42 to address slavery issues in supply chains.  
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50 We further verified our program-coded statement scores based on other data sources and  
51 measurement approaches. Specifically, we first obtained the data from Development  
52 International, who assessed the anti-slavery/human trafficking performance of FTSE 100  
53 companies based on modern slavery statements (Bayer et al., 2018). We then matched our  
54 sample with those covered by Development International, resulting in 71 matched firms.  
55 Finally, we computed the correlation between our program-coded statement scores and the  
56 performance scores obtained from Development International for these 71 firms. The  
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correlation is highly positive and significant ( $r = 0.42, p < 0.01$ ). Moreover, we also coded our sample firms' modern slavery statements manually and obtained a high correlation between the human- and program-coded statement scores (further explained in section 5.1). These additional checks confirmed the reliability and validity of our program-coded statement scores.

#### 4.2.2 Modern Slavery Media Coverage

Consistent with prior research (e.g. Liu et al., 2014; Chandler et al., 2020), we measured media coverage by searching relevant news articles via Factiva. We preferred Factiva to a specific newspaper (e.g. Financial Times) because Factiva aggregated news articles from various media sources, thereby representing a more comprehensive coverage of the modern slavery topic under study. Factiva also allowed us to restrict our search to those media sources based in the UK, in line with our research context focused on UK firms. As we were interested in the overall coverage of the modern slavery topic rather than the modern slavery issues of specific firms, we used "modern slavery" as the search keyword without including the names of specific companies. We limited our search to the headlines of news articles because these news articles should be more relevant to modern slavery, compared with other news articles mentioning "modern slavery" in their bodies rather than headlines. Prior research also suggested that news headlines are used to highlight important information and grab readers' attention (Geer and Kahn, 1993), consistent with our awareness view on media coverage. After the search, we quantified modern slavery media coverage in each year as the annual number of news articles from UK media mentioning "modern slavery" in their headlines.

#### 4.2.3 Supply Chain Slavery Risk

We combined data from Factset Revere and Walk Free Foundation to measure the slavery risk in each sample firm's supply chain. Specifically, we relied on Factset Revere's historical supply chain relationship data to identify a sample firm's first-tier suppliers and their countries in the year before the sample firm issued its first modern slavery statement (FactSet, 2014), while the slavery risk at the country level was indicated by the Global Slavery Index published by the Walk Free Foundation in 2014 (Walk Free Foundation, 2014). To account for the possibility that a sample firm's suppliers may be distributed unevenly across countries, we created a weighted variable,  $w_i$ , to indicate the percentage of a sample firm's suppliers in each country  $i$ . Mathematically, we computed a sample firm's supply chain slavery risk as

$$\sum_{i=1}^N w_i \times \text{Global Slavery Index}_i,$$

where  $w_i$  is the ratio of a sample firm's number of suppliers in country  $i$  to the same firm's total

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3 number of suppliers across  $N$  countries. Although this measure does not capture the actual  
4 slavery incidents associated with a sample firm's suppliers, it represents the perceived slavery  
5 risk in the firm's supply chain. This is because a firm should be more likely to encounter supply  
6 chain slavery issues if its suppliers are located in countries with high (rather than low) slavery  
7 risks as indicated by the Global Slavery Index.  
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#### 10 11 12 13 *4.2.4 Corporate Sustainability Performance*

14 We measured corporate sustainability performance as a combination of a firm's social,  
15 environmental, and financial performance (Pagell and Gobeli, 2009; Sodhi and Tang, 2021).  
16 First, we obtained social and environmental performance data from Sustainalytics, a database  
17 monitoring the annual nonfinancial performance of more than 11,000 firms across different  
18 countries (including the UK) based on information from various primary and secondary sources  
19 (Thorne et al., 2017; Francoeur et al., 2019). For example, Sustainalytics tracks 58 and 56 data  
20 items related to social and environmental performance, respectively (Walker et al., 2019). For  
21 each data item, Sustainalytics rates firm performance from 0 to 100, with a higher value  
22 indicating a better performance. As a firm's social performance may have incorporated modern  
23 slavery in its supply chain, leading to possible tautological concerns, we excluded 10 supply  
24 chain-related data items, such as quality of social supply chain standards and external social  
25 certification of suppliers, when measuring social performance. This means that we measured  
26 our sample firms' social and environmental performance as the average ratings of their 48 (i.e.  
27 58-10) social-related data items and 56 environmental-related data items, respectively.  
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30 We measured a firm's annual financial performance in terms of its return on assets (ROA)  
31 (Kim and Davis, 2016; Thorne et al., 2017). Specifically, with the annual accounting data  
32 obtained from Worldscope, we computed ROA as operating income divided by total assets.  
33 We rescaled ROA to the range of 0 to 100 to make it consistent with the measures of social and  
34 environmental performance. Finally, we averaged a sample firm's social, environmental, and  
35 financial performance to obtain an overall measure of its corporate sustainability performance.  
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#### 38 39 40 41 42 43 44 45 46 47 48 49 *4.2.5 Control Variables*

50 We controlled for several firm-level variables, including firm size, the market to book (MTB)  
51 ratio, labor intensity, and domestic sales, that may be related to firms' efforts to address slavery  
52 issues. Specifically, firm size and domestic sales may be positively related to firm efforts  
53 because large firms may have more resources to address slavery issues while firms with more  
54 domestic sales may pay more attention to UK domestic markets and the UK MSA. By contrast,  
55 MTB ratio and labor intensity may be negatively related to firm efforts. A firm with a higher  
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MTB ratio is perceived as more valuable by shareholders and expected to have a higher growth in the future, which may force the firm to allocate resources to other investments (rather than to address modern slavery) in order to maintain a high growth rate. A firm with a higher labor intensity relies more on laborers rather than machines, which may be more likely to encounter slavery issues. We measured firm size as the natural logarithm of the number of employees (Kim et al., 2015), the MTB ratio as the market value of equity divided by the book value of equity (Lam, 2018), labor intensity as the number of employees divided by sales (Yiu et al., 2020), and domestic sales as the percentage of UK sales divided by the total sales (Short et al., 2007).

### 4.3 Regression Analysis

We constructed a regression model, as shown below, to estimate how modern slavery media coverage (H1), supply chain slavery risk (H2), and corporate sustainability performance (H3), are related to firms' statement scores.

$$\begin{aligned}
 & \text{Statement Score}_{i(t+1)} \\
 & = \alpha_0 + \alpha_1 \text{Firm Size}_{it} + \alpha_2 \text{MTB Ratio}_{it} + \alpha_3 \text{Labor Intensity}_{it} + \alpha_4 \text{Domestic Sales}_{it} \\
 & + \alpha_5 \text{Modern Slavery Media Coverage}_{it} + \alpha_6 \text{Supply Chain Slavery Risk}_{it} \\
 & + \alpha_7 \text{Corporate Sustainability Performance}_{it} + \varepsilon_{it},
 \end{aligned}$$

where  $i$  and  $t$  are firm and year indices, respectively.  $\varepsilon_{it}$  is the error term. We maintained a one-year lag between the dependent variable measured in year  $t+1$  and all independent variables measured in year  $t$ , ensuring the direction of causality under test. Also, the dependent and independent variables were measured based on data collected from different sources such as Factset Revere, Worldscope, and Sustainalytics, reducing possible common method bias. We have also conducted several robustness tests based on alternative measures of the dependent and independent variables and obtained consistent test results, as documented in Section 5.1. The highest variance inflation factor values across all independent variables is 1.30, which is well below the threshold of 5 and suggests multicollinearity is not a major concern (Kim et al., 2016). As we measured firms' statement scores based on their first modern slavery statements, this is a cross-sectional rather than a panel regression model. We thus performed an ordinary least squares estimation of the model and relied on  $\alpha_5$  to  $\alpha_7$ , respectively, to test the three hypotheses.

## 5. Test Results

The correlations, means, and standard deviations of all variables included in the regression

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3 model are presented in Table III, while Table IV shows the test results of four regression  
4 models with different combinations of independent variables. Specifically, Model 1 includes  
5 control variables only. Models 2 to 4 add the three hypothesized variables (i.e. modern slavery  
6 media coverage, supply chain slavery risk, and corporate sustainability performance) to Model  
7 1 sequentially. All four models are statistically significant ( $p < 0.01$ ) with adjusted  $R$ -squared  
8 values ranging from 9.00% to 17.31%.  
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14 -----Tables III and IV about here-----  
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16 The coefficient of modern slavery media coverage remains positive and significant ( $p < 0.1$ )  
17 across models 2 to 4, suggesting that firms put more effort into addressing slavery issues in  
18 supply chains when there is more media coverage of these issues. Thus, H1 is supported.  
19 Similarly, the coefficient of the supply chain slavery risk is positive and significant ( $p < 0.05$ )  
20 in models 3 to 4. This means that firms sourcing products from suppliers located in countries  
21 with high slavery risks put more effort into addressing slavery issues in supply chains, thereby  
22 supporting H2. Finally, the coefficient of corporate sustainability performance is positive and  
23 significant ( $p < 0.01$ ), as shown in Model 4. This suggests that firms with better performance  
24 in corporate sustainability put more effort into addressing slavery issues in supply chains,  
25 supporting H3. Therefore, all three hypotheses are supported.  
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28 Moreover, three control variables, i.e. firm size, MTB ratio, and domestic sales, are  
29 statistically significant ( $p < 0.1$ ) in the full mode (i.e. Model 4). Specifically, the test results  
30 suggest that firms of a larger size, with higher domestic sales but lower MTB ratios put more  
31 effort into addressing slavery issues in supply chains, which is consistent with our expectation.  
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### 34 35 36 37 38 39 40 41 **5.1 Robustness Tests**

42 We conducted several additional tests to check the robustness of our findings and documented  
43 the test results in Table V. First, we adopted alternative measures of the three hypothesized  
44 variables. Specifically, we measured modern slavery media coverage alternatively based on  
45 news articles from the 12 most circulated daily newspapers in the UK (Tobitt and Majid, 2021)  
46 rather than from all UK media sources, accounting for the possibility that UK firms may pay  
47 more attention to these major newspapers. For supply chain slavery risk, instead of using the  
48 Global Slavery Index published in 2014, our alternative measure was based on the average  
49 value of the Global Slavery Index published between 2014 and 2018, which took account of  
50 the fact that our sample firms issued their first modern slavery statements across different years  
51 between 2015 and 2018. Finally, we measured corporate sustainability performance  
52 alternatively by focusing on the environmental and financial performance dimensions (i.e. we  
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3 excluded the social performance dimension), further addressing the concern that the social  
4 performance dimension may have covered modern slavery. The regression results based on  
5 these three alternative measures remain consistent, as shown in Models 1 to 3 in Table V,  
6 respectively.  
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10 -----Table V about here-----  
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12 We employed the instrumental variables (IV) approach to further address the possible  
13 endogenous relationship between corporate sustainability performance and statement score.  
14 Following previous studies (e.g. Ho et al., 2017; Fu et al., 2020), we first instrumented a firm's  
15 corporate sustainability performance with two variables: (1) the average corporate  
16 sustainability performance of the firm's industry peers, and (2) the firm's three-year lagged  
17 corporate sustainability performance. We then performed a two-stage least squares estimation  
18 using these two instruments and obtained consistent test results, as shown in Model 4. This  
19 suggests that our model specification is robust to endogeneity concerns.  
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26 To further investigate how individual dimensions of corporate sustainability performance  
27 are related to firm efforts to address modern slavery in supply chains, we decomposed corporate  
28 sustainability performance into social, environmental, and financial performance and included  
29 these three dimensions as independent variables in the regression model. The regression results  
30 documented in Model 5 suggest that while the social ( $p < 0.05$ ) and environmental ( $p < 0.1$ )  
31 dimensions are still positively related to statement score, there is no significant relationship ( $p$   
32  $> 0.1$ ) between the financial dimension and statement score. This investigation reveals the  
33 heterogeneity of relationships between different types of firm performance and firm efforts to  
34 address modern slavery in supply chains.  
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41 Our analysis has focused on firms' first modern slavery statements in order to mitigate  
42 possible mimetic isomorphism issues, but this practice raises the concern that these first  
43 statements, compared with more recent ones, might be less sophisticated in documenting the  
44 firms' efforts to address modern slavery (Benstead et al., 2018). To address this concern, we  
45 conducted one-way ANOVA tests to check the difference in statement scores across different  
46 issuing years (2015-2018) but could not find a significant difference ( $p > 0.1$ ). We also  
47 performed multiple-comparison tests to compare the differences in statement scores between  
48 2015 and each of the other years, but we still did not identify any significant differences ( $p$   
49  $> 0.1$ ). Overall, there is no evidence that the statement scores vary significantly across years.  
50 Nevertheless, we measured the dependent variable alternatively as the average score of a firm's  
51 modern slavery statements issued between 2015 and 2018 and obtained qualitatively similar  
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3 regression results, as shown in Model 6.  
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5 Finally, we remeasured firm efforts to address modern slavery in supply chains based on  
6 human (rather than machine) coding. Specifically, two of the authors read the modern slavery  
7 statements of all sample firms independently and rated each statement based on a five-point  
8 scale, ranging from 1 (little effort to address modern slavery) to 5 (major effort to address  
9 modern slavery). The ratings from the two independent coders were consistent, as indicated by  
10 the very high correlation between their ratings ( $r = 0.87, p < 0.01$ ). We thus averaged the ratings  
11 from the two coders to indicate firms' overall efforts. We also checked and confirmed a high  
12 correlation between the human- and machine-coded ratings ( $r = 0.48, p < 0.01$ ). Finally, we  
13 obtained consistent regression results in Model 7 with the human-coded ratings as the  
14 dependent variable.  
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## 24 **6. Discussion of Test Results**

25 Our test results show that firms put more effort into addressing supply chain modern slavery  
26 issues when there is greater media coverage of these issues. This finding can be explained by  
27 agenda-setting theory (Luo et al., 2019), which suggests that media coverage makes firms more  
28 aware of the importance of addressing modern slavery issues, which in turn translates into their  
29 efforts to address these issues. Although media coverage receives limited attention from SCM  
30 researchers, it has been well investigated in previous CSR studies (Zyglidopoulos et al., 2012;  
31 Pollach, 2014). For example, Pollach (2014) found that media coverage of environmental  
32 issues is related to firms' environmental agendas, which is consistent with our finding  
33 regarding the impact of media coverage on firm efforts to address modern slavery.  
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41 Our test results further suggest that a firm's efforts to address modern slavery are also  
42 determined by the slavery risk presented in its supply chain. This is because firms should be  
43 more likely to encounter modern slavery issues in supply chains with high (rather than low)  
44 slavery risk, motivating them to take actions to address these issues and avoid "potential losses  
45 from inaction" (Pacheco and Dean, 2015, p. 1095). This explanation is in line with the  
46 expectancy-valence model, which emphasizes that an actor is more motivated to act when it  
47 "feels that something important is at stake" (Yu and Cannella, 2007, p. 666). Previous SCM  
48 studies, although not focused on modern slavery, have also highlighted how firm practices are  
49 dependent on supply chain risk. For instance, Awaysheh and Klassen (2010) found that a firm  
50 is more likely to adopt supplier socially responsible practices when it runs a long, risky supply  
51 chain, which is consistent with our finding regarding the determining role of supply chain  
52 slavery risk.  
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Moreover, our test results reveal the positive relationship between corporate sustainability performance and firm efforts to address modern slavery in supply chains. We attribute this finding to the fact that firms with superior performance in corporate sustainability should possess more knowledge, experience and skills in resolving social and environmental issues and have easier access to internal and external financial resources, equipping them with better capabilities for addressing modern slavery in supply chains. This logic is in line with the resource-based view which considers the bundle of these social, environmental, and financial resources as a source for firms to gain a competitive advantage in terms of “the ability to demonstrate low slavery risk” (Cousins et al., 2020, p. 5283). Interestingly, our robustness tests further suggest that social and environmental resources are more important than financial resources for firms to gain such a competitive advantage. This finding is consistent with the possible tension between financial performance and CSR activities highlighted in the literature (McWilliams and Siegel, 2000; Li et al., 2020). Although firms with better financial performance should have more resources to address modern slavery, they may face greater pressure to maintain high financial performance and prefer to allocate their resources to other investments (rather than addressing modern slavery) with clear, foreseeable financial returns, making financial performance less relevant to firm efforts to address modern slavery.

Although not hypothesized, several control variables, including firm size, domestic sales, and MTB ratio, are found to be significantly related to firm efforts to address modern slavery in supply chains. The findings of these variables can still be interpreted through the AMC framework. For example, firm size can be viewed as a capability-related variable, suggesting that large firms should have more resources and capabilities to address modern slavery in their supply chains. Meanwhile, domestic sales and MTB ratio can be related to firm motivation. Specifically, firms with more domestic sales in the UK should pay more attention to the UK market and the UK MSA, motivating them to address slavery issues to meet UK customers’ expectations and UK government’s demands. By contrast, firms with a high MTB ratio are expected by shareholders to have a high growth rate, motivating them to allocate their resources to those investments that are more likely to meet shareholders’ expectations (rather than to address modern slavery in supply chains).

## 7. Conclusions, Contributions and Limitations

To conclude, by utilizing the AMC framework and the theoretical lenses of agenda-setting theory, the expectancy-valence model, and the resource-based view, our research theorizes how AMC-related factors, including modern slavery media coverage, supply chain slavery risk, and



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3 corporate sustainability performance, help explain the variation in firms' efforts to address  
4 modern slavery in supply chains. Consistent with our theorization, our empirical analysis,  
5 based on secondary data collected from multiple sources, suggests that firms put more effort  
6 into addressing supply chain modern slavery issues when there is greater media coverage of  
7 these issues, when firms source from countries with high slavery risks, and when firms have  
8 good performance in corporate sustainability. Our research provides important implications for  
9 theory and practices.

### 16 **7.1 Theoretical Implications**

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18 Our research contributes to the modern slavery literature by adopting the AMC framework to  
19 explain why firms put different efforts into addressing modern slavery in supply chains.  
20 Although prior studies have documented the variation in firms' efforts to address modern  
21 slavery (Stevenson and Cole, 2018; Flynn and Walker, 2021), they "struggle to explain it", as  
22 pointed out by Monciardini et al. (2021, p. 290). The AMC framework enables us to make  
23 sense of such variation by considering a firm's awareness, motivation, and capability of  
24 addressing modern slavery issues. The consideration of the three dimensions of awareness,  
25 motivation, and capability also allows us to provide a more comprehensive explanation of the  
26 determinants of the firms' efforts. Our research demonstrates the applicability of the AMC  
27 framework in the modern slavery context, laying an important theoretical foundation for future  
28 research. In particular, future research can adopt the AMC framework to investigate AMC-  
29 related factors at different levels (e.g. firm, supply chain, industry, and country), advancing our  
30 understanding of firm behaviors in the modern slavery context.

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33 Moreover, our research enriches the AMC literature by employing relevant theories,  
34 including agenda-setting theory, the expectancy-valence model, and the resource-based view,  
35 to further theorize how the variables under study are related to the specific AMC dimensions.  
36 Although the AMC framework provides an overarching, meta-theoretic perspective for  
37 researchers to consider AMC-related variables, it fails to explain why these variables are  
38 related to the specific AMC dimensions and thus can be viewed as AMC-related variables.  
39 Previous AMC studies have also often made the connections between their research variables  
40 and the specific AMC dimensions based on implicit assumptions or common sense. Our  
41 research, by contrast, relies on formal theorization, providing a clear link between empirical  
42 constructs and theoretical concepts. For instance, we use agenda-setting theory to explain why  
43 firms are more aware of the importance of addressing supply chain slavery issues when there  
44 is greater media coverage of these issues, enabling us to view media coverage as an awareness-

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3 related variable in the modern slavery context. Our formal theorization approach is also in line  
4 with Yu and Cannella's (2007, p. 667) suggestion that researchers need to explain how the  
5 variables to be included in an AMC study "impact one or more dimensions of the framework."  
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7 Overall, our research highlights the importance of integrating the AMC framework with other  
8 relevant theories, together enabling a solid, theoretical explanation of the AMC-related  
9 variables and advancing the AMC literature.

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13 Finally, our research reveals new theoretical insights by comparing different capability-  
14 related variables. Specifically, our research shows that the social, environmental, and financial  
15 dimensions of corporate sustainability are related to firm efforts to address modern slavery to  
16 different extents. This suggests that although firms with superior performance in these  
17 dimensions should possess more resources that enable them to address modern slavery, the  
18 importance of these dimensions is not the same in the modern slavery context. Our research  
19 thus extends the resource-based view by arguing that although VRIN resources enable firms to  
20 create competitive advantage (Barney, 1991), the advantage-creating potentials should vary  
21 across different types of VRIN resources. In other words, we should not assume the same  
22 advantage-creating potentials for different VRIN resources. Our investigation also responds to  
23 Gold et al.'s (2015, p. 491) call for studying "which resources and capabilities need to be  
24 developed within individual companies" for addressing modern slavery, inspiring future  
25 research to further compare different AMC-related variables. For instance, researchers may  
26 reveal new insights by examining the variation across different media outlets (e.g. newspapers,  
27 radio, television, and social media) in influencing firms' awareness of modern slavery issues.  
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## 40 **7.2 Practical Implications**

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42 Consistent with prior studies (Stevenson and Cole, 2018; Flynn and Walker, 2021), our analysis  
43 of UK firms' modern slavery statements finds significant variation in their efforts to address  
44 modern slavery in supply chains. This may explain why existing modern slavery-related  
45 legislation, such as the UK MSA, has been criticized for being ineffective at ensuring firms  
46 genuinely address modern slavery issues (Ionova, 2018; Cousins et al., 2020). There is no doubt  
47 that much should be done to tackle modern slavery, and our research provides important  
48 implications for different stakeholders, as outlined below.  
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54 Our research demonstrates a positive relationship between media coverage and firm efforts  
55 to address supply chain modern slavery issues. This suggests that news media should realize  
56 their agenda-setting role, regularly covering relevant modern slavery topics to increase firms'  
57 awareness of the importance of addressing modern slavery in supply chains. Other parties, such  
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3 as governments and NGOs, can also use news media to make firms more aware of “proposed  
4 solutions” and “specific knowledge about the proposals” (Benton and Frazier, 1976, p. 261),  
5 moving beyond a general awareness of modern slavery issues. For example, they can use news  
6 media to discuss different practices to address modern slavery as well as the pros and cons of  
7 these practices, taking advantage of the media’s public agenda-setting effect (Luo et al., 2019).  
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11 Our research also shows that firms perceiving there to be a higher risk of modern slavery in  
12 their supply chains are more likely to address the threat. This implies that governments and  
13 relevant parties can highlight the risks and negative consequences of modern slavery issues to  
14 motivate firms to act. This can be done through, for example, public education, investigation  
15 reports, and dedicated reporting websites (e.g. [www.modernslavery.gov.uk](http://www.modernslavery.gov.uk)). A general insight  
16 emerging from our investigation is that a firm is more motivated to act when it “feels that  
17 something important is at stake” (Yu and Cannella, 2007, p. 666). This suggests that  
18 governments could use both carrot and stick approaches to motivate firms to address modern  
19 slavery. For instance, a firm’s performance in addressing modern slavery could become part of  
20 the criteria for obtaining governmental contracts, and the private sector could be encouraged  
21 to also follow this practice. Similarly, the government and private sector could adopt a zero-  
22 tolerance policy, terminating contracts with firms when modern slavery is found in their supply  
23 chains.  
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27 However, policymakers should realize that not all firms have the necessary capabilities to  
28 address modern slavery issues, especially when these issues occur in extended supply chains.  
29 Our research also suggests that it is unlikely that firms with poor performance in corporate  
30 sustainability are able to address modern slavery in their supply chains. It is thus important to  
31 provide appropriate support to enable firms to build the necessary capabilities, such as to  
32 improve their sustainability performance. Firms themselves should also not underestimate the  
33 difficulty of addressing modern slavery in supply chains whilst understanding the  
34 transferability of the knowledge, experience and skills gained from corporate sustainability  
35 improvements to the modern slavery context. Therefore, we encourage firms to improve their  
36 performance in corporate sustainability, which in turn will make them more capable of  
37 addressing modern slavery in supply chains.  
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41 Other stakeholders, such as customers and shareholders, can also play important roles in  
42 motivating firms to address supply chain modern slavery issues. For example, our research  
43 shows that firms put more effort into addressing slavery issues when they have more sales from  
44 the UK. This suggests that UK customers, who “seek out businesses with higher ethical  
45 standards” (Home Office, 2017, p. 4), expect firms to address modern slavery in their supply  
46 chains.  
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3 chains. By contrast, our research suggests that firms with a high MTB ratio are less likely to  
4 address supply chain slavery issues as these firms may perceive that their shareholders expect  
5 them to focus on high-growth investments rather than on addressing slavery issues. Therefore,  
6 shareholders of these firms may have to voice their expectation of slavery-free supply chains,  
7 changing the firms' perceptions and encouraging them to address supply chain slavery issues.  
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### 12 **7.3 Research Limitations**

14 As with any research, our study has certain limitations. The first limitation concerns the sample  
15 of firms used in our research. In particular, we constructed the sample based on the FTSE All-  
16 Share Index, which may limit the generalizability of our findings to public limited firms only.  
17 Moreover, due to missing data across different sources, the firms included in this research are  
18 relatively large, with minimum sales equal to £72.2 million, which is approximately double the  
19 threshold required by the UK MSA. Thus, our findings may not be applicable to smaller firms  
20 whose characteristics and capabilities may be quite different to those in our sample. We thus  
21 encourage future research to investigate other private and smaller firms to verify the  
22 conclusions drawn in our research. It would also be interesting to look at samples from other  
23 countries that have introduced similar legislation, such as from Australia or France.  
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26 Moreover, our measurements based on secondary data are not perfect. For instance, we  
27 quantified firms' efforts based on a content analysis of their modern slavery statements.  
28 Although this approach is consistent with prior CSR research (Crilly et al., 2016; Li and Lu,  
29 2020) and we verified it with a third-party source and a manual coding approach, it is possible  
30 that firms' modern slavery statements may not fully reflect their true efforts to address slavery  
31 issues as firms have the freedom to decide what to disclose in their statements. Modern slavery  
32 statements also limit our focus to firms with a turnover  $\geq$  £36 million as only these firms are  
33 required to issue such statements. We thus encourage future research to adopt other approaches,  
34 such as in-depth case studies, to cover firms with different turnovers and provide a more  
35 complete documentation of their efforts to address modern slavery.  
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38 Another measurement limitation is that we relied on a firm's first-tier suppliers for  
39 measuring the slavery risk in its supply chain. Although this measurement approach is in line  
40 with our motivation argument, it misses the opportunity of looking at a firm's sub-tier suppliers  
41 that may be more likely to be involved in modern slavery incidents. Therefore, future research  
42 can explore the possibility of using other datasets to study slavery risk in multi-tier supply  
43 chains and reveal new insights.  
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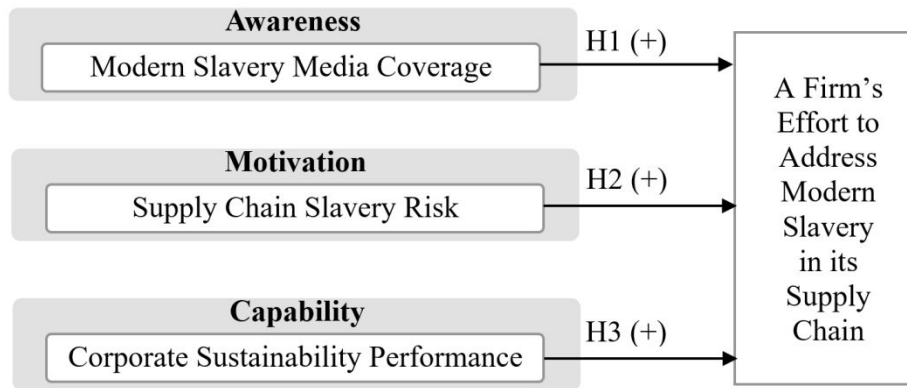
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## Appendix: Coding of Firms' Modern Slavery Statements

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5 a) The organization's structure, its business and its supply chains:  
6 Code 0: if there is no information about the firm's structure, business and supply chains.  
7 Code 1: if there is information about the firm's structure and/or business.  
8 Code 2: if there is information about the firm's supply chains as well as its structure and/or  
9 business.  
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13 b) Its policies in relation to slavery and human tracking:  
14 Code 0: if there is no information about the firm's code of conduct or policy.  
15 Code 1: if there is information about the firm's code of conduct or policy.  
16 Code 2: if the code of conduct or policy mentioned is directly related to modern slavery.  
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19 c) Its due diligence processes in relation to slavery and human tracking in its business and  
20 supply chains:  
21 Count the firm's number of due diligence activities as suggested by the CORE Coalition  
22 ([https://corporate-responsibility.org/publications/mandatory-human-rights-due-](https://corporate-responsibility.org/publications/mandatory-human-rights-due-diligence/)  
23 [diligence/](https://corporate-responsibility.org/publications/mandatory-human-rights-due-diligence/)).  
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27 d) The parts of its business and supply chains where there is a risk of slavery and human  
28 tracking taking place, and the steps taken to assess and manage that risk;  
29 Code 0: if there is no information about risk analysis or risk assessment.  
30 Code 1: if there is information about risk analysis or risk assessment.  
31 Code 2: if the risk analysis or risk assessment mentioned is directly related to modern  
32 slavery.  
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36 e) Its effectiveness in ensuring that slavery and human tracking is not taking place in its  
37 business or supply chains, measured against such performance indicators as it considers  
38 appropriate:  
39 Code 0: if there is no information about the firm's effectiveness.  
40 Code 1: if there are general statements on the firm's effectiveness.  
41 Code 2: if there are specific KPIs measuring the firm's effectiveness.  
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45 f) The training about slavery and human tracking available to its staff:  
46 Code 0: if there is no information about the firm's training activities.  
47 Code 1: if there is information about the firm's training activities in general.  
48 Code 2: if the firm's training activities mentioned are directly related to modern slavery.  
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**Figure 1. Conceptual Framework**

**Table I. Descriptive Statistics**

Panel A: Distribution of sample firms' first statements across years					
Year	Frequency		Percentage		
2015	86		42.8%		
2016	94		46.8%		
2017	15		7.5%		
2018	6		3.0%		
All Years	201		100%		
Panel B: Distribution of sample firms across industries					
Industry	SIC Code	Frequency	Percentage		
Mining	10-14	15	7.5%		
Construction	15-17	7	3.5%		
Manufacturing	20-39	50	24.9%		
Transportation, Communications, Electric, Gas, and Sanitary Services	40-49	26	12.9%		
Wholesale Trade	50-51	11	5.5%		
Retail Trade	52-59	29	14.4%		
Finance, Insurance, and Real Estate	60-67	32	15.9%		
Services	70-89	31	15.4%		
All Industries	All SIC Codes	201	100%		
Panel C: Characteristics of sample firms					
Firm characteristics	Mean	Standard deviation	Minimum	Maximum	
Sales (million)	5947.0	13573.0	72.2	146167.2	
Total assets (million)	28978.7	148962.9	189.6	1629644.0	
Operating income (million)	558.1	1316.5	-5827.0	10645.1	
Number of employees (thousand)	31.2	72.5	0.02	611.4	
Return on assets (%)	7.3	8.4	-32.0	39.9	
Return on sales (%)	14.4	12.8	-35.8	64.9	

**Table II. Variable Measurements**

Variables	Measurements	Data Sources
Statement Score	$\frac{1}{6} \sum_{n=1}^6 \frac{Points\ Obtained_n}{Maximum\ Points\ Available_n} \times 100\%$ , where $n$ represents the six categories of information mentioned in the UK Modern Slavery Act 2015, PART 6, 54(5).	Modern Slavery Registry
Modern Slavery Media Coverage	Annual number of UK news articles covering modern slavery issues	Factiva
Supply Chain Slavery Risk	$\sum_{i=1}^N w_i \times GSI_i$ , where $w_i$ represents the ratio of a firm's number of suppliers in country $i$ to the same firm's total number suppliers across $N$ countries, and $GSI_i$ indicates country $i$ 's Global Slavery Index published by the Walk Free Foundation in 2014.	Factset Revere, Walk Free Foundation
Corporate Sustainability Performance	The average of a firm's social performance (excludes supply chain data items and ranges from 0 to 100), environmental performance (ranges from 0 to 100), and financial performance (return on assets; rescaled to 0 to 100).	Worldscope, Sustainalytics
Firm Size	Natural logarithm of number of employees	Worldscope
MTB Ratio	Market value of equity divided by book value of equity	Worldscope
Labor Intensity	Number of employees divided by sales	Worldscope
Domestic Sales	$\frac{UK\ Sales}{Total\ Sales} \times 100\%$	Worldscope

**Table III. Correlation Matrix**

Variables	1	2	3	4	5	6	7	8
1. Statement Score	1.00							
2. Firm Size	0.28***	1.00						
3. MTB Ratio	-0.07	0.03	1.00					
4. Labor Intensity	0.02	0.41***	0.05	1.00				
5. Domestic Sales	0.03	-0.20***	-0.01	-0.04	1.00			
6. Modern Slavery Media Coverage	0.11	-0.04	0.03	-0.12	-0.13*	1.00		
7. Supply Chain Slavery Risk	0.17**	0.18**	0.08	-0.04	-0.41***	0.07	1.00	
8. Corporate Sustainability Performance	0.24***	0.03	0.11	-0.08	0.13*	-0.03	-0.02	1.00
Mean	49.76	2.15	3.93	7.10	52.75	242.46	20.87	56.92
Standard deviation	20.23	1.74	6.77	8.76	38.39	136.55	5.94	7.82

Notes: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$  (two-tailed tests).

**Table IV. Regression Results**

Variables	Model 1	Model 2	Model 3	Model 4
Intercept	40.96*** (12.65)	35.50*** (8.25)	20.91*** (2.92)	-11.29 (-0.97)
Firm Size	4.15*** (4.72)	4.19*** (4.79)	3.88*** (4.46)	3.62*** (4.26)
MTB Ratio	-0.23 (-1.16)	-0.25 (-1.23)	-0.28 (-1.44)	-0.36* (-1.86)
Labor Intensity	-0.28 (-1.63)	-0.25 (-1.44)	-0.20 (-1.16)	-0.13 (-0.81)
Domestic Sales	0.05 (1.45)	0.06* (1.70)	0.10** (2.56)	0.08** (2.12)
Modern Slavery Media Coverage		0.02* (1.91)	0.02* (1.90)	0.02** (2.05)
Supply Chain Slavery Risk			0.63** (2.52)	0.62** (2.54)
Corporate Sustainability Performance				0.59*** (3.47)
Number of Observations	201	201	201	201
<i>R</i> -squared	10.82%	12.45%	15.23%	20.20%
Adjusted <i>R</i> -squared	9.00%	10.21%	12.61%	17.31%
<i>F</i> -statistic	5.94***	5.55***	5.81***	6.98***

Notes: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$  (two-tailed tests). *t*-statistics are in parentheses. A one-year lag between the dependent variable (Statement Score) and all the independent variables.



**Table V. Robustness Test Results**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Intercept	-10.23 (-0.88)	-12.33 (-1.05)	-4.56 (-0.39)	-10.37 (-0.73)	-9.17 (-0.75)	-9.38 (-0.81)	-1.51** (-2.43)
Firm Size	3.63*** (4.26)	3.60*** (4.24)	3.67*** (4.27)	3.61*** (4.02)	3.57*** (4.01)	3.56*** (4.22)	0.34*** (7.44)
MTB Ratio	-0.36* (-1.83)	-0.36* (-1.86)	-0.37* (-1.86)	-0.36* (-1.83)	-0.33 (-1.59)	-0.33* (-1.69)	-0.01 (-1.44)
Labor Intensity	-0.14 (-0.85)	-0.14 (-0.86)	-0.13 (-0.79)	-0.12 (-0.71)	-0.14 (-0.86)	-0.05 (-0.33)	-0.01 (-1.39)
Domestic Sales	0.08** (2.08)	0.08** (2.02)	0.10** (2.48)	0.10** (2.33)	0.08** (2.00)	0.08** (2.01)	0.004** (2.11)
Modern Slavery Media Coverage	0.04* (1.85)	0.02** (2.01)	0.02** (2.13)	0.03*** (2.83)	0.02* (1.96)	0.02* (1.93)	0.002*** (3.77)
Supply Chain Slavery Risk	0.61** (2.52)	0.71** (2.60)	0.68*** (2.75)	0.62** (2.48)	0.59** (2.34)	0.54** (2.24)	0.02* (1.88)
Corporate Sustainability Performance	0.59*** (3.47)	0.58*** (3.39)	0.43*** (2.72)	0.52** (2.36)		0.61*** (3.61)	0.04*** (4.08)
Social Performance					0.26** (2.15)		
Environmental Performance					0.18* (1.68)		
Financial Performance					0.14 (1.10)		
Number of Observations	201	201	201	180	201	201	201
<i>R</i> -squared	19.89%	20.33%	18.36%	21.40%	20.38%	19.81%	34.30%
Adjusted <i>R</i> -squared	16.98%	17.44%	15.40%	18.21%	16.63%	16.90%	31.92%
<i>F</i> -statistic	6.84***	7.04***	6.20***	6.16***	5.43***	6.81***	14.39***

Notes: \* $p < 0.1$ , \*\* $p < 0.05$ , and \*\*\* $p < 0.01$  (two-tailed tests). *t*-statistics are in parentheses. A one-year lag between the dependent variable (Statement Score) and all the independent variables. Model 1: measure modern slavery media coverage alternatively by focusing on 12 major UK newspapers. Model 2: measure supply chain slavery risk alternatively based on the average value of the Global Slavery Index published between 2014 and 2018. Model 3: measure corporate sustainability performance alternatively by focusing on the environmental and financial performance dimensions (i.e. exclude the social performance dimension). Model 4: treat corporate sustainability performance as an endogenous variable and perform two-stage least squares estimation based on the instrumental variables approach. Model 5: show the three individual dimensions of corporate sustainability performance. Model 6: measure the dependent variable alternatively based on average statement score from 2015 to 2018. Model 7: measure the dependent variable alternatively based on manual coding of statements.

## Response to Editor and Reviewer Comments

Dear Editor and Reviewers,

Please find enclosed a revised version of our manuscript for you to further consider for publication in the *International Journal of Operations and Production Management*. We have refined the paper in response to the many constructive comments and suggestions we received on our earlier draft.

The changes in the revised paper include but are not limited to the following:

- We now use media coverage of modern slavery issues rather than modern slavery legislation to indicate firm awareness in the modern slavery context.
- We focus on slavery risks in supply chains and have dropped supply chain complexity for the motivation dimension of the AMC framework.
- We use corporate sustainability performance, which is an integration of a firm's social, environmental, and financial performance, for the capability dimension of the AMC framework.
- The above means that the variables included in the revised paper are modern slavery media coverage, supply chain slavery risk, and corporate sustainability performance, corresponding to the awareness, motivation, and capability dimensions, respectively, of the AMC framework.
- We have strengthened the literature review and theoretical background section (section 2) by explaining why the AMC framework is appropriate in our research context, discussing how previous AMC studies use relevant, measurable variables to indicate firm awareness, motivation, and capability in their research contexts, and emphasizing the importance of providing additional theoretical explanations for why these variables are related to the specific AMC dimensions.
- We have completely rewritten the hypothesis development section (section 3) to provide more solid theoretical explanations of why the variables included in our research (i.e. modern slavery media coverage, supply chain slavery risk, and corporate sustainability performance) affect firms' efforts to address modern slavery in supply chains. Specifically, we integrate the AMC framework with several relevant theories, including agenda-setting theory, the expectancy-valence model, and the resource-based view, to explain why our research variables are related to firms' awareness, motivation, and capability in the modern slavery context, which in turn translate into their efforts to address modern slavery in supply chains.
- We have improved variable measurements (section 4.2) by explaining why it is appropriate to measure firms' efforts to address modern slavery issues based on their modern slavery statements, verifying the program-coded statement scores based on other data sources and measurement approaches, measuring modern slavery media coverage based on Factiva data, accounting for the uneven distribution of suppliers across countries for the measurement of supply chain slavery risk, and excluding social performance in supply chains for the measurement of corporate sustainability performance to address possible tautological

concerns.

- We now provide a more detailed explanation in the regression analysis (section 4.3) about the advantages of our analysis approach for testing the proposed hypotheses, such as time lags between dependent and independent variables, data collected from different sources, robustness tests based on alternative measures, and low variance inflation factor values across variables.
- We now perform several additional tests to demonstrate the robustness of our findings (section 5.1), such as by using alternative measures of independent and dependent variables, employing the instrumental variables (IV) approach to address endogeneity concerns, examining the differences across the three dimensions of corporate sustainability performance, and by adopting manual coding of all modern slavery statements.
- We have provided a detailed discussion of the test results for both hypothesized and control variables (section 6) and interpreted them against the AMC framework and relevant theories including agenda-setting theory, the expectancy-valence model, and the resource-based view.
- We have improved our research's theoretical contributions (section 7.1) and now better discuss how our research contributes to the modern slavery literature through demonstrating the applicability of the AMC framework in the modern slavery context, how it enriches the AMC literature with a formal theorization of the AMC-related variables under study, and how it extends the resource-based view by arguing that the advantage-creating potentials should vary across different types of firm resources.
- We have strengthened our research's practical contributions (section 7.2) and further discussed how our research findings provide important implications for different stakeholders, such as governments, NGOs, customers, shareholders, and the firms themselves.

The remainder of this document provides a more detailed description of how we have responded to all the review comments that we received. Each review comment is first given in black text followed by the author response in blue text.

We greatly appreciate the opportunity we have been given to submit this revision. Thank you.

## Response to Editor-in-Chief's Comments

### [Editor-in-Chief's Comments]

Looking through the reviewer comments, we however believe that most of them are addressable, and we therefore invite and encourage you to revise and resubmit your paper. We see promise in the paper.

All reviewers provide some valuable suggestions for your consideration to further improve the paper. Please do your best to address as many of these reviewer comments as possible. If you are not able to do so, please note these issues as a limitation, or rebut them in your response document. For instance, I feel that the theoretical angle is good. You may want to draw ties here to the motivation-opportunity-ability perspective--in this vein, please find also attached a paper we wrote a number of years ago that leveraged this perspective, and maybe similar argumentation can be used in your paper as well.

### [Our Response]

Thank you for your positive comments on our paper's potential and theoretical angle and for giving us an important opportunity to revise the paper and to address the reviewers' concerns. We have read all the reviewers' comments very carefully and followed their suggestions closely when revising the paper. We discuss in the following pages the detailed changes that have been made in the revised paper based on their comments and suggestions.

We are grateful for your generosity in sharing your MOA paper with us, which inspires us to further enhance our hypothesis development and theoretical contributions. Specifically, inspired by your theoretical development, we integrate the AMC framework with several relevant theories including agenda-setting theory, the expectancy-valence model, and the resource-based view to provide a more solid theoretical explanation of why the hypothesized variables included in our study are related to firms' efforts to address modern slavery in supply chains (section 3). We have also strengthened our research's theoretical implications (section 7.1) by discussing how our research: contributes to the modern slavery literature through demonstrating the applicability of the AMC framework in the modern slavery context (inspired by your application of the MOA framework in the buyer-driven knowledge transfer context), enriches the AMC literature with a formal theorization of the AMC-related variables under study (inspired by your theorization of the MOA-related variables), and extends the resource-based view by arguing that the advantage-creating potentials should vary across different types of firm resources (inspired by your contingency argument).

Overall, we feel that the quality of our paper has been improved significantly with your valuable guidance and the reviewers' constructive suggestions. We also believe we have addressed all of the reviewers' concerns. Please do let us know if you have any additional comments or suggestions. We greatly appreciate the opportunity to submit this revision. Thank you.

## Response to Reviewer 1's Comments

### [Reviewer 1's Comments]

Thank you for the opportunity to review this paper. I certainly appreciate the attention to modern slavery in supply chain as it is an important phenomenon that prevent those systems to achieve appropriate levels of sustainability. The authors for sure picked an interesting and intriguing topic. Overall, the paper is well-written. However, there are some issues that need to be addressed.

### [Our Response]

Thank you for your positive comments on the importance and interestingness of our research topic. We are also glad to learn that you think our paper is well-written. We have read your comments on our paper carefully and followed your suggestions accordingly when revising the paper. We discuss below the changes that have been made in the revised paper based on your comments and suggestions.

### [Reviewer 1's Comments]

#### THEORETICAL FRAMEWORK

The authors propose a theoretical/conceptual framework based on the Awareness-Motivation-Capability (AMC) perspective in which they explore the issue of modern slavery supply chain. The road towards the development of the paper's theoretical framework in my view lacks sufficient argumentation/articulation. Let me try to explain this in more detail.

Although the AMC perspective may bring some value to the modern slavery debate, I feel that section 2 is underdeveloped. It seems to be a section with 3 disconnected sub-sections (i.e., 2.1, 2.2, 2.3). For example, subsection 2.1, which has one single paragraph, adds little value to the paper. Section 2.2 explores the phenomenon itself and what the literature says about it. Section 2.3 is central to your theoretical framework. However, AMC in isolation may bring a limited theoretical perspective to this study. In fact, I was hoping to see a more robust and sophisticated theoretical framework, including a combination of multiple relevant theories/theoretical perspectives. This is something important for the authors to think about.

### [Our Response]

Thank you for your useful comments on our section 2 regarding the literature review and theoretical background of the AMC framework. We agree that subsection 2.1 in the previous version may add less value to the paper as it just provides an introduction of the UK Modern Slavery Act. We also agree that a combination of multiple relevant theories or theoretical perspectives can provide more robust and sophisticated explanations of the relationships among different variables under study.

Following your suggestions, we first dropped the original subsection 2.1. Instead, we now make use of the new subsection 2.1 to review past studies on modern slavery in supply chains and identify an important research gap in the literature, which in turn points out that our research



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3 aims to address this gap through the theoretical lens of the AMC framework that is further  
4 explained in the new subsection 2.2. This enables us to make a better connection between the  
5 new subsections 2.1 and 2.2. Specifically, we mention that “Although previous studies have  
6 demonstrated the heterogeneity of firm responses to disclosure requirements and the variation  
7 in firm strategies to address modern slavery in supply chains, little is known about why such  
8 heterogeneity and variation occurs. Indeed, as Monciardini et al. (2021, p. 290) observed,  
9 existing studies “only describe this phenomenon [i.e. a variety of organizational responses and  
10 strategies] but struggle to explain it”. Our research aims to address this important knowledge  
11 gap by adopting the AMC framework to investigate AMC-related factors that help explain why  
12 firms put different efforts into addressing modern slavery in supply chains” (p. 5).  
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18 In the new subsection 2.2, following your suggestion, we discuss the limitations of the AMC  
19 framework and point out the need to adopt additional theories to explain why the variables  
20 included in a study are relevant to one or more dimensions of the AMC framework and thus  
21 justify the inclusion of these variables. We also use a few past studies to illustrate this point.  
22 Specifically, we mention that “a general principle, as Yu and Cannella (2007, p. 667) argued,  
23 is that the variables to be included in an AMC study have “to impact one or more dimensions  
24 of the framework.” This suggests that researchers also need to provide additional theoretical  
25 explanations for why these variables are related to the specific AMC dimensions. For example,  
26 Chen et al. (2007) explained that a firm should pay more attention to its competitors with  
27 relatively larger scales or sizes, increasing its awareness of the competition from these  
28 competitors, while Haleblian et al. (2012) theorized that it should be easier for a firm with  
29 higher financial performance to raise the required resources to finance acquisitions, equipping  
30 it with a better capability to participate in an acquisition wave” (pp. 6-7).  
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36 Following the principle suggested by Yu and Cannella (2007) and taking account of the modern  
37 slavery context, we then explain that we adopt the theoretical lenses of agenda-setting theory,  
38 the expectancy-valence model, and the resource-based view to explain why the variables  
39 included in our research, i.e. modern slavery media coverage, supply chain slavery risk, and  
40 corporate sustainability performance, can be viewed as AMC-related factors and thus related  
41 to firm efforts to address modern slavery in supply chains. Specifically, we adopt agenda-  
42 setting theory to explain that firms should be more aware of the importance of addressing  
43 supply chain modern slavery issues when there is greater media coverage of these issues, the  
44 expectancy-valence model to explain that firms sourcing from countries with higher slavery  
45 risks should be more motivated to address the slavery issues, and the resource-based view to  
46 explain that firms with better performance in corporate sustainability should be more capable  
47 of addressing the slavery issues. We provide a detailed discussion of these theoretical  
48 explanations in section 3 on the development of our hypotheses.  
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54 Overall, we agree with your insightful comments that a combination of multiple relevant  
55 theories or theoretical perspectives (e.g. agenda-setting theory, the expectancy-valence model,  
56 and the resource-based view) with the AMC framework enables us to provide a more robust  
57 and sophisticated theoretical explanation of the hypothesized relationships in this research.  
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### [Reviewer 1's Comments]

The issue above becomes evident in Figure 1, which is confusing and perhaps presented too early in the paper (at which point the reader is still trying to make sense of what you plan to do in the paper with very limited knowledge about the constructs). To me, it seems awkward to refer to “Modern Slavery Legislation” as “Awareness” in the AMC framework. From my perspective legislation is and will always be the “motivation”, i.e., the reason why companies and supply chains may (or may not) act to avoid penalties, sanctions, bad publicity and loss of reputation. “Awareness” to me would be associated with the media (e.g., specific cases that go public and consequences of those cases) or government (e.g., specific campaigns to fight modern slavery). Another issue is with the “Motivation” block in the AMC framework as per Figure 1. “SC Complexity” per se can never be a motive for firms to act in regard to modern slavery (please note that there are pretty complex SCs that do not rely on modern slavery). Thus here an operationalizable construct of “Modern Slavery Risk” that also includes the construct of “SC Slavery Index” may be the solution to this issue. In the same way, “Financial Performance” and “Social Performance” are outcomes, which may or may not be associated with the application of capabilities. The construct of “Capabilities” needs to be better explored and explained in the paper so that the reader can clearly understand what are the links and relationships between capabilities and performance. The current manuscript does not provide such a clarity.

### [Our Response]

We have made the following changes in the revised paper based on your insightful comments. First, we agree that it may be too early to present Figure 1 in the introduction section. In the revised paper, we move Figure 1 to the hypothesis development section (p. 11), providing a summary of the hypotheses developed in our research.

Inspired by your comment that awareness would be associated with the media, we include a new variable named “modern slavery media coverage” as an awareness-related factor. This new variable indicates the extent to which modern slavery issues are reported by news media. Consistent with your suggestion, we expect that firms should be more aware of the importance of addressing modern slavery in supply chains when there is greater media coverage of modern slavery issues. We agree that this media coverage variable, compared with modern slavery legislation, better captures the awareness dimension, so we avoid viewing modern slavery legislation as the awareness backdrop in the revised paper.

We also agree that it is not necessary that firms with complex supply chains should be involved in modern slavery. For example, a firm with a complex supply chain (i.e. having many suppliers) but mainly sourcing from developed countries may encounter fewer modern slavery issues in its supply chain when compared with a firm having a small number of suppliers but most of these suppliers being located in developing countries. Therefore, we drop the SC complexity variable in the revised paper to avoid confusion. Following your positive comment on the SC Slavery Index variable, we focus on this variable in the revised paper to indicate the motivation dimension. This is because firms sourcing from countries with high slavery risks should be more likely to encounter modern slavery issues in supply chains, motivating them to put greater

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3 effort into addressing such issues.  
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6 We have also strengthened the explanations regarding the link between performance and  
7 capabilities in the revised paper (pp. 9-11; section 3.3). Following other reviewers' suggestions,  
8 we now focus on corporate sustainability performance in the revised paper. Consistent with  
9 previous studies that have conceptualized sustainability in terms of the three pillars of people,  
10 planet, and profits (Pagell and Gobeli, 2009; Sodhi and Tang, 2021), we regard corporate  
11 sustainability performance as a combination or integration of a firm's social, environmental,  
12 and financial performance. We then adopt the resource-based view that "considers a firm as a  
13 unique bundle of tangible and intangible resources and capabilities" (Chen, 1996, p. 107) to  
14 explain why we can view corporate sustainability performance as a capability-related variable  
15 in the modern slavery context. Specifically, we explain that the resources arising from superior  
16 performance in corporate sustainability can be regarded as VRIN (valuable, rare, imperfectly  
17 imitable, and non-substitutable) resources, making firms more capable of addressing modern  
18 slavery in supply chains and leading to a competitive advantage in terms of low slavery risk  
19 (Cousins et al., 2020). Please refer to pages 9-11 (section 3.3) for the detailed explanation.  
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### 26 **[Reviewer 1's Comments]**

#### 27 HYPOTHESES DEVELOPMENT

28 Aligned with what has been raised above, the hypotheses development section in this paper  
29 needs more attention. H1, H2, H3 and H4 are developed based on one single paragraph each –  
30 obviously it's not the number of paragraphs that counts, but one paragraph seems insufficient  
31 to articulate such a growing literature/debate on modern slavery in SCs. For example, H1 states:  
32 "Firms with more complex supply chains put greater effort into addressing modern slavery  
33 issues in their supply chains". Which firms are you talking about? The ones located in all and  
34 any position/tiers in the SC? Or only focal companies? SC complexity is also an issue raised  
35 above that needs additional clarity. H2 states: "Firms sourcing from countries with a high  
36 modern slavery risk put greater effort into addressing modern slavery issues in their supply  
37 chains". Again, lack of clarity: are you talking about direct sourcing only? Or all suppliers in  
38 the entire SC (supplier of the supplier of the supplier, etc) at multiple tiers of distance from the  
39 focal firm? If direct suppliers only, than this needs to be clear in the paper. If that's really the  
40 case, your study might be missing the more exciting area with the highest incidence of modern  
41 slavery, i.e., distant areas in the SC often called invisible parts of the SC. H3 and H4 also have  
42 issues in explaining what the connections between performance and capabilities are, which was  
43 also raised above.  
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### 51 **[Our Response]**

52 Thank you for your insightful comments on our hypothesis development. We have made the  
53 following changes in the hypothesis development based on your suggestions. First, we have  
54 dropped the previous H1 about SC complexity. This is because we agree with your earlier  
55 comment that it is not necessary that firms with complex supply chains should be involved in  
56 modern slavery, making the relationship between SC complexity and firms' motivation to  
57 address modern slavery in supply chains less clear.  
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3 Second. for H2 about SC slavery risk, we make it clear in the revised paper (p. 8; section 3.2)  
4 that we focus on direct, first-tier suppliers in this research. We also explain that these first-tier  
5 suppliers, compared with other sub-tier suppliers, are more directly connected and visible to  
6 the focal firm and thus more likely to motivate it to address modern slavery. This is in line with  
7 our assertion that supply chain slavery risk is a motivation-related variable. Nevertheless, we  
8 agree that it would be interesting to investigate the invisible parts of a supply chain in which  
9 more modern slavery incidents may occur. We thus discuss this future research direction in the  
10 revised paper (p. 25; section 7.3).  
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15 Third, in the revised paper (pp. 9-11; section 3.3), we develop H3 for corporate sustainability  
16 performance, which covers a firm's social, environmental, and financial performance. We rely  
17 on the resource-based view to provide a detailed theoretical explanation of why firms with  
18 better performance in corporate sustainability will be more capable of addressing modern  
19 slavery in supply chains. Please refer to pages 9-11 (section 3.3) for the detailed explanation.  
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### 23 **[Reviewer 1's Comments]**

#### 24 EMPIRICAL WORK

25 In line with the issues above, I would like to urge the authors to enhance the empirical side of  
26 this paper. There are strong limitations in the empirical work. The secondary dataset might not  
27 be appropriate to answer your research question. First: the paper relies on firms' modern  
28 slavery statements. This may not be that representative as often large/powerful corporations  
29 have these statements (although this has been changing recently) and your dataset further  
30 constraints the scope. Second, apart from the fact that the dataset is related to UK only (and  
31 this may make it more difficult to generalize), suppliers from Factsheet Revere are likely to be  
32 the ones that are not involved in modern slavery directly even if they come from high-risk  
33 countries (issue was commented above). Third, suppliers of the suppliers of the suppliers, etc  
34 (i.e., the ones far way in the SC structure - the invisible part of the SC) are the ones that more  
35 frequently bring the issue of modern slavery to SCs. This seems to be missing from this study.  
36 This makes me wondering whether your data can actually help you to address the current  
37 research question: "What factors explain variation in firms' efforts to address modern slavery  
38 in supply chains?" I am not quite convinced.  
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### 45 **[Our Response]**

46 Thank you for your comments on the empirical data used in our research. We agree that no  
47 research is perfect, especially for research based on secondary data that were collected quite a  
48 few years ago. While we concede that your concerns about our data limitations related to  
49 sampling, generalizability, and measurement are valid, we would like to provide a more  
50 detailed explanation and justification for why such data are necessary or reasonable in our  
51 research context.  
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56 First, we have provided a more detailed explanation in the revised paper (p. 13; section 4.2.1)  
57 about why we relied on firms' modern slavery statements to quantify firm efforts to address  
58 modern slavery in supply chains. Specifically, we mention that "due to the "illegal, often  
59 hidden" (Caruana et al., 2021, p. 258) nature of modern slavery, it is challenging to collect  
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3 reliable primary data to study modern slavery. A firm's modern slavery statement is the best  
4 data source available for us to make sense of its effort to address modern slavery issues. This  
5 is because such a statement, issued under the UK MSA, should document the steps taken by a  
6 firm to "ensure that slavery and human trafficking is not taking place in any of its supply chains"  
7 (Home Office, 2017, p. 5). Prior CSR research (e.g. Crilly et al., 2016; Li and Lu, 2020) has  
8 also relied on firms' CSR or sustainability reports to assess their CSR efforts or performance.  
9 For instance, Crilly et al. (2016) measured Chinese firms' efforts to "do good" and "do no harm"  
10 by analyzing the content of these firms' sustainability reports. Similarly, we analyzed the  
11 content of firms' modern slavery statements to quantify their efforts to address modern slavery"  
12 (p. 13). Nevertheless, we agree that focusing on modern slavery statements will limit our  
13 sample coverage because the UK Modern Slavery Act only requires firms with a turnover  $\geq$   
14 £36 million to issue modern slavery statements. We discuss this limitation in the revised paper  
15 (p. 25; section 7.3).  
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23 Second, we agree that even if a supplier is based in a country with high slavery risk, it is not  
24 necessary that this supplier will be involved in modern slavery incidents, but it is reasonable to  
25 expect that suppliers located in high-risk countries should have a higher probability of being  
26 involved in modern slavery, when compared with suppliers located in low-risk countries. We  
27 have made this point clearer in our measurement of slavery risk in supply chains in the revised  
28 paper (pp. 15-16; section 4.2.3). Specifically, we mention that "Although this measure does  
29 not capture the actual slavery incidents associated with a sample firm's suppliers, it represents  
30 the perceived slavery risk in the firm's supply chain. This is because a firm should be more  
31 likely to encounter supply chain slavery issues if its suppliers are located in countries with high  
32 (rather than low) slavery risks as indicated by the Global Slavery Index" (pp. 15-16). This  
33 measurement approach is also consistent with prior SCM research that emphasizes the  
34 importance of considering the likelihood or probability of adverse supply chain events when  
35 assessing supply chain risk (Heckmann et al., 2015). We have also changed the variable name  
36 from "supply chain slavery index" to "supply chain slavery risk" in the revised paper to better  
37 reflect our "risk" focus.  
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44 Finally, as mentioned in our response to your earlier comments, we agree that it would be  
45 interesting to investigate the invisible parts of a supply chain in which more modern slavery  
46 incidents may occur (we discuss this future research direction on page 25 of the revised paper),  
47 but we believe that it is reasonable to focus on focal firms' direct suppliers in our research  
48 context. This is because these visible suppliers are more likely to draw the focal firms' attention  
49 and motivate them to address modern slavery issues, when compared with their less-visible  
50 indirect suppliers. We have made this point clearer in the revised paper (p. 8; section 3.2) by  
51 stating that "In this research, we focus on a focal firm's first-tier suppliers because these  
52 suppliers, compared with other sub-tier suppliers, are more directly connected and visible to  
53 the focal firm and thus more likely to motivate it to address modern slavery. This is in line with  
54 our assertion that supply chain slavery risk is a motivation-related variable" (p. 8).  
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Overall, we do appreciate your valid concerns about our data limitations and we also discuss



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3 these limitations in the revised paper, but we believe these data are reasonable for answering  
4 our research question, as explained above.  
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### 7 **[Reviewer 1's Comments]**

#### 8 DISCUSSION/CONCLUSION

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10 The section is potentially interesting, but sometimes really confusing. Most of the times having  
11 a separated section for "discussion" and other for "conclusions" helps clarifying things to  
12 readers and create a more cohesive flow. For example, the section 6 starts with one single  
13 enormous paragraph, which is quite confusing. Then subsection 6.1 would be fundamental to  
14 add value to the paper, but it seems a bit superficial. The contributions to the literature are not  
15 very convincing, possibly because the issues raised above, which takes a good chunk of the  
16 legitimacy of this paper. This includes both the first contribution ("we theorize that firms with  
17 supply chains that are complex and spread across countries with high slavery risks are more  
18 motivated to address modern slavery issues") and the second one ("our analysis suggests that  
19 not all types of firm capabilities are created equal: while some (e.g. social performance) enable  
20 firms to put more effort into addressing these issues, others (e.g. financial performance) are not  
21 directly related to firm efforts"). With that said, I believe this paper requires (and deserves)  
22 more work and more thought to enhance its contributions beyond what it is currently claiming.  
23 With a better articulated theoretical framework, better definition of the variables, possibly  
24 revised research question and more appropriate hypotheses, the authors may be able (as they  
25 should) to think and work harder on the contributions of this paper to the theory, practice and  
26 policy. This would allow the authors to develop/extend the theory on modern slavery in supply  
27 chains supported by the theoretical lenses adopted and the empirical evidences that emerge  
28 from the field.  
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### 36 **[Our Response]**

37 Thank you for your insightful comments, which enabled us to further improve the contributions  
38 of our research. Following your suggestions, we first have two separate sections for the  
39 discussion (section 6) and conclusions (section 7) in the revised paper to improve the clarity of  
40 presentation. Specifically, section 6 documents the discussion of our test results while section  
41 7 focuses on this research's conclusions as well as its contributions and limitations. We also  
42 simplify the starting paragraph in section 6 to avoid confusion.  
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47 Based on your earlier comments, we have revised our research quite significantly, such as by  
48 integrating the AMC framework with several relevant theories including agenda-setting theory,  
49 the expectancy-valence model, and the resource-based view to provide a better theoretical  
50 explanation of firms' efforts to address modern slavery in supply chains, dropping the supply  
51 chain complexity variable to avoid confusion, using media coverage rather than legislation to  
52 indicate awareness, and measuring firm performance in corporate sustainability that takes  
53 account of the three pillars of people, planet, and profits. These significant changes enable our  
54 research to make better contributions to theory, practice and policy.  
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58 We have rewritten our research's theoretical contributions significantly and discussed them  
59 from three different perspectives, as shown in section 7.1 (pp. 22-23) in the revised paper.  
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3 Specifically, first, we emphasize that our research contributes to the modern slavery literature  
4 by adopting the AMC framework to explain why firms put different efforts into addressing  
5 modern slavery in supply chains. Although prior studies have documented the variation in firms'  
6 efforts to address modern slavery (Stevenson and Cole, 2018; Flynn and Walker, 2021), they  
7 "struggle to explain it", as pointed out by Monciardini et al. (2021, p. 290). The AMC  
8 framework enables us to make sense of such variation by considering a firm's awareness,  
9 motivation, and capability of addressing modern slavery issues. The consideration of the three  
10 dimensions of awareness, motivation, and capability also allows us to provide a more  
11 comprehensive explanation of the determinants of the firms' efforts. Our research demonstrates  
12 the applicability of the AMC framework in the modern slavery context, laying an important  
13 theoretical foundation for future research.  
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19 Second, we explain that our research enriches the AMC literature by employing relevant  
20 theories, including agenda-setting theory, the expectancy-valence model, and the resource-  
21 based view, to further theorize how the variables under study are related to the specific AMC  
22 dimensions. Although the AMC framework provides an overarching, meta-theoretic  
23 perspective for researchers to consider AMC-related variables, it fails to explain why these  
24 variables are related to the specific AMC dimensions and thus can be viewed as AMC-related  
25 variables. Previous AMC studies have also often made the connections between their research  
26 variables and the specific AMC dimensions based on implicit assumptions or common sense.  
27 Our research, by contrast, relies on formal theorization, providing a clear link between  
28 empirical constructs and theoretical concepts. Overall, our research highlights the importance  
29 of integrating the AMC framework with other relevant theories, together enabling a solid,  
30 theoretical explanation of the AMC-related variables and advancing the AMC literature.  
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36 Finally, we discuss how our research reveals new theoretical insights by comparing different  
37 capability-related variables. Specifically, our research shows that the social, environmental,  
38 and financial dimensions of corporate sustainability are related to firm efforts to address  
39 modern slavery to different extents. This suggests that although firms with superior  
40 performance in these dimensions should possess more resources that enable them to address  
41 modern slavery, the importance of these dimensions is not the same in the modern slavery  
42 context. Our research thus extends the resource-based view by arguing that although VRIN  
43 resources enable firms to create competitive advantage (Barney, 1991), the advantage-creating  
44 potentials should vary across different types of VRIN resources. In other words, we should not  
45 assume the same advantage-creating potentials for different VRIN resources.  
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51 We have also rewritten our research's practical contributions significantly and discussed how  
52 our research findings provide important implications for different stakeholders, such as  
53 governments, NGOs, customers, shareholders, and the firms themselves, as shown in section  
54 7.2 (pp. 23-25) in the revised paper. Specifically, for the finding about modern slavery media  
55 coverage, we discuss how governments and NGOs can use news media to make firms more  
56 aware of "proposed solutions" and "specific knowledge about the proposals" (Benton and  
57 Frazier, 1976, p. 261), moving beyond a general awareness of modern slavery issues. For the  
58 finding about supply chain slavery risk, we discuss how governments and the private sector  
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3 can use both carrot and stick approaches to motivate firms to address modern slavery in supply  
4 chains. For the finding about corporate sustainability performance, we urge firms to improve  
5 their performance in corporate sustainability, which in turn will make them more capable of  
6 addressing modern slavery in supply chains. For the finding about domestic sales, we highlight  
7 that UK customers, who “seek out businesses with higher ethical standards” (Home Office,  
8 2017, p. 4), can motivate firms to address modern slavery in their supply chains. For the finding  
9 about the MTB ratio, we emphasize that shareholders of firms with a high MTB ratio need to  
10 voice their expectation of slavery-free supply chains, changing the firms’ perceptions and  
11 encouraging them to address supply chain slavery issues.  
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16 Overall, we sincerely thank you for your insightful comments and helpful suggestions, which  
17 enabled us to improve the quality of our paper significantly. We hope we have addressed all  
18 your concerns. Please let us know if you have any additional comments and suggestions. Thank  
19 you.  
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## Response to Reviewer 2's Comments

### [Reviewer 2's Comments]

Overall

This paper covers an emerging hot topic, modern slavery in supply chains. The authors have chosen a basic framework (awareness-motivation-capability) to operationalize the study along with data from 201 UK firms. The research question is supported by four relevant hypotheses. The authors use a variety of data sources to test the hypotheses and later do a robustness test with variable changes. Overall, the paper is well done and I have only a few comments on improvements.

### [Our Response]

Thank you for your overall positive comments on our paper. We have further revised the paper based on your helpful suggestions, as discussed below. Please let us know if you have any further comments or suggestions. Thank you.

### [Reviewer 2's Comments]

Title

The title reflects the contents of the paper.

### [Our Response]

Thank you.

### [Reviewer 2's Comments]

Theory

The framework has been around for a long time but only recently adopted in operations management although it seems very obvious. There seems to be opportunities in future research to use more advanced theories here. The hypotheses all make sense based on what we know about these types of CSR problems.

### [Our Response]

We are glad to learn that you think the AMC framework fits our research. Following Reviewer 1's suggestions, we have further enhanced the hypothesis development in the revised paper (pp. 7-11; section 3) by adopting additional relevant theories, including agenda-setting theory, the expectancy-valence model, and the resource-based view, to explain why the awareness-, motivation-, and capability-related factors considered in our research are related to firms' efforts to address modern slavery in supply chains. We also discuss the theoretical implications of using these theories in the revised paper (pp. 22-23; section 7.1).

### [Reviewer 2's Comments]

Data Collection Process

Might there be a difference between the firms that started issuing their MSA statements in 2015 versus the ones that came on board later? It would seem that those that had started first might

have more comprehensive statements than those who started later.

### [Our Response]

We agree that it is reasonable to expect that there may be a difference in statement scores between firms issuing their MSA statements in different years. Following your suggestions, we conduct one-way ANOVA tests to check whether there is any significant difference in statement scores across different issuing years (2015-2018). The ANOVA test result is not significant ( $F$ -value = 1.51,  $p$ -value = 0.21). We also further perform multiple-comparison tests to provide a direct comparison of statement scores between 2015 and each of the other years. The multiple-comparison test results shown below suggest that the statement scores issued in 2015 are not significantly different from those issued in other years. Overall, there is no evidence that the statement scores vary significantly across years. We have reported and discussed these non-significant test results in the revised paper (p. 19; section 5.1).

Year	Year	Difference in statement scores	Scheffé-adjusted $p$ -value
2015	2016	4.86	0.46
2015	2017	9.00	0.47
2015	2018	-2.80	0.99

### [Reviewer 2's Comments]

Also, it appears that the measures of slavery are averaged across countries but what if a company sources more product from a riskier country? It would seem that some kind of weighted average might be more representative although it would be harder to get this data. I suggest mentioning more limitations of the variables used in the limitations and opportunities for future research section. Additionally, what might be the limitations of having higher sales companies in your data set (over 72.2 million pounds) relative to those players with lower sales that still meet the threshold?

### [Our Response]

We are sorry that we did not make it clear in the previous manuscript that our measure of supply chain slavery risk is based on a weighted average. We are able to calculate the weighted average because the supply chain relationship data obtained from Factset Revere indicates the countries in which a firm's suppliers are located. In the revised paper (p. 15; section 4.2.3), we have made it explicit that our measure of supply chain slavery risk is based on the following equation.

$\sum_{i=1}^N w_i \times \text{Global Slavery Index}_i$ , where  $w_i$  represents the ratio of a firm's number of suppliers in country  $i$  to the same firm's total number suppliers across  $N$  countries, and  $\text{Global Slavery Index}_i$  indicates country  $i$ 's Global Slavery Index published by the Walk Free Foundation in 2014.

We agree that there are some limitations with our sample firms whose minimum sales are about double the threshold (£36 million) for issuing modern slavery statements. In particular, our regression results, as shown in Table IV, suggest that large firms tend to have better statement



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3 scores, as large firms may have more resources to address modern slavery issues. Our test  
4 results thus may not be applicable to small firms with fewer resources to address modern  
5 slavery issues. We discuss this limitation in the revised paper (p. 25; section 7.3).  
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### 8 **[Reviewer 2's Comments]**

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10 Use of Python: It's not exactly clear how you did this auto-coding. You should add a table that  
11 shows how you gave sentence fragments to Python and how they were counted. It seems like  
12 a place where lots of green-washing could occur. This could also be a limitation of the  
13 statements used. How did the firms get a point in the category? For example: do they mention  
14 the topic or do they actually do something actionable about the topic?  
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### 17 **[Our Response]**

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19 Following your suggestion, we have provided a coding example in the revised paper (p. 14;  
20 section 4.2.1) to illustrate how our Python program assigned different points to firms by  
21 analyzing the content of their statements. Specifically, we mention that "for category (f)  
22 regarding modern slavery and human trafficking training, our program assigned 2 points to a  
23 firm if its statement mentioned training and modern slavery/human trafficking-related  
24 keywords in a sentence. If only the training keyword was mentioned without modern  
25 slavery/human trafficking-related keywords in the same sentence, 1 point was assigned by the  
26 program. Finally, the program assigned 0 points to a firm if the training keyword could not be  
27 found across the text of its statement" (p. 14).  
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32 We agree with your concern that green-washing is possible as our coding approach was based  
33 on counting of relevant keywords mentioned in firms' statements. We now address this concern  
34 with two different approaches: the first approach is based on data from Development  
35 International and the second approach is based on our manual coding of the statements. For the  
36 first approach, we mention in the revised paper (p. 14; section 4.2.1) that "we first obtained the  
37 data from Development International, who assessed the anti-slavery/human trafficking  
38 performance of FTSE 100 companies based on modern slavery statements (Bayer et al., 2018).  
39 We then matched our sample with those covered by Development International, resulting in 71  
40 matched firms. Finally, we computed the correlation between our program-coded statement  
41 scores and the performance scores obtained from Development International for these 71 firms.  
42 The correlation is highly positive and significant ( $r = 0.42$ ,  $p < 0.01$ )" (p. 14).  
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48 For the second approach, we mention in the revised paper (p. 20; section 5.1) that "we  
49 remeasured firm efforts to address modern slavery in supply chains based on human (rather  
50 than machine) coding. Specifically, two of the authors read the modern slavery statements of  
51 all sample firms independently and rated each statement based on a five-point scale, ranging  
52 from 1 (little effort to address modern slavery) to 5 (major effort to address modern slavery).  
53 The ratings from the two independent coders were consistent, as indicated by the very high  
54 correlation between their ratings ( $r = 0.87$ ,  $p < 0.01$ ). We thus averaged the ratings from the  
55 two coders to indicate firms' overall efforts. We also checked and confirmed a high correlation  
56 between the human- and machine-coded ratings ( $r = 0.48$ ,  $p < 0.01$ ). Finally, we obtained  
57 consistent regression results in Model 7 with the human-coded ratings as the dependent variable"  
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(p. 20). Taken together, these additional checks confirmed the reliability and validity of this automated coding approach.

### [Reviewer 2's Comments]

Comparison of metrics versus robustness test

I would like to see a table that compares the initial metric to the robustness test metric and what about these two measures is different. Why might the robustness metrics capture that is different?

### [Our Response]

Following your suggestions, we compare the differences between the original measures used in Table IV and the alternative measures used in the robustness tests (Table V), as shown in the following table. Although we did not include this table in the revised paper due to *IJOPM*'s word limit, we provide more detailed descriptions of the alternative measures in the revised paper (pp. 18-20; section 5.1) to spell out the differences.

Variable Names	Original Measures in Table IV	Alternative Measures in Table V	Differences
Modern Slavery Media Coverage	Annual number of news articles covering modern slavery issues from the UK media	Annual number of news articles covering modern slavery issues from 12 major UK newspapers	The alternative measure focuses on the 12 major UK newspapers (rather than all UK media), as UK firms may pay more attention to these major newspapers.
Supply Chain Slavery Risk	Weighted average of the Global Slavery Index published in 2014 across all countries in which a firm's suppliers are located	Weighted average of the average Global Slavery Index published between 2014 and 2018 across all countries in which a firm's suppliers are located	The alternative measure is based on the average Global Slavery Index published between 2014 and 2018 (rather than published in 2014 only), covering our investigation period from 2015 to 2018.
Corporate Sustainability Performance	The average of a firm's financial performance, social performance, and environmental performance	The average of a firm's financial performance and environmental performance	The alternative measure focuses on the financial and environmental performance dimensions (rather than all three dimensions), addressing the concern that the social performance dimension may have covered modern slavery.
Statement Score	The score of a firm's first modern	The average score of a firm's modern	The alternative measure covers all modern slavery

	slavery statement	slavery statements issued between 2015 and 2018.	statements issued by a firm between 2015 and 2018, making the results more comparable across firms.
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### **[Reviewer 2's Comments]**

#### Findings and implications

In the implications for practices, it seems to be biased more toward rewards to discourage slavery practices instead of penalties? Governments have a wide variety of policy tools here so I would suggest considering both carrots and sticks.

### **[Our Response]**

Following your useful suggestions, we have further strengthened the implications for practice in the revised paper (p. 24; section 7.2). In particular, we discuss how governments can use both carrot and stick approaches to motivate firms to address modern slavery. Specifically, we mention that “A general insight emerging from our investigation is that a firm is more motivated to act when it “feels that something important is at stake” (Yu and Cannella, 2007, p. 666). This suggests that governments could use both carrot and stick approaches to motivate firms to address modern slavery. For instance, a firm’s performance in addressing modern slavery could become part of the criteria for obtaining governmental contracts, and the private sector could be encouraged to also follow this practice. Similarly, the government and private sector could adopt a zero-tolerance policy, terminating contracts with firms when modern slavery is found in their supply chains” (p. 24).

### **[Reviewer 2's Comments]**

#### Writing Overall

Overall, the paper is well written and organized. I believe the authors have done a nice job with this research and given what an important social issue this is, it’s nice to see people advancing this research in operations management.

### **[Our Response]**

Thank you for your positive comments on the writing of our paper and the importance of our research. We hope we have addressed all your concerns. Please let us know if you have any other comments or suggestions. Thank you.

## Response to Reviewer 3's Comments

### [Reviewer 3's Comments]

Thank you for the opportunity to review your interesting and relevant paper entitled: Addressing Modern Slavery in Supply Chains: An Awareness-Motivation-Capability Perspective. This is an interesting and relevant topic for academics, policy makers and practitioners alike. This paper draws on an interesting set of secondary data sources to test four deductively derived hypotheses relating to firms' motivation and capabilities in addressing modern slavery risks in their supply chains. The paper is very well written but unfortunately, does not make any real contributions to either theory or practice.

### [Our Response]

Thank you for your positive comments on the interestingness and relevance of our paper. We are also glad to learn that you think the dataset used in our research is interesting and the paper is well written. We have followed your useful suggestions and revised the paper significantly, paying particular attention to strengthening the contributions of our research to theory and practice. We discuss below the changes that have been made based on your insightful comments.

### [Reviewer 3's Comments]

Conceptual framework and research design

Some interesting data sources are engaged, but the issues relate to the learning derived from these data, and whether any contributions are made to theory or practice / policy. The research design is rather limited relying on simple multiple regression model such that the proposed hypotheses cannot really be tested for any directional inferences, and whilst the analyses throw up some potentially interesting correlations and non-correlations, I was left with a feeling that this was starting point for some more extensive research that may make a contribution.

### [Our Response]

Thank you for your positive comment on the interestingness of the data sources used in our research. We also agree that our Table III shows the correlations among different variables, but we have to respectfully disagree that our multiple regression analysis is just showing correlations and is inappropriate for testing the proposed hypotheses. A search across all papers published in *IJOPM* suggests that more than 100 *IJOPM* publications have relied on multiple regression analysis for hypothesis testing, making it clear that multiple regression analysis has been widely accepted in the OM field as a standard tool for hypothesis testing.

Our research has also paid close attention to the direction of the relationships under test. In particular, we use time-series rather than cross-sectional data in this research, enabling us to maintain a one-year lag between the dependent and independent variables and ensure that we test how the independent variables measured in year  $t-1$  affect the dependent variable measured in year  $t$ . Moreover, we collect data from different sources such as Factset Revere, Worldscope, and Sustainalytics, reducing common method bias and improving the confidence in the test

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3 results. We also conduct several robustness tests based on alternative measures of the  
4 dependent and independent variables and obtain consistent test results. Overall, we view our  
5 empirical analysis as even more advanced and robust than traditional *IJOPM* papers based on  
6 cross-sectional data collected from single sources.  
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10 We are sorry that we might not have made the advantages of our empirical analysis clear in the  
11 previous manuscript. We have provided more detailed explanations of these advantages in the  
12 revised paper (p. 17; section 4.3) to avoid misunderstanding. Specifically, we state that “We  
13 maintained a one-year lag between the dependent variable measured in year  $t+1$  and all  
14 independent variables measured in year  $t$ , ensuring the direction of causality under test. Also,  
15 the dependent and independent variables were measured based on data collected from different  
16 sources such as Factset Revere, Worldscope, and Sustainalytics, reducing possible common  
17 method bias. We have also conducted several robustness tests based on alternative measures of  
18 the dependent and independent variables and obtained consistent test results, as documented in  
19 Section 5.1. The highest variance inflation factor values across all independent variables is 1.30,  
20 which is well below the threshold of 5 and suggests multicollinearity is not a major concern  
21 (Kim et al., 2016)” (p. 17).  
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### 26 27 [Reviewer 3’s Comments]

28 The AMC perspective is not adequately justified or expanded sufficiently. By the time the ‘A’  
29 was seemingly side-lined from the start (“We take the introduction of modern slavery  
30 legislation as firms’ increased awareness of the threat (Benstead et al., 2018), which enables  
31 us to focus on factors related to firms’ motivations and capabilities”), it was difficult to see  
32 why this strategic competitive analysis tool was selected at all? In particular there was no  
33 alignment between Chen’s (or other authors) operationalisation of variables and the use made  
34 in this study, such that all that remained is the words themselves. How does this framework  
35 differ from Pettigrew and McNulty’s 1995 concept of skills and willingness for instance?  
36 I also found the conflation of capability with performance to be problematic. These are two  
37 very different concepts. The relationship between social performance and modern slavery  
38 “efforts” also needs further examination up front. The former is considered by many policy  
39 makers to include modern slavery such that correlation may be expected anyway ... impacting  
40 the formulation and testing of H4.  
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### 46 47 [Our Response]

48 Thank you for your insightful comments on the AMC framework used in our research.  
49 Following your suggestions, we have made the following changes in the revised paper. First,  
50 we have stopped viewing the introduction of modern slavery legislation as firms’ increased  
51 awareness, because, as Reviewer 1 has suggested, it is better to use media coverage rather than  
52 modern slavery legislation to indicate awareness. As a result, we develop a new hypothesis 1  
53 (H1) about how media coverage of modern slavery issues is related to firms’ efforts to address  
54 modern slavery in supply chains (pp. 7-8; section 3.1).  
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58 Second, in the revised paper (p. 6; section 2.2), we also discuss the operationalization of  
59 variables in Chen’s research and other AMC studies (e.g. Chen et al., 2007; Udenio et al., 2018;  
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Haleblian et al., 2012). In particular, we clarify that it is difficult, if not impossible, to measure awareness, motivation, and capability at the firm level, especially for research based on secondary data. Therefore, researchers need to make use of other relevant, measurable variables to indicate or signal a firm's awareness, motivation, and capability. This also suggests that these variables are context-specific and vary across studies. We provide a few examples to illustrate this point in the revised paper. Specifically, we state that "For example, Chen et al. (2007) used the relative scale of a firm's competitors to indicate the firm's awareness of the competition, whereas Udenio et al. (2018) employed a firm's market orientation to signal its awareness of demand shocks. Similarly, regarding the capability dimension, Udenio et al. (2018) chose a firm's availability of resources, such as planners and IT systems, in their research context of inventory management, but Haleblian et al. (2012) relied on a firm's financial performance to study its participation in an acquisition wave" (p. 6).

As the AMC framework is a high-level, meta-theoretic perspective that enables researchers to consider awareness-, motivation-, and capability-related factors, we agree that it is important to provide additional theoretical explanations of why these factors are related to firm awareness, motivation, and capability in the specific research contexts. We also use a few past studies to illustrate this point in the revised paper (pp. 6-7; section 2.2). Specifically, we mention that "a general principle, as Yu and Cannella (2007, p. 667) argued, is that the variables to be included in a study "had to impact one or more dimensions of the framework." This suggests that researchers also need to provide additional theoretical explanations of why these variables are related to the specific AMC dimensions. For example, Chen et al. (2007) explained that a firm should pay more attention to its competitors with relatively larger scales or sizes, increasing its awareness of the competition from these competitors, while Haleblian et al. (2012) theorized that it should be easier for a firm with higher financial performance to raise the required resources to finance acquisitions, equipping it with a better capability to participate in an acquisition wave" (pp. 6-7).

As a result, we have also further strengthened our hypothesis development (pp. 7-11; section 3) in the revised paper by providing more detailed theoretical explanations of why the independent variables considered in our research are related to a firm's awareness, motivation, and capability, respectively, in the modern slavery context. For example, in developing H1, we adopt agenda-setting theory to explain why firms are more aware of the importance of addressing modern slavery in supply chains when there is greater media coverage of modern slavery issues (again, in line with previous AMC studies, we are not measuring awareness as media coverage but explain why media coverage is related to awareness). Similarly, we use the resource-based view to explain the relationship between capability and performance, but it does not suggest that we view that capability = performance or we measure capability as performance.

We also agree that there are some overlaps between the AMC framework and Pettigrew and McNulty's (1995) concept of skills and willingness. In particular, the motivation and ability dimensions of the AMC framework are consistent with Pettigrew and McNulty's willingness and skills concepts, respectively. However, Pettigrew and McNulty (1995) did not capture the



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3 awareness dimension of the AMC framework. As we have considered an awareness-related  
4 factor (i.e. media coverage) in the revised paper, we believe the AMC framework better suits  
5 our research context than Pettigrew and McNulty's willingness and ability concepts.  
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8 We also appreciate your comment on the relationship between social performance and modern  
9 slavery, which inspired us to further improve our measure. In the revised paper, following other  
10 reviewers' suggestion, we focus on firm performance in corporate sustainability rather than  
11 financial and social performance individually. Our measure of corporate sustainability  
12 performance is a combination of a firm's social, environmental, and financial performance.  
13 Moreover, for the social performance component included in the corporate sustainability  
14 measure, we exclude all data items related to social performance in supply chains, avoiding the  
15 inclusion of modern slavery in supply chains in the final corporate sustainability measure. We  
16 have added a footnote in the hypothesis development section (p. 10) to make this point clear  
17 and also provided a more detailed explanation in the variable measurement section (p. 16).  
18 Moreover, we now also measure corporate sustainability performance alternatively based on  
19 environmental and financial performance only, which means that we drop social performance  
20 in this alternative measure. The test results based on this alternative measure remain consistent,  
21 as shown in Table V (Model 3), demonstrating the robustness of our findings.  
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### 28 **[Reviewer 3's Comments]**

29 The operationalisation of modern slavery effort is also problematic. Firstly, because there is an  
30 implicit assumption that more thorough statements reflect more effort in practice, but secondly,  
31 because the automated analysis seems so superficial that it is easy to imagine very symbolic  
32 statements being coded with high compliance.  
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### 36 **[Our Response]**

37 We agree that there are some limitations of measuring firms' efforts to address modern slavery  
38 based on their modern slavery statements, but we believe these statements are the best data  
39 sources available for us to quantify firms' efforts. We have provided a more detailed  
40 explanation in the revised paper (p. 13; section 4.2.1) to justify our use of the modern slavery  
41 statements. Specifically, we mention that "due to the "due to the "illegal, often hidden"  
42 (Caruana et al., 2021, p. 258) nature of modern slavery, it is challenging to collect reliable  
43 primary data to study modern slavery. A firm's modern slavery statement is the best data source  
44 available for us to make sense of its effort to address modern slavery issues. This is because  
45 such a statement, issued under the UK MSA, should document the steps taken by a firm to  
46 "ensure that slavery and human trafficking is not taking place in any of its supply chains"  
47 (Home Office, 2017, p. 5). Prior CSR research (e.g. Crilly et al., 2016; Li and Lu, 2020) has  
48 also relied on firms' CSR or sustainability reports to assess their CSR efforts or performance.  
49 For instance, Crilly et al. (2016) measured Chinese firms' efforts to "do good" and "do no harm"  
50 by analyzing the content of these firms' sustainability reports. Similarly, we analyzed the  
51 content of firms' modern slavery statements to quantify their efforts to address modern slavery"  
52 (p. 13).  
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60 Although we believe the automated analysis of modern slavery statements can help avoid



human bias or preference and ensure an objective assessment of these statements, we agree that we need to further check the reliability and validity of this automated coding approach. We performed checks with two different approaches: the first approach is based on data from Development International and the second approach is based on our manual coding of the statements. For the first approach, we mention in the revised paper (p. 14; section 4.2.1) that “we first obtained the data from Development International, who assessed the anti-slavery/human trafficking performance of FTSE 100 companies based on modern slavery statements (Bayer et al., 2018). We then matched our sample with those covered by Development International, resulting in 71 matched firms. Finally, we computed the correlation between our program-coded statement scores and the performance scores obtained from Development International for these 71 firms. The correlation is highly positive and significant ( $r = 0.42, p < 0.01$ )” (p. 14).

For the second approach, we mention in the revised paper (p. 20; section 5.1) that “we remeasured firm efforts to address modern slavery in supply chains based on human (rather than machine) coding. Specifically, two of the authors read the modern slavery statements of all sample firms independently and rated each statement based on a five-point scale, ranging from 1 (little effort to address modern slavery) to 5 (major effort to address modern slavery). The ratings from the two independent coders were consistent, as indicated by the very high correlation between their ratings ( $r = 0.87, p < 0.01$ ). We thus averaged the ratings from the two coders to indicate firms’ overall efforts. We also checked and confirmed a high correlation between the human- and machine-coded ratings ( $r = 0.48, p < 0.01$ ). Finally, we obtained consistent regression results in Model 7 with the human-coded ratings as the dependent variable” (p. 20). Taken together, these additional checks confirmed the reliability and validity of this automated coding approach.

### **[Reviewer 3’s Comments]**

From the few conclusions that were drawn from the result, what implications do these have for theory or practice?

### **[Our Response]**

We have revised the paper significantly to strengthen the discussion of this research’s implications for theory and practice. In particular, in section 7.1 (pp. 22-23), we discuss our research’s theoretical implications from three different perspectives. First, we emphasize that our research contributes to the modern slavery literature by adopting the AMC framework to explain why firms put different efforts into addressing modern slavery in supply chains. Although prior studies have documented the variation in firms’ efforts to address modern slavery (Stevenson and Cole, 2018; Flynn and Walker, 2021), they “struggle to explain it” as pointed out by Monciardini et al. (2021, p. 290). The AMC framework enables us to make sense of such variation by considering a firm’s awareness, motivation, and capability of addressing modern slavery issues. The consideration of the three dimensions of awareness, motivation, and capability also allows us to provide a more comprehensive explanation of the determinants of the firms’ efforts. Our research demonstrates the applicability of the AMC framework in the modern slavery context, laying an important theoretical foundation for future

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3 research.  
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6 Second, we explain that our research enriches the AMC literature by employing relevant  
7 theories, including agenda-setting theory, the expectancy-valence model, and the resource-  
8 based view, to further theorize how the variables under study are related to the specific AMC  
9 dimensions. Although the AMC framework provides an overarching, meta-theoretic  
10 perspective for researchers to consider AMC-related variables, it fails to explain why these  
11 variables are related to the specific AMC dimensions and thus why they can be viewed as  
12 AMC-related variables. Previous AMC studies have also often made the connections between  
13 their research variables and the specific AMC dimensions based on implicit assumptions or  
14 common sense. Our research, by contrast, relies on formal theorization, providing a clear link  
15 between empirical constructs and theoretical concepts. Overall, our research highlights the  
16 importance of integrating the AMC framework with other relevant theories, together enabling  
17 a solid, theoretical explanation of the AMC-related variables and advancing the AMC literature.  
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23 Finally, we discuss how our research reveals new theoretical insights by comparing different  
24 capability-related variables. Specifically, our research shows that the social, environmental,  
25 and financial dimensions of corporate sustainability are related to firm efforts to address  
26 modern slavery to different extents. This suggests that although firms with superior  
27 performance in these dimensions should possess more resources that enable them to address  
28 modern slavery, the importance of these dimensions is not the same in the modern slavery  
29 context. Our research thus extends the resource-based view by arguing that although VRIN  
30 resources enable firms to create competitive advantage (Barney, 1991), the advantage-creating  
31 potentials should vary across different types of VRIN resources. In other words, we should not  
32 assume the same advantage-creating potentials for different VRIN resources.  
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38 In section 7.2 (pp. 23-25) on the practical implications of our research, we discuss how our  
39 research findings provide important implications for different stakeholders, such as  
40 governments, NGOs, customers, shareholders, and the firms themselves. Specifically, for the  
41 finding about modern slavery media coverage, we discuss how governments and NGOs can  
42 use news media to make firms more aware of “proposed solutions” and “specific knowledge  
43 about the proposals” (Benton and Frazier, 1976, p. 261), moving beyond a general awareness  
44 of modern slavery issues. For the finding about supply chain slavery risk, we discuss how  
45 governments and the private sector can use both carrot and stick approaches to motivate firms  
46 to address modern slavery in supply chains. For the finding about corporate sustainability  
47 performance, we urge firms to improve their performance in corporate sustainability, which in  
48 turn will make them more capable of addressing modern slavery in supply chains. For the  
49 finding about domestic sales, we highlight that UK customers, who “seek out businesses with  
50 higher ethical standards” (Home Office, 2017, p. 4), can motivate firms to address modern  
51 slavery in their supply chains. Finally, for the finding about the MTB ratio, we emphasize that  
52 shareholders of firms with a high MTB ratio need to voice their expectation of slavery-free  
53 supply chains, changing the firms’ perception and encouraging them to address supply chain  
54 slavery issues.  
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**[Reviewer 3's Comments]**

Finally, the purpose suggest “revealing factors” sounds explorative, but in fact this is a hypothesis testing study and the objective to explain why some firms put more effort into modern slavery than others is not met (I do not believe that it is even measured).

**[Our Response]**

Following your suggestion, we have avoided mentioning “revealing factors” in the revised paper and modified the purpose in the abstract to make it clear that our research adopts the Awareness-Motivation-Capability (AMC) framework to investigate AMC-related factors that explain the variation in firm efforts to address modern slavery in supply chains.

**[Reviewer 3's Comments]**

Other general comments

The assumption that the UK MSA ‘serves’ as awareness is for me, a leap too far. There is at least a temporal dimension here, and certainly there are big difference in awareness within organisations as well as between them. Different degrees of awareness surely also need to be recognised.

**[Our Response]**

We agree that it may be too strong to assume that the UK MSA can serve as awareness for all firms concerned. Following your suggestion, we avoid viewing the UK MSA as the awareness backdrop in the revised paper. Instead, based on Reviewer 1's comments, we use media coverage of modern slavery issues in each year to indicate awareness because firms should be more aware of the importance of addressing modern slavery in supply chains when there is greater media coverage of modern slavery issues. The use of media coverage also helps capture the temporal dimension, as media coverage of modern slavery issues will change over time.

**[Reviewer 3's Comments]**

The paper needs to be much tighter in its use of conceptual terms such as capability, ability, effort and performance and should define and distinguish these terms before then justifying their operationalisation.

**[Our Response]**

Following your suggestions, we have provided a clear definition of each hypothesized variable when developing the relevant hypothesis concerned with the variable (pp. 7-11; section 3). For example, for corporate sustainability performance, we state that “Following previous studies that have conceptualized sustainability in terms of the three pillars of people, planet, and profits (Pagell and Gobeli, 2009; Sodhi and Tang, 2021), we regard corporate sustainability performance as a combination or integration of a firm's social, environmental, and financial performance” (p. 9). Similarly, for supply chain slavery risk, we mention that “Consistent with prior research that has assessed supply chain risk in terms of the likelihood or probability of adverse supply chain events (Heckmann et al., 2015), we view supply chain slavery risk as the extent to which modern slavery incidents will occur in a focal firm's supply chain” (p. 8).

We also provide more detailed explanations of the differences and relationships between theoretical concepts (i.e. awareness, motivation, and capability) and empirical variables (i.e. modern slavery media coverage, supply chain slavery risk, and corporate sustainability performance) in the revised paper. In particular, we make it clear that “Researchers thus need to make use of other relevant, measurable variables to indicate or signal a firm’s awareness, motivation, and capability” (p. 6) and “researchers also need to provide additional theoretical explanations of why these variables are related to the specific AMC dimensions” (p. 6). For example, we adopt the resource-based view that “considers a firm as a unique bundle of tangible and intangible resources and capabilities” (Chen, 1996, p. 107) to explain the relationship between corporate sustainability performance and firm capability to address modern slavery in supply chains (pp. 9-11; section 3.3). Similarly, we use Vroom’s (1964) expectancy-valence model of motivation to explain the relationship between supply chain slavery risk and firm motivation to address modern slavery in supply chains, in view of the heterogeneity of expectancy and valence across supply chains with different levels of slavery risk (pp. 8-9; section 3.2).

### **[Reviewer 3’s Comments]**

Page 12 “and followed the principles to code ...” these principles need to be expounded in more detail (if there is more detail) to indicate how this python program is assessing performance, and hence how the manual checks were undertaken. The impression is that this is a very superficial assessment for each of the 6 s54 sections?

### **[Our Response]**

Following your suggestion, we have provided a brief coding example in the revised paper (p. 14; section 4.2.1) to illustrate how our Python program assigned different points to firms by analyzing the content of their statements. Specifically, we mention that “for category (f) regarding modern slavery and human trafficking training, our program assigned 2 points to a firm if its statement mentioned training and modern slavery/human trafficking-related keywords in a sentence. If only the training keyword was mentioned without modern slavery/human trafficking-related keywords in the same sentence, 1 point was assigned by the program. Finally, the program assigned 0 points to a firm if the training keyword could not be found across the text of its statement” (p. 14).

We have also provided a more detailed description in the revised paper (p. 20; section 5.1) about how the manual checks were conducted. Specifically, we mention that “we remeasured firm efforts to address modern slavery in supply chains based on human (rather than machine) coding. Specifically, two of the authors read the modern slavery statements of all sample firms independently and rated each statement based on a five-point scale, ranging from 1 (little effort to address modern slavery) to 5 (major effort to address modern slavery). The ratings from the two independent coders were consistent, as indicated by the very high correlation between their ratings ( $r = 0.87, p < 0.01$ ). We thus averaged the ratings from the two coders to indicate firms’ overall efforts. We also checked and confirmed a high correlation between the human- and machine-coded ratings ( $r = 0.48, p < 0.01$ ). Finally, we obtained consistent regression results in Model 7 with the human-coded ratings as the dependent variable” (p. 20).

We agree that the Python-based coding approach is not ideal, but the consistency between the human- and machine-coded approaches improves confidence that our Python-based approach is acceptable for capturing firms' efforts to address modern slavery.

**[Reviewer 3's Comments]**

Discussion and conclusions do little to interpret the findings against theory.

**[Our Response]**

Following your suggestion, we have provided a detailed discussion of our research findings against theory, as shown in section 6 (pp. 20-21) in the revised paper. Specifically, we interpret our research findings about modern slavery media coverage against agenda-setting theory, supply chain slavery risk against the expectancy-valence model, and corporate sustainability performance against the resource-based view. We also discuss how our research findings about control variables, including firm size, domestic sales, and MTB ratio, can be interpreted through the AMC framework.

**[Reviewer 3's Comments]**

The end of section 6.2 should be revisited. At least this should highlight that the source of the quotation is the Daily Mail, but I would question its inclusion at all in an academic paper.

**[Our Response]**

Following your suggestion, we have dropped the Daily Mail source from the revised paper to avoid any unnecessary confusion.

**[Reviewer 3's Comments]**

The early introduction of future research in section 6.1 again is potentially indicative that the research to date needs to be used as the first stage of a wider investigation that now examines causative links and looks to explain those links (perhaps through a mixed method design).

**[Our Response]**

Following your suggestion, we have revised section 6.1 (now section 7.1 in the revised paper) significantly to provide a better discussion of our research's theoretical implications from three different perspectives. First, we emphasize that our research contributes to the modern slavery literature by adopting the AMC framework to explain why firms put different efforts into addressing modern slavery in supply chains. Although prior studies have documented the variation in firms' efforts to address modern slavery (Stevenson and Cole, 2018; Flynn and Walker, 2021), they "struggle to explain it" as pointed out by Monciardini et al. (2021, p. 290). The AMC framework enables us to make sense of such variation by considering a firm's awareness, motivation, and capability of addressing modern slavery issues. The consideration of the three dimensions of awareness, motivation, and capability also allows us to provide a more comprehensive explanation of the determinants of the firms' efforts. Our research demonstrates the applicability of the AMC framework in the modern slavery context, laying an important theoretical foundation for future research.



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Second, we explain that our research enriches the AMC literature by employing relevant theories, including agenda-setting theory, the expectancy-valence model, and the resource-based view, to further theorize how the variables under study are related to the specific AMC dimensions. Although the AMC framework provides an overarching, meta-theoretic perspective for researchers to consider AMC-related variables, it fails to explain why these variables are related to the specific AMC dimensions and thus why they can be viewed as AMC-related variables. Previous AMC studies have also often made the connections between their research variables and the specific AMC dimensions based on implicit assumptions or common sense. Our research, by contrast, relies on formal theorization, providing a clear link between empirical constructs and theoretical concepts. Overall, our research highlights the importance of integrating the AMC framework with other relevant theories, together enabling a solid, theoretical explanation of the AMC-related variables and advancing the AMC literature.

Finally, we discuss how our research reveals new theoretical insights by comparing different capability-related variables. Specifically, our research shows that the social, environmental, and financial dimensions of corporate sustainability are related to firm efforts to address modern slavery to different extents. This suggests that although firms with superior performance in these dimensions should possess more resources that enable them to address modern slavery, the importance of these dimensions is not the same in the modern slavery context. Our research thus extends the resource-based view by arguing that although VRIN resources enable firms to create competitive advantage (Barney, 1991), the advantage-creating potentials should vary across different types of VRIN resources. In other words, we should not assume the same advantage-creating potentials for different VRIN resources.

#### **[Reviewer 3's Comments]**

Finally, again I would like to congratulate the author(s) on a very well presented, well-written submission and feel almost apologetic in concluding that despite some interesting data sources, there is insufficient substance in the findings and conclusions (or even potential) for it to merit publication in this journal.

#### **[Our Response]**

Thank you again for your positive comments on the presentation and writing of our paper and your useful suggestions for us to further improve the paper. By addressing your concerns closely and revising the paper significantly, we believe the revised paper now presents more robust findings and makes important contributions to theory and practice, as discussed above. Please let us know if you have any other comments or suggestions. Thank you.



## Response to Reviewer 4's Comments

### [Reviewer 4's Comments]

The authors tackle an important subject, and their research is timely and relevant. The authors have gathered interesting data, albeit with a small sample size. Unfortunately there are problems with the hypotheses development as well as the empirical testing. These problems are significant enough, that addressing them will change the paper in a fundamental way. Therefore I would recommend "reject and resubmit" for this manuscript.

I have pointed out my concerns below and also provided hints to the authors on how to address them. I hope the authors will redo the manuscript to take care of weaknesses in the theory part, in the measures and in the analysis.

### [Our Response]

Thank you for your positive comments on the timeliness and relevance of our research. We are also glad to learn that you think our research topic is important and the data collected is interesting. We have read your comments on our hypothesis development and empirical testing very carefully and revised the paper significantly to improve the use of theory, measurement, and analysis. We discuss below the changes that have been made in the revised paper based on your useful suggestions.

### [Reviewer 4's Comments]

Theoretical concerns:

While examples of modern slavery are provided, the term is never formally defined. The authors should include a definition on the first page, along with examples, for clarity.

### [Our Response]

Following your suggestion, we have provided a formal definition of modern slavery on the first page of the revised paper (p. 1; section 1). Specifically, we view modern slavery as an umbrella term used to refer to "the recruitment, movement, harboring or receiving of children, women or men through the use of force, coercion, abuse of vulnerability, deception or other means for the purpose of exploitation" (Such et al., 2020, p. 217).

### [Reviewer 4's Comments]

The paper does a good job introduce the awareness motivation capability (AMC) framework. However, on page 7-8 when it is time to develop hypothesis all of that seems to have been forgotten. There is little continuity and application of the ideas developed in sections 1 and 2, in section 3 on hypothesis development. Hypothesis development is not based on the AMC framework which is a short coming that should be addressed.

### [Our Response]

Thank you for your positive comments on our introduction of the AMC framework in section 2. Following your suggestions, we have revised the hypothesis development (section 3) very

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3 substantially and paid close attention to linking our explanations in the hypothesis development  
4 to the AMC framework. In particular, for the development of each hypothesis, we have  
5 provided a detailed theoretical explanation of why the research variable under study is related  
6 to the specific dimension of the AMC framework, making a strong connection between sections  
7 2 and 3.  
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11 For example, in the new hypothesis 1 (pp. 7-8; section 3.1), our research variable is modern  
12 slavery media coverage (we use this new variable based on Reviewer 1's suggestion). We first  
13 explain why firms are more aware of the importance of addressing modern slavery in supply  
14 chains (the awareness dimension of the AMC framework) when there is greater media coverage  
15 of modern slavery issues. We then further explain that the AMC framework has suggested that  
16 a firm is more likely to act or respond to a threat (e.g. to address modern slavery in supply  
17 chains) when it is more aware of the threat (Chen, 1996). This explanation logic enables us to  
18 hypothesize the relationship between our research variable (e.g. media coverage) and firm  
19 efforts to address modern slavery in supply chains through the specific dimension (e.g.  
20 awareness) of the AMC framework, making a clear link between the hypothesis development  
21 and the AMC framework.  
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#### 27 **[Reviewer 4's Comments]**

28 H1 argues that complexity leads to greater effort as it makes it harder to obtain information.  
29 How does that link to the AMC framework? In fact, it seems to oppose the idea of awareness  
30 in the AMC framework. As argued by the authors, awareness will be low in complex supply  
31 chains and low awareness should lead to lower effort according to the AMC framework (which  
32 is the opposite of what H1 states).  
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#### 36 **[Our Response]**

37 Thank you for your insightful comments on the supply chain complexity variable. We agree  
38 that your alternative explanation of the supply chain complexity variable from the awareness  
39 perspective is reasonable. To avoid confusion, we have removed the supply chain complexity  
40 variable from the revised paper and just kept the supply chain slavery risk variable for the  
41 motivation dimension. This decision is in line with your later comment that the authors should  
42 "consider using the most appropriate or a combined measure of motivation." This is because,  
43 as you have suggested, supply chain complexity is less appropriate for indicating motivation.  
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#### 48 **[Reviewer 4's Comments]**

49 H2 argues that risk of slavery increases motivation which in turn increases efforts to address  
50 the modern slavery issue. However, the link between more sourcing from high-risk countries  
51 leading to increased motivation of the buyer firm has not been developed, but rather assumed.  
52 H2 does not need the AMC framework, as higher risk means higher chance of negative  
53 outcomes (such as bad publicity) so a rational actor will try to mitigate the risk. This reasoning  
54 does not require or use the AMC framework.  
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#### 59 **[Our Response]**

60 Thank you for your useful comments, which inspired us to further enhance the explanations of

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3 the link between sourcing from high-slavery risk countries and firm motivations to address  
4 modern slavery in supply chains. In the revised paper (pp. 8-9; section 3.2), we make use of  
5 Vroom's (1964) expectancy-valence model of motivation to explain the link between supply  
6 chain slavery risk and firm motivation to address modern slavery in supply chains. Specifically,  
7 consistent with your comment that a supply chain with high slavery risk means a higher chance  
8 of negative outcomes (such as bad publicity) for a firm, motivating the firm to address modern  
9 slavery in supply chains, the expectancy-valence model suggests that an actor is more  
10 motivated to act when the perceived outcome valence is high. Moreover, this model further  
11 suggests that an actor's motivation is also determined by the effort-outcome expectancy, which  
12 is the extent to which an actor believes that its effort or action will lead to the potential gains  
13 or its inaction will result in the potential losses. In our research context, this indicates how a  
14 firm's effort-outcome expectancy depends on different levels of slavery risk in supply chains.  
15 Taken together, the expectancy-valence model provides a comprehensive explanation of why  
16 supply chain slavery risk is related to firm motivation in the modern slavery context, providing  
17 a clear link between our hypothesis development and the AMC framework.  
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24 We would like to clarify that the AMC framework provides a guidance for us to consider  
25 awareness-, motivation-, and capability-related factors that may be related to firm efforts to  
26 address modern slavery in supply chains, but the AMC framework *per se* does not explain why  
27 a research variable (e.g. supply chain slavery risk) is related to a specific dimension (e.g.  
28 motivation) of the AMC framework. It is the researchers' responsibility to provide additional  
29 theoretical explanations beyond the AMC framework about the link between the research  
30 variable and the specific AMC dimension. For example, we adopt the expectancy-valence  
31 model to explain the connection between supply chain slavery risk and firm motivation, as  
32 discussed above. We also use some past AMC studies (e.g. Chen et al., 2007; Haleblian et al.,  
33 2012) in the revised paper to illustrate that "researchers also need to provide additional  
34 theoretical explanations of why these variables are related to the specific AMC dimensions"  
35 (p. 6).  
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#### 42 [Reviewer 4's Comments]

43 H4 is problematic as sustainability performance measures will often include performance on  
44 social issues like slavery. So H4 is essentially saying if a firm has high performance, it will put  
45 greater effort into improving a particular dimension of that performance. This seems somewhat  
46 tautological. I encourage authors to consider using a construct related to sustainability that does  
47 not include social issues, such as environmental performance only.  
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#### 51 [Our Response]

52 We agree that a firm's social performance may also cover modern slavery in supply chains,  
53 leading to possible tautological concerns. We have made the following changes in the revised  
54 paper to address this concern. First, for the social performance measure, we dropped all data  
55 items related to supply chains, reducing the overlap between social performance and modern  
56 slavery in supply chains. Moreover, in the revised paper, we focus on firm performance in  
57 corporate sustainability rather than financial and social performance individually. Our measure  
58 of corporate sustainability performance is a combination of a firm's financial performance,  
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3 social performance without the supply chain-related data items as discussed above, and  
4 environmental performance. We have also measured corporate sustainability performance  
5 alternatively based on financial and environmental performance only, which means that we  
6 dropped social performance in this alternative measure. The test results based on this  
7 alternative measure remain consistent, as shown in Table V (Model 3), demonstrating the  
8 robustness of our findings.  
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### 11 12 13 **[Reviewer 4's Comments]**

14 Figure 1 further highlights how the AMC framework does not fit the hypothesis. There is no  
15 measure for awareness in the regression analysis and there are two measures of motivation.  
16 Instead, the authors should find a measure for awareness, and consider using the most  
17 appropriate or a combined measure of motivation. If the hypotheses and the variables actually  
18 empirically tested do not match the AMC framework, then the AMC framework must be  
19 removed for a different theoretical perspective. Currently there is a big disconnect between  
20 literature review (section 2) and hypotheses development (section 3).  
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### 23 24 25 **[Our Response]**

26 Following your suggestions, we have revised the research variables used in our research quite  
27 significantly to better match the AMC framework. First, we avoid viewing modern slavery  
28 legislation as the awareness backdrop in the revised paper. Instead, we use modern slavery  
29 media coverage, measured as the number of UK news articles covering modern slavery issues  
30 in each year, to indicate the awareness dimension. Second, as discussed above, we have  
31 removed the supply chain complexity variable in the revised paper and just kept the more  
32 appropriate supply chain slavery risk variable for the motivation dimension. Finally, we have  
33 combined a firm's social, environmental, financial performance into a single corporate  
34 sustainability performance measure for the capability dimension. The test results, as shown in  
35 Table IV, suggest that firms put greater efforts into addressing modern slavery in supply chains  
36 when there is greater media coverage of modern slavery issues, when firms source from  
37 countries with high-slavery risks, and when firms have better performance in corporate  
38 sustainability. These findings are consistent with the AMC framework.  
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44 Also, to enhance the connection between the literature review (section 2) and hypothesis  
45 development (section 3) sections, we follow your suggestions by adopting additional  
46 theoretical perspectives, including agenda-setting theory, the expectancy-valence model, and  
47 the resource-based view to explain why the variables considered in the hypothesis development  
48 are related to the specific dimensions of the AMC framework. Specifically, we adopt agenda-  
49 setting theory to explain that firms should be more aware of the importance of addressing  
50 supply chain slavery issues when there is greater media coverage of these issues, the  
51 expectancy-valence model to explain that firms sourcing from countries with higher slavery  
52 risks should be more motivated to address the slavery issues, and the resource-based view to  
53 explain that firms with better performance in corporate sustainability should be more capable  
54 of addressing the slavery issues. These theoretical explanations provide a very clear connection  
55 between the hypothesized variables and the specific dimensions of the AMC framework.  
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**[Reviewer 4's Comments]**

Concerns about measures:

It is not clear how the supply chain complexity measure incorporates # of suppliers, and geographical spread across countries. If firm A has 100 suppliers in 1 country (let's say China) and firm B has 100 suppliers across 20 countries, what will their respective supply chain complexity scores be? Clearly firm B has a much more complex supply chain and should have a much higher complexity score. However according to Table II it seems that both firms will have the same complexity score, which will simply be the natural logarithm of number of suppliers. This measure should be revised to capture both # of suppliers and geographic spread. Authors are recommended to look at making an index measure, where both # of suppliers and # of countries increase the index.

**[Our Response]**

We agree that it is better to incorporate both the number of suppliers and the number of countries in the supply chain complexity measure. We also find that your suggested index measurement approach is quite innovative and is doable as we have data about the geographical distributions of our sample firms' suppliers. However, as discussed above, we have dropped the supply chain complexity variable based on your comments, so we do not include this measure in the revised paper, but we will definitely follow your suggested index approach when measuring supply chain complexity in our future research. Thank you for the suggestion.

**[Reviewer 4's Comments]**

In addition to testing the reliability of programmatic (automated) coding of firm's statements to build the predictor variable, authors should also check if their variable agrees with assessments of various firms on the slavery issue. Even if 3rd party recommendations or comments can be obtained for a few firms in the sample on the slavery issue, those can be checked against the coded variable from the statements. This would provide greater validity to the measure, instead of simply checking for reliability of automated scoring vs human coding.

**[Our Response]**

Thank for your insightful comments that enabled us to further improve the validity of our measure. Following your suggestion, we have obtained data from Development International, who assessed the anti-slavery/human trafficking performance of FTSE 100 companies based on modern slavery statements (Bayer et al., 2018). We then matched our sample with those covered by Development International, resulting in 71 matched firms. Finally, we computed the correlation between our program-coded statement scores and the performance scores obtained from Development International for these 71 firms. The correlation is highly positive and significant ( $r = 0.42$ ,  $p < 0.01$ ), indicating the consistency between our measurement and Development International's measurement. We have documented this verification procedure in the revised paper (p. 14; section 4.2.1).

**[Reviewer 4's Comments]**

Concerns about Data and Analysis:

The data includes a wide range of industries. The authors should justify why service industries



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3 like finance, communications and transportation are relevant as these industries are unlikely to  
4 be importing manufactured goods from high-risk countries where modern slavery is a problem.  
5 The authors should especially justify inclusion of the following industries: (1) finance,  
6 insurance and real estate, and (2) transportation, communications, electric, gas, and sanitary  
7 services. Lacking good justification, those two industries should be removed from the sample,  
8 as it does not seem appropriate to include them along with manufacturing industries.  
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### 12 [Our Response]

13 Following your suggestions, we have provided more detailed justifications in the revised paper  
14 (p. 12; section 4.1) about why we also include service industries in this research, especially the  
15 following service industries: (1) finance, insurance and real estate, and (2) transportation,  
16 communications, electric, gas, and sanitary services. In particular, we explain that it is common  
17 for service firms, especially those listed on the stock markets, to source goods and/or services  
18 from overseas suppliers. We use two sample firms to illustrate this point. For example, BT  
19 Group, a telecommunications company, stated that it buys “products and services -- such as IT  
20 equipment, cables, design and disposal services -- from thousands of suppliers worldwide” (BT  
21 Group, 2006). Similarly, HSBC, a large bank, had outsourced parts of its IT supports and call  
22 centers to suppliers located in developing countries (Griffiths, 2013). These examples suggest  
23 firms in service industries also import goods and/or services, and thus need to address modern  
24 slavery in their international supply chains. We also further compared the statement scores  
25 between firms in the finance, communications and transportation service industries and firms  
26 in other industries but cannot find a significant difference ( $t = 0.40$ ,  $p = 0.69$ ). This suggests  
27 that there is no evidence that firms in the finance, communications and transportation service  
28 industries will put less effort into addressing modern slavery in supply chains when compared  
29 with firms in other industries.  
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### 38 [Reviewer 4’s Comments]

39 It is not clear what MTB (market value to book value) is controlling for. A high value on this  
40 ratio would represent a growing company, but it is not clear why we need to control for that.  
41 Since the sample size is rather small (201 observations?) extraneous control variables are not  
42 desirable unless there is a strong rationale for them.  
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### 46 [Our Response]

47 Following your suggestions, we have provided a more detailed explanation in the revised paper  
48 (pp. 16-17; section 4.2.5) about why we control for the MTB ratio in this research. Specifically,  
49 we explain that a firm with a higher MTB ratio is perceived as more valuable by shareholders  
50 and expected to have higher growth in the future, which may force the firm to allocate resources  
51 to other investments (rather than to address modern slavery) in order to maintain a high growth  
52 rate. Our test results, as shown in Table IV (Model 4), also suggest that firms with a higher  
53 MTB ratio put less effort into addressing modern slavery, confirming the importance of  
54 including the MTB ratio in our regression model.  
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### 59 [Reviewer 4’s Comments]

60 In model 5 the authors have 19 predictor variables (including time and industry dummies) and

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3 the intercept, which means estimation 20 parameters from 201 observations. This is a very high  
4 parameter to sample size ratio. The authors can ameliorate this concern by removing extraneous  
5 industries and the MTB control variable. Also since there are only 5 observations in 2018, that  
6 year's data can be removed to reduce a time dummy variable. Similarly, 1 measure for  
7 capability may be sufficient, given that sustainability performance is endogenous with the  
8 outcome variable (statement score) and hence should not be used as a predictor.  
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### 11 12 **[Our Response]**

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14 Following your helpful suggestions, we have made the following changes in the revised paper  
15 to improve our observation-to-variable ratio. First, we dropped the year and industry dummies  
16 because our test results suggest that all year and industry dummies are not statistically  
17 significant. In fact, the adjusted R-squared values of our regression models do not decrease  
18 after dropping the year and industry dummies, providing further support for removing these  
19 dummies. Moreover, we now use just one performance measure (i.e. corporate sustainability  
20 performance) for the capability dimension, further reducing the number of predictors. As a  
21 result, we have 7 independent variables across 201 observations, suggesting a very good  
22 observation-to-variable ratio.  
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### 26 27 **[Reviewer 4's Comments]**

28 There is endogeneity in the model, which confounds the results. The sustainability score  
29 variable (predictor) and the statement score variable (outcome) are both determined completely  
30 or partially by a firm's performance in tackling the modern slavery issue. These two variables  
31 are endogenous. Authors are recommended to read the literature on endogeneity and how it  
32 threatens causal inference.  
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### 36 37 **[Our Response]**

38 Based on your earlier comments, we have taken a few steps to mitigate the endogeneity concern.  
39 First, as discussed above, we have dropped all data items related to supply chains when  
40 measuring social performance, reducing the overlap between social performance and modern  
41 slavery in supply chains. Moreover, we have combined financial, social (without the supply  
42 chain data items), and environmental performance into a single predictor (i.e. corporate  
43 sustainability performance), avoiding the possible high correlations among these individual  
44 performance measures if they are included in the same regression model as three individual  
45 predictors.  
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49 Although these steps help reduce the endogeneity concern, we understand that endogeneity can  
50 never be completely eliminated. In the revised paper (p. 19; section 5.1), we adopt the  
51 instrumental variables (IV) approach to further address the possible endogenous relationship  
52 between corporate sustainability performance and statement score. Following previous studies  
53 (e.g. Ho et al., 2017; Fu et al., 2020), we first instrument a firm's corporate sustainability  
54 performance with two variables: (1) the average corporate sustainability performance of the  
55 firm's industry peers, and (2) the firm's three-year lagged corporate sustainability performance.  
56 We then perform a two-stage least squares estimation using these two instruments and obtained  
57 consistent test results, as shown in Table V (Model 4). This suggests that our model  
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3 specification is robust to the endogeneity concern.  
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6 **[Reviewer 4's Comments]**

7 The authors have panel data, hence OLS is not an appropriate technique. The authors can use  
8 a fixed effects model, or a GLS estimator to account for time-based and firm-based correlation  
9 between observations. The p-values from an OLS estimator cannot be trusted for panel data.  
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12 **[Our Response]**

13 We agree that it is more appropriate to use a fixed effects model or a GLS estimator for  
14 analyzing panel data, but we would like to clarify that the data used in our research is not panel  
15 data. This is because we focus on firms' first modern slavery statements to quantify their efforts  
16 to address modern slavery in supply chains, suggesting that there is only one observation per  
17 firm and making it impossible to conduct panel data analysis. To avoid confusion, we make it  
18 clear in the revised paper (p. 17; section 4.3) that "As we measured firms' statement scores  
19 based on their first modern slavery statements, this is a cross-sectional rather than a panel  
20 regression model. We thus performed an ordinary least squares estimation of the model" (p.  
21 17).  
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27 Overall, we thank you for your insightful comments on our hypothesis development and  
28 empirical testing as well as your useful suggestions for us to improve the use of theory,  
29 measurement, and analysis in our research. We hope we have addressed all your concerns.  
30 Please let us know if you have any further comments and suggestions. Thank you.  
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