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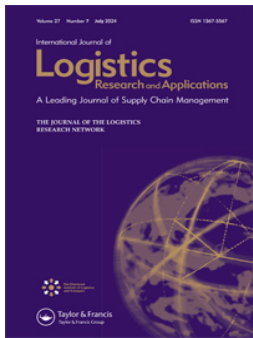
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RESEARCH ARTICLE



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Modern slavery in supply chains: a systematic literature review

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ABSTRACT

Modern slavery is a complex and challenging phenomenon that may hinder the sustainable development of the global supply chain. However, there is no existing academic review on modern slavery in supply chains. This study conducts a systematic literature review to synthesise this body of literature. We searched keywords in the Scopus database and identified 44 articles published between 2013 and 2022 to identify critical themes and propose a conceptual framework capturing the relationships among the identified themes. Through our analysis, three themes of modern slavery in supply chains were identified: antecedents (analyzed from regulatory, organisational, and social perspectives); practices (e.g. practices to mitigate modern slavery in supply chains); and outcomes (e.g. business compliance). We conclude by proposing a research agenda to inform future research.

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Modern slavery; supply chain management; sustainability

1. Introduction

Modern slavery in supply chains, including various forms of human trafficking, forced labour, and child labour, is a complex and severe issue that has emerged in global supply chains in recent years (Bales, Trodd, and Williamson 2009). Because of the complexity and invisibility of modern slavery in the supply chain, we are currently unable to estimate accurately how many people are affected by modern slavery globally, but according to the International Labor Organization (2017), at least tens of millions of people worldwide are victims of modern slavery. Typically, modern slavery manifests itself in practices such as forced labour, human trafficking, and illegal employment that greatly restrict the freedom of workers and cause them great suffering. Given the enormous damage modern slavery does to the supply chain, it has attracted the attention of governments and stakeholders such as nongovernment organisations (NGOs) and the media. Most countries worldwide have passed legislation banning modern slavery (Trautrimis et al. 2021). However, despite governments legislating against modern slavery, it has continued to grow wildly in all sectors (Meehan and Pinnington 2021). For example, in southeast Asia, modern slavery is widespread in the electronics industry, where more than one-third of migrant workers have had their passports confiscated and been subjected to forced labour (Kelly 2014). In the offshore fishing industry in dozens of fishing countries, there is forced labour and illegal employment (Tickler et al. 2018). In the seafood supply chains of major supermarkets such as Walmart, large numbers of people are forced to work

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without regularity (Hodal, Kelly, and Lawrence 2014). Slavery in the form of child labour has also occurred in Ferrero's cocoa supply chain (Lalwani et al. 2018). People who are victims of modern slavery lose their freedom and are not paid for anything other than the most basic living demands (Islam and Van Staden 2021). Not only that, but they are also persecuted to varying degrees, both physically and psychologically. These examples demonstrate the almost ubiquitous nature of modern slavery in supply chains and that this slavery represents an extreme form of persecution of labourers, which warns us that we must increase awareness of modern slavery.

The growth of multinational companies has led to increasingly developed global supply chains because of economic globalisation (Zheng et al. 2021; Chen et al. 2017). The common practice of outsourcing in supply chains also creates the conditions for the existence of modern slavery in multinational companies' global supply chains (Genevieve 2014). Thus, researchers such as Beske and Seuring (2014) offer several approaches to monitoring modern slavery in the supply chain. The most common of these is conducting audits of the company's code of conduct (Mamic 2004) or a third-party audit (Hutchins and Sutherland 2008). For example, companies may audit their suppliers against relevant criteria (Emmelhainz and Adams 1999) to ensure that they do not have problems with modern slavery. Moreover, the United Kingdom (UK) enacted the UK Modern Slavery Act of 2015, which establishes law requiring stakeholders such as enterprises to disclose the practices they have adopted to mitigate modern slavery risks (Islam and Van Staden 2021). Addressing a social issue such as modern slavery in the supply chain through legislation is seen as a wise decision that can provide a powerful weapon capable of eliminating the risk of modern slavery (Rosile et al. 2021).

As a topic that has emerged in supply chain management in recent years, modern slavery has received only little attention from scholars. For example, reviewing the extant literature related to modern slavery in supply chains, Crane (2013) analyze and summarise the causes of modern slavery from different perspectives. Stevenson and Cole (2018) and Schaper and Pollach (2021) summarise the relevant literature related to the prevention and reduction of modern slavery in supply chains by analyzing the modern slavery statements issued by companies in recent years. However, no systematic literature review has been conducted on this topic to date. Therefore, the aim of this research is to analyze the existing literature on modern slavery in supply chains to identify key themes and provide an overview based on the following research questions:

RQ1: What are the antecedents that lead to the creation of modern slavery in supply chains?

RQ2: What are the manifestations of modern slavery in supply chains?

RQ3: What are the practices adopted to combat modern slavery in supply chains?

The remainder of the paper is divided into five sections. Section 2 describes the research method and the systematic review process. Section 3 presents the key themes of the review questions. Section 4 presents a conceptual framework based on our proposed themes and discusses the research implications of this paper. Section 5 concludes by exploring the potential research value of this study.

2. Research method

We adopt a systematic literature review approach in this study to analyze the sampled articles. In this section, the process of our method is described in detail.

2.1. Review process

We selected Scopus, the largest database with the broadest coverage of scholarly articles and the largest peer-review database, as our primary data source to gather the literature to be reviewed. Articles were searched for using a combination of keywords for modern slavery and supply chains (Table 1). We used ('modern slavery' OR 'labour rights' OR 'labor rights' OR 'human rights' OR

Table 1. Search strings for research literature databases.

AND	
child labour	purchase procurement supply chains value chains
child labour	
forced labour	
forced labour	
human rights	
labour rights	
labour rights	
modern slavery	

‘forced labour’ OR ‘forced labor’) OR (‘child labour’ OR ‘child labor’) AND (‘supply chains’ OR ‘value chains’ OR ‘procurement’ OR ‘purchase’) as keywords to identify English-language articles in peer-reviewed journals.

First, a total of 1,448 articles were retrieved from the database using these keywords. We then focused on articles related to modern slavery, the modern slavery acts and slavery in supply chains. After reading the article titles and abstracts, we selected 88 articles out of 1,448 for literature review. Then, after reading the full text, we identified 44 articles for inclusion in our literature review. Both these steps were designed to ensure we included literature on modern slavery issues (e.g. human rights, forced labour, child labour) as they occur in supply chains or value chains, and to exclude articles that were related only to supply chains or only to slavery. The process of literature screening is illustrated in Figure 1.

2.2. Descriptive analysis

This section presents a descriptive analysis of modern slavery in the supply chain and our consideration of the relevant themes of the articles to facilitate the assessment of the literature.

The distribution by year of the 44 articles published between 2013 and 2021 is presented in Figure 2. The first article was published in 2013. Ten articles were published in 2018 and 23 in

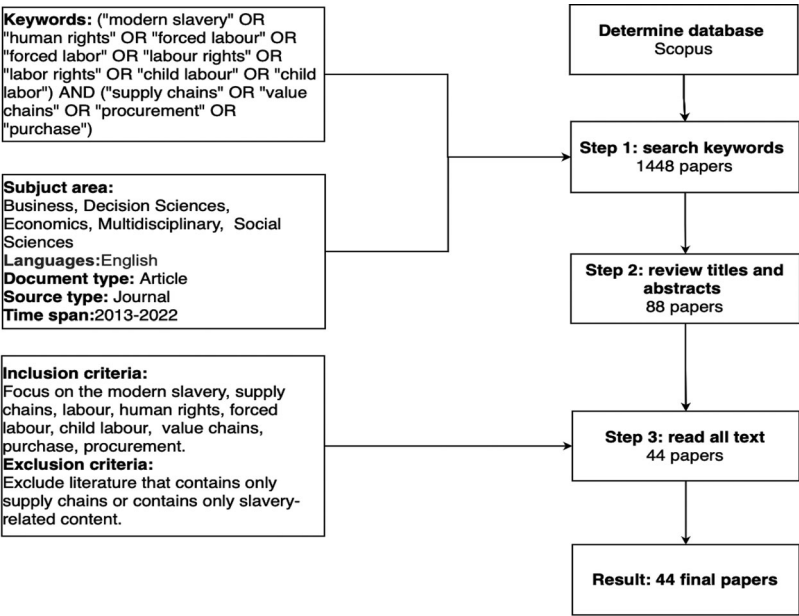


Figure 1. Review process.

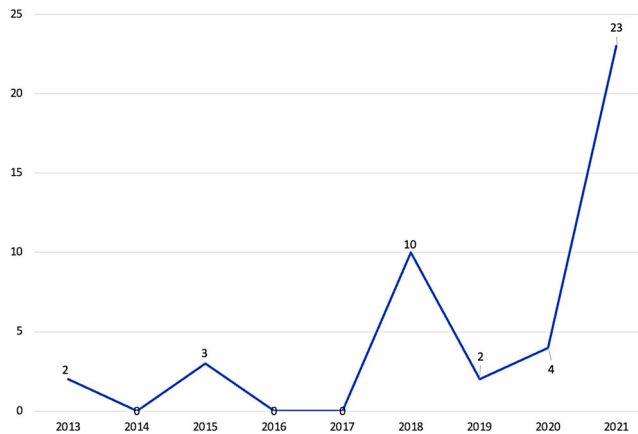


Figure 2. Distribution of reviewed articles by year.

2021. Modern slavery in the supply chain has become a hot topic in academic research, which is reflected by the issue attracting increasing research attention. Of the 44 articles, most (i.e. seven) were published in *Supply Chain Management: An International Journal*, followed by *Business and Society*, which published four articles on the topic (Table 2).

The 44 articles reviewed in this study can be categorised by type of research into case studies (19); survey research (11); modelling (9); secondary data analysis (2); action research (1); experimental research (1); and literature review (1) (Figure 3).

Table 2. Description of the relevant journals.

Journal	Number of Paper	Impact Factor	Quartiles
Supply Chain Management: An international journal	7	8.93	Q1
Business and Society	4	6.81	Q1
Journal of Cleaner Production	2	9.56	Q1
Business Strategy and Development	2	2.27	Q2
International Journal of Operations and Production Management	2	6.67	Q1
Sustainability (Switzerland)	2	3.25	Q1
European Business Review	2	8.08	Q1
Journal of Business Research	2	7.38	Q1
Accounting, Auditing & Accountability Journal	1	2.91	Q1
Academy of Management Review	1	7.77	Q1
Benchmarking: an International Journal	1	2.60	Q1
British Journal of Criminology	1	2.74	Q1
Business and Human Rights Journal	1	1.20	Q2
Business and Politics	1	1.71	Q1
Business Strategy and the Environment	1	8.99	Q1
European Journal on Criminal Policy and Research	1	1.64	Q1
Humanities and Social Sciences Communications	1	N/A	N/A
IEEE	1	37.55	Q1
International Journal of Production Economics	1	8.31	Q1
Journal of Business Ethics	1	5.77	Q1
Journal of Management Inquiry	1	3.11	Q1
Journal of Operations Management	1	5.94	Q1
Journal of Supply Chain Management	1	7.78	Q1
Journal of the British Academy	1	N/A	N/A
Management Science	1	5.04	Q1
Multinational Business Review	1	3.02	Q1
Nature Communications	1	13.78	Q1
The Business Lawyer	1	N/A	N/A
The Modern Law Review	1	0.99	Q2

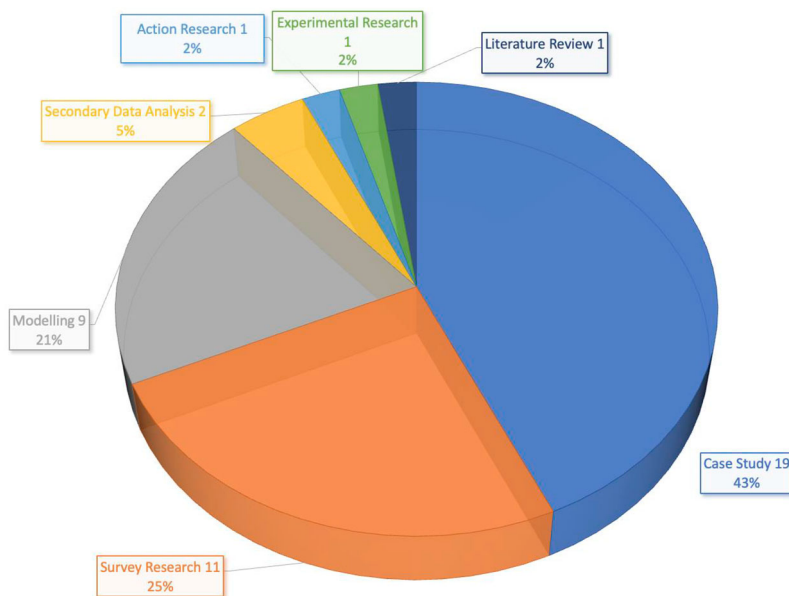


Figure 3. Distribution of reviewed articles by method.

3. Thematic findings

In this section, we analyze the findings of the study. We first analyze the causes of modern slavery in supply chains. We then present the tools that can be used to assess and detect modern slavery in the supply chain. Finally, we explore company compliance with practices designed to avoid modern slavery in supply chain management.

3.1. Antecedents of modern slavery

Modern slavery in supply chains is widespread across the globe, with an estimated 16 million people in the global private economy engaged in forced labour exploitation (Global Slavery Index 2019). There are many causes of modern slavery in the supply chain, including poverty, racial discrimination, corruption, inadequate laws, crime, and many irregularities in the supply chain. Scott (2001) notes several significant factors resulting in modern slavery, for example, lack of government regulation, unregulated nature of business, and social culture. The antecedents of modern slavery identified in the reviewed literature are described in the following sections.

3.1.1. Regulatory reasons

Many countries have established formal legislation and agreements to prohibit slavery, such as passing national slavery laws and signing international human rights agreements (Crane 2013). However, there is considerable variation in how these measures are implemented by different governments. Problems with the strength of government regulation or the enforcement of regulations is a key factor that can lead to modern slavery in the supply chain. Kaufmann, Kraay, and Mastruzzi (2011) argue that to combat modern slavery, state governance needs to be efficient, rigorous in its ability to enforce the law, avoid corruption, and accountable to citizens in relation to their feedback and suggestions. This argument of Kaufmann, Kraay, and Mastruzzi (2011) indicates that insufficient government regulation can lead to the generation of modern slavery. In addition, mismanagement or corruption in government can disrupt social order, allowing slavery to flourish

locally. For example, bribes to border guards can make human trafficking possible and bribes to local police officers can allow the continuation of illegal labour exploitation (Richards 2004).

However, modern slavery exists not only in poor countries with poor security but also in developed countries with better government administration. For example, the InterContinental Hotels Group in the UK was revealed to have long employed slave workers through external housekeeping services (Bales and Cornell 2008). In addition, Stringer, Whittaker, and Simmons (2016) discovered modern slavery in New Zealand whereby foreign vessels were forced to conduct the fishing operations. It is interesting to note that in these cases of modern slavery, the slaves were sourced through trafficking from countries with poor government oversight, which then allows modern slavery to occur in countries with more stringent regulations.

To better illustrate this point, it is important to explore how the existing regulatory system of slavery can be publicly governed. The main reason for the failure of current governments to prevent slavery effectively is the insufficient attention given to this issue (Crane 2013). In addition, investment in enforcing modern slavery laws varies from region to region globally (Bales 2005). Given that modern slavery affects a relatively small segment of society, whose voice is often unheard, the government's concern for modern slavery is indirect (Crane 2013). Further, some governments mistakenly believe that existing laws and regulations can effectively address the issue of modern slavery in supply chains (Downs 1972).

3.1.2. Organisational reasons

Crane (2013) proposes that firms hiring slaveries have specific 'slavery management capabilities' to commit slavery. He divides such capabilities of firms to manage slaves into two types: exploiting/insulating and sustaining/shaping. The ability to exploit and insulate refers to factors such as debt management, accounting opacity, and supply chain opacity and the ability to sustain and shape refers to corporate moral legitimisation (the reasons why firms use slaves) and domain maintenance (where firms bribe government officials to achieve their purposes) (Stringer and Michailova 2018). Thus, firms are also a key factor leading to modern slavery in the supply chain.

Additionally, the most common type of modern slavery in a firm's supply chain is forced labour. For example, forced labour often occurs in tea and cocoa supply chains, and the average daily wage for workers in these two industries is extremely low (LeBaron 2021b). The low value of labour in these industries, the low compliance of these industries, and the high substitutability of the labour force induce firms to engage in modern slavery because it means cost reduction. In primary industries with low labour costs and low technology, firms use forced labour to reduce their operating costs. Thus, the lower the value stage in the supply chain, the more likely that slavery will occur (Chen et al. 2022).

The legitimacy of the industry (i.e. the behaviour of the firm being desirable in relation to social norms and social values) is also an important factor in the creation of modern slavery (Suchman 1995). Illegal practices (e.g. slavery, sex work) are committed by organisations that seek to escape the regulation of formal institutions, because in a 'renegade economy', regulatory standards are set by renegade partners (e.g. the industry leader), which allows slavery to be seen as appropriate in certain circumstances (Webb et al. 2009).

3.1.3. Social reasons

Socioeconomic context also plays a key role in the creation of modern slavery in the supply chain, with poverty of a specific region being a major factor leading to modern slavery (Crane 2013). For example, the United Nations recognises that the root cause of modern slavery is that millions of people around the globe are living in extreme poverty (Rassam 2005). Plant (2007) states that all else being equal, a lower gross domestic product per capita will translate into a higher proportion of the population being used as slaves. This is because employers often recruit slaves by coercion or deception, and people in poorer areas are more vulnerable to deception, which can lead to them being victims of human trafficking (Plant 2007). Therefore, slavery can occur when there are

'transshippers' that sell slaves in a poor region where poverty was much lower than in another region. A multi-component study by the International Labour Organisation on migrant workers revealed that poor people with low levels of education or from poor countries are more likely to be targeted for trafficking (Andrees 2008).

Unemployment is an important cause of poverty, particularly structural unemployment (Crane 2013). If there are few job opportunities in an area, workers in that area lack certain vocational skills, which inevitably exacerbates the poverty of those without jobs in that area. In a situation where workers are unemployable and local policing is poor, the false propaganda of people who sell slaves can seem to offer lifesaving opportunities for people in difficult economic circumstances. People in such areas are often tricked or coerced into being sold into slavery in other regions. Poorer, less educated people are the preferred targets of slave traders because lower levels of education and awareness often mean that people are not aware of the dangers of slavery (Andrees 2008). Thus, low levels of education and awareness contribute to the persistence of modern slavery in the supply chain.

In addition to socioeconomic factors, sometimes certain traditional, feudal, and unequal social practices can contribute to modern slavery in the supply chain. For example, in some regions, deep-rooted traditional practices of bonded labour is a long-standing concern (Quirk 2006). That is when traditional culture that includes discriminatory practices (e.g. exploitation of or discrimination against women, children, and certain races) is accepted by the local majority, then slavery can be considered acceptable in that society. For example, cases of sexual slavery are more likely to occur in regions or countries where there is gender inequality (Bertone 1999; Schauer and Wheaton 2006). Such social phenomena have also led to the modern slavery being disguised as culture.

Thus, socioeconomic and sociocultural factors can be important causes of modern slavery in the supply chain. Lower economic levels and employment rates increase the probability of becoming a victim of modern slavery, as does a social culture that is more feudal and unequal.

3.2. Modern slavery assessment and detection

Relevant research on modern slavery in supply chains suggests that detecting and assessing modern slavery is extremely challenging (Stevenson and Cole 2018). Many companies have less transparent, more globalised, and highly interconnected supply chains (Gold, Trautrim, and Trodd 2015), which increases the difficulty of assessing modern slavery in supply chains. This section specifically discusses methods for assessing and detecting modern slavery in the supply chain.

According to the modern slavery statements of firms, the most common means of assessment is to audit the qualifications of individual suppliers in the supply chain, either directly or by inviting a third party to do so (Stevenson and Cole, 2018). For example, following the enactment of modern slavery laws, one firm has developed a rigorous audit system tailored to its circumstances. For example, workers in the supply chain are interviewed while third-party vetting staff are present to ensure that workers' identity, job qualifications, and age meet the employment criteria (Airwair International Ltd 2018). Firms may engage in fraud with auditors to cover up modern slavery in their supply chains. However, if falsified data are discovered by relevant authorities, the company faces much higher fines than the cost of detecting and remediating modern slavery in its supply chain (Stevenson and Cole 2018). As a result, the vast majority of companies are compliant with risk assessments to detect the presence of modern slavery in their supply chains. For example, some companies in Australia use the Global Slavery Index (2019) to assist their ability to detect the existence of modern slavery practices in their supply chain (Christ, Rao, and Burritt 2019). Tools such as the Global Slavery Index (2019), which is a database on areas with a high incidence of modern slavery, help companies identify areas where modern slavery is highly prevalent and where government regulatory capacity is inadequate. For example, because of inadequate local government regulatory capacity, Sub-Saharan Africa has the highest number of child labourers (estimated to be 59 million) (Johnson and Christopher 2015). In addition, the emergence of large

numbers of slaves and forced labour slavery occurred in the diamond mining industry in Africa (Schulte, Balasubramanian, and Paris 2021).

By inviting a third party to audit the company's supply chain, a degree of transparency can be achieved and modern slavery in the supply chain can be effectively assessed and detected. To better enhance supply chain transparency, the Chartered Institute of Purchasing and Supply Walk Free Foundation (CIPS-Walk Free 2013) proposes several indicators for initial screening in modern slavery assessments. First, low capacity of government or law enforcement agencies; second, a high proportion of poor workers; third, a lack of employment opportunities; fourth, recruitment of workers by agencies; fifth, a high proportion of immigrants or ethnic minorities in the workforce; sixth, production activities located in less economically developed or conflict war-torn areas; seventh, a high rate of raw material extraction industries or less skilled industries. The above indicators can be used as a low-level early warning system to assess the incidence of modern slavery, but further testing is required to adequately detect modern slavery in the supply chains. For example, slavery practices can be detected by analyzing economic data from different areas (e.g. villages, cities) or by comparing photographs of factories taken by satellite or surveillance (Gold, Trautrim, and Trodd 2015).

However, assessing modern slavery in supply chains also requires the use of approaches that go beyond traditional supply chain auditing (Lund-Thomsen 2008). The tools firms adopt to assess slavery vary according to the context of the assessment. For example, there are many cases of modern slavery on plantations that produce ethanol fuel in Brazil (Rush 2007). In the supply chain of ethanol production in Brazil, slavery used to occur only in the regions of several producers. However, ethanol production was recently expanded to other areas and at the same time, workers began to be employed through agencies rather than directly by the ethanol producer (McGrath 2013). This change in the structure of employment is an early warning of the possibility of slavery practices, thus providing suppliers with an indicator that they should assess modern slavery in the supply chain. The assessment of modern slavery in the supply chain must be monitored continuously, keeping close monitor of structural changes in the supply chain. When there is a suspicion that slavery is being used for labour, an assessment and investigation by a specialist inspectorate or government agency is required.

In addition to companies assessing and monitoring their supply chains, many suppliers are also assessed to prevent slavery (Schaper and Pollach 2021). For example, Stevenson and Cole (2018) note that in some cases, when multiple buyers are purchasing from the same supplier, a collaborative audit will be conducted. The reports of those audits are shared in a platform to exchange data on supplier ethics, which brings pressures to suppliers to improve their compliance. Moreover, focal firms can request suppliers to conduct self-assessment and assessments from third-party labour agencies, and suppliers reporting new subcontracting arrangements in a timely manner (Gold, Trautrim, and Trodd 2015). Sometimes it is also stipulated in the contract with the supplier that the supplier needs to ensure that its behaviour will meet the buyer's needs and that a full supply chain list is published to increase transparency in the supply chain (CIPS-Walk Free 2013). However, the complexity of supply chains in some industries means that many suppliers are unable to do this, with organisations such as the Marks & Spencer Group acknowledging the difficulties in mapping the complete supply chain (Voss et al. 2019).

All these assessment approaches are based on manual surveys or extrapolation based on historical data. To diversify the assessment of modern slavery in the supply chain, firms can use satellite remote sensing to assess and address specific forms of slavery (Tambe and Tambay 2020). For example, there are frequent reports of modern slavery occurring in brick kilns in South Asia, where the exploitation and abuse of local workers are ongoing and child and forced labour is common (Bales 2012; Kara 2014). Given the uneven distribution of brick bands in the area of the brick kilns, the density of brick kilns is highly variable and therefore needs to be monitored simultaneously in time and space (Foody et al. 2019) by using satellite remote sensing techniques to obtain data on the potential for slavery. The detection of the region through time and space makes a significant contribution to the assessment of modern slavery in this sector of this region

(Boyd et al. 2021). Thus, where direct observation of modern slavery in the supply chain is not possible, the use of satellite remote sensing can provide a valid dataset about slavery practices in the region, which can help governments to develop relevant regulatory policies, help companies to focus on relevant problems, and ultimately address issues related to labour exploitation.

3.3. Pathways to reducing modern slavery

Modern slavery exists in the supply chains of almost all industries (Walk Free Foundation 2016). To address this widespread problem, standards of supply chain transparency have been elevated to the level of law (Meehan and Pinnington 2021), and large companies are exploring optimal solutions for reducing modern slavery in the supply chain. Multiple pathways are needed to solve the problems of modern slavery. The following subsections discuss specific measures that can be adopted to address modern slavery in the supply chain at different levels.

3.3.1. Corporate code of conduct

When faced with the issue of modern slavery in the supply chain, companies should take the issue seriously and accordingly develop rules of conduct that are appropriate to their situation to deal with modern slavery. Given that modern slavery is widespread across supply chains, it must be addressed by using the strength of all companies and suppliers in the supply chain.

Under a bill to be introduced in Australia regarding modern slavery, companies will be required to develop a full suite of regulatory tools and guidelines to improve supply chain transparency (Christ and Burritt 2018). Given that many firms are unaware of modern slavery and the existence of modern slavery in their supply chains, the UK has strengthened its requirements for companies to be transparent about their supply chains through the recent UK Modern Slavery Act 2015. For example, modern slavery and human trafficking in supply chains were disclosed by Rio Tinto in its annual report and used to assess the firm's performance (Rio Tinto Ltd. 2020). As a result of the Modern Slavery Act in the UK, an increasing number of companies are declaring their specific actions against modern slavery in their supply chains in their reports, which increases supply chain transparency and the transparency of the practices of the company itself.

Due diligence arose from the United States Securities Act of 1933 (Sjostrom and Willian 2005) and since then, has been used in various fields (Koker 2006) and can be considered a mechanism for risk control (Van Buren, Schrempf-Stirling, and Westermann-Behaylo 2021). Thus, a firm should also exercise due diligence in a timely manner once the possibility of modern slavery arises. For example, Switzerland holds companies based in the country accountable for modern slavery in their global supply chains and their suppliers must pass due diligence (Davis 2018).

Firms also adopt codes of conduct to discipline their employees, and these codes can play an important role in reducing the problem of modern slavery in the supply chain (Crane 2013). With a code of conduct in place, companies become more compliant in both the recruitment of employees and in their operations (Roberts, McNulty, and Stiles 2005). Once a firm is operating more compliantly, its business reputation will be significantly enhanced. However, the development and implementation of a code of conduct can increase firm costs (Stevenson and Cole 2018). In addition, it can be challenging to enforce, and in many cases, the code of conduct is not well implemented, so it is often treated as a mere formality.

3.3.2. Employee rights protection

The protection of employees' rights is an important measure for the management of employees. Such protection mainly refers to the protection of employees' legal rights, safeguarding their physical and mental health, and treating the employees without discrimination (Gulenko 2018; Maon, Lindgreen, and Swaen 2010). In addition, taking responsibility for employee behaviour also leads to better employee relations (Jones 1995) and this combined with protecting employees' rights has the potential to enhance employee identification with the company, thus reducing the risk of modern

slavery in the firm. Further, the protection of employees' rights also enhances the reputation of the company and creates a positive corporate image (Lee, Lau, and Cheng 2013).

This view is supported by a number of high-profile labour incidents. For example, in Asia, lighting industry manufacturers have affected the reputation of global buyers by failing to protect the rights of their employees (Yu 2008). These labour incidents were caused by the failure of companies to provide an adequate level of protection for employee rights, which can lead to forced labour (Winstanley, Clark, and Leeson 2002). It is therefore important for companies to focus not only on protecting the rights of their employees but also on positively influencing other suppliers. The literature reports that some suppliers are working to enhance workplace safety (Carter and Jennings 2002). For example, companies such as Disney and Hewlett-Packard ensure that their suppliers comply with local human rights regulations and standards of employment; have revised employee regulations in response to past inadequacies; and have strengthened their focus on employee welfare and employee safety (Andersen and Skjoett-Larsen 2009). Companies increasing employee protections and focusing on employee development play a crucial role in reducing modern slavery in the company's supply chain.

3.3.3. Establishment of a modern slavery whistleblowing mechanism

Given that modern slavery is a very complex issue, it relies on the strength of all members of the community to solve it. Stevenson (2022) reports that when faced with the issue of modern slavery in modern supply chains, corporate supply chains can establish monitoring mechanisms in the communities where the supply chains are located to mobilise all community members to report any possible risks of modern slavery when they are identified, that is, to establish a system of whistleblowing. Eccles, Ioannou, and Serafeim (2014) reports that any flaw in the organisation of the supply chain can be reported. However, Andrade (2015) argues that the scope of whistleblowers needs to be limited to the inner workings of the organisation. Therefore, the whistleblowers may also be someone from within the firm. Any witness to slavery practices should report to local authorities, regulatory bodies, the media, and legal institutions. However, many people are reluctant to report problems related to modern slavery for fear of reprisals, so methods such as anonymous telephone calls and anonymous online reporting are gaining popularity (Crane, 2013).

Given that modern slavery incidents in the supply chain often involve several linked cases, whistleblowers can offer themselves greater protection by reporting indirectly (Meehan and Pinnington 2021). In addition, there are a number of issues with whistleblowing that need to be considered. First, it should be considered to whom the whistleblower should report, particularly when conflicting interests are involved. For example, Levitt's report states that the company has now appointed a compliance officer for receiving information from whistleblowers (Stevenson 2022). Second, when a company or institution is perceived to be afraid to take action to address a problem, it can make itself less credible and whistleblowing can suffer as a result. For example, in Leicester, UK, companies ignored early signals and failed to act, leading to cases of modern slavery (Lewis 2020). Therefore, clear and safe reporting avenues must be provided for whistleblowers, and the whistleblowing process should provide the option to report anonymously (Schwartz and Gottlieb 1980).

Companies must improve their slavery whistleblowing mechanisms, provide professional and systematic training to those responsible for dealing with whistleblowing issues, and ensure responsible people are in this important position, so that all whistleblowers can receive a truthful response after a rigorous investigation.

Establishing a sound monitoring and whistleblowing mechanism is an important means of reducing modern slavery in the supply chain. The advantage of establishing a whistleblowing mechanism is that it can effectively bring to light the problems of modern slavery, so that they can be addressed in a timely manner (Gold, Trautrim, and Trodd 2015). In addition, the deterrent effect of a whistleblowing mechanism can also significantly reduce the likelihood of modern slavery in the supply chain (Chen et al. 2021). However, there are some drawbacks to whistleblowing (Gold, Trautrim, and Trodd 2015). First, in many cases, workers who are victims of modern slavery do

not have the opportunity to blow the whistle. Second, the negative publicity generated by whistle-blowing can damage a firm's reputation. Third, many victims are afraid to report for fear of reprisals from those with conflicting interests (Stevenson 2022).

3.3.4. *Technology can reduce modern slavery*

Modern slavery in the supply chain is a complex ecosystem. Thus, an ecosystem approach must be taken to bring the entire supply chain together in cooperation (New 2015). In the face of a large and complex global supply chain systems, the technology of artificial biotechnology and blockchain can be used to provide technical support to individual organisations so that illegal acts of modern slavery in the supply chain can be detected and companies can be prompted to take relevant measures (Tambe and Tambay 2020).

For example, in food supply chains, firms can use biomarker technology to deal with modern slavery (Lafargue et al. 2021). The food itself cannot be digitally marked, but companies can rely on the code of the packaging to which it is attached to trace the origin of the product. However, while digital coding is an extremely common way of identifying provenance in the supply chain, it can be easily misappropriated (Rogerson and Parry 2020). Natural products have a unique chemical signature and therefore firms can distinguish them by analyzing the DNA of that product (Jean-son, Labat, and Little 2011). In this process, DNA is extracted from the product by biological methods. The DNA extracted from the product can determine the presence of other substances in the compounded processed food. Biomarkers are susceptible to change due to environmental influences, but they are inherently stable and can be adapted to various procedures in the processing chain. Therefore, a sample can be taken at any point in the supply chain and the results can be analyzed against the data in the Modern Slavery Database, and by comparing the data, the origin of the sample can be traced (Zolg and Langen 2004). DNA technology is already being used in the food supply chain. For example, Hawkins et al. (2015) uses DNA technology to detect sources of environmental contamination through honey mixtures. Unfortunately, DNA technology has not been applied in the cocoa industry, where modern slavery is highly prevalent. However, this technology has the potential to be applied to the cocoa supply chain because firms can collect DNA from the beans, which can be identified even when they are processed into chocolate (Lafargue 2020). The DNA of cocoa beans varies from farm to farm, and these subtle differences help to trace the supply chain of cocoa beans. While there has been a great deal of research on biometrics, biometrics is not widely applied to supply chain management (Chen et al. 2021). However, it does open up a new direction for firms to use biometrics to trace the potential risks of modern slavery in the supply chain.

Blockchain technology is characterised by storing information transparently and immutably; when new information is added to the blockchain, through certain algorithms, it becomes a digital chain with transparency and immutability (Papathanasiou, Cole, and Murray 2020). Initially, companies were not able to understand the role that blockchain transparency could play and considered that it would lead to the disclosure of important information about the company (Christ and Helliär 2021). Thus, the attribute of blockchain transparency plays an important role in regulating companies in combating modern slavery. In addition, the immutability of the blockchain can be of great help in preventing improper recruitment, as nothing in the contract can be modified to prevent it being tampered with by certain companies and storing it in the blockchain can also greatly protect the interests of labour, thus minimising modern slavery in the supply chain (Queiroz and Fosso Wamba 2019). Therefore, for companies, blockchain technology, when applied in its entirety to the supply chain, can be a powerful tool to combat the problem of fraud and deception. Specifically, blockchain technology can also be applied to processes such as contract signing, raw material tracking in the supply chain, identifying fraudulent products to reduce modern slavery in the supply chain (Rogerson and Parry 2020).

More importantly, firms can improve existing slavery prohibition due diligence through technology, specifically by using blockchain to record modern slavery offences in the supply chain, digitally

identify components, and use artificial intelligence for crime monitoring processes (Tambe and Tambay 2020). Kara (2017) states that many victims are unaware of their persecution as slaves and do not know how to go about breaking out of modern slavery. Because one of the problems these victims often face is that have no proof of identity, blockchain technology can help them by providing them with unique identities. In addition, modern slavery based on artificial intelligence can also monitor violations in the supply chain (Kamble et al. 2021). For example, by monitoring factors such as working hours, irregular employment, and overtime work. Once breaches of modern slavery in the supply chain have been monitored and identified by artificial intelligence, all crime data are recorded in the blockchain and immediately afterwards, action can be taken against the crime through auditing (Tambe and Tambay 2020).

3.4. UK modern slavery act 2015

The slave trade was abolished in Britain in 1807. Despite this, there are still many acts of slavery in Britain today (Flynn and Walker 2021). The concept of modern slavery is increasingly found in Modern Slavery Act (Mantouvalou 2018). Since the enactment of the UK Modern Slavery Act 2015, there are laws relating to noncompliance with the employment relationship and the defense of rights in relation to substandard working conditions. According to statistics, at least 10,000 people in the UK were victims of modern slavery in 2014 (Monciardini, Bernaz, and Andhov 2021). The significant increase in cases arising from modern slavery each year since the law was enacted demonstrates that increasingly more people are becoming aware that modern slavery is illegal and are seeking legal recourse (Simpson et al. 2021).

The first five sections of the UK Modern Slavery Act are primarily aimed at the government and NGOs (Cousins et al. 2020). Section 54 of the act (Transparency in Supply Chains) requires companies with any business in the UK with a turnover greater than £36 million to publish their modern slavery report for the year in their annual report to demonstrate how the company has addressed modern slavery in their supply chain during the year. The rest of the act refers sets out legislation on modern slavery in relation to individuals, to improve the understanding of modern slavery for all. With the enactment of its Modern Slavery Act, the UK has become a world leader in the fight against modern slavery.

As discussed, the identification of modern slavery in the supply chain is a vague and very complex issue (Boersma 2018). This is particularly evident in supply chains at the intersection of developing and developed countries (Bright et al. 2020) because behaviour that is considered compliant in developing countries can be illegal in developed countries. For example, the act of employing child labour is illegal in developed countries, yet in some poorer regions, if child labour is not employed, families can experience significant economic difficulties (Caruana et al. 2021).

The differences in perceptions have led to laws being extremely challenging to implement. However, as a result of the UK Modern Slavery Act, an increasing number of companies are voluntarily disclosing modern slavery (Flynn 2020), which increases the transparency of the company's supply chain and decreases the risk of generating modern slavery. It remains of greater concern whether the regulator is able to ensure that the public interest is served because many regulators prioritise the protection of the interests of powerful and economically strong groups (Broad and Turnbull 2018). The effectiveness of any law can be greatly reduced if the power to regulate is held by companies with private interests (Benstead, Hendry, and Stevenson 2021).

3.5. Modern slavery compliance

The enactment of modern slavery legislation has led more companies are taking modern slavery seriously and reporting how they face the pressures of modern slavery by issuing modern slavery statements. These statements force firms to behave in a compliant manner (Fracarolli Nunes, Lee Park, and Shin 2021).

However, the most companies' modern slavery statements emphasise how to set standards rather than how to enact remediation (Gadd and Broad 2018). In addition to issuing statements on modern slavery, firms must establish the right corporate culture and actively curtail the harms of modern slavery (Caruana et al., 2021). Furthermore, companies such as some in the cocoa manufacturing industry have realised the importance of sustainability (Zhu et al. 2022) and have increased the protection, basic wages, and other benefits of their employees (LeBaron 2021a). It is also extremely important to train employees to ensure they understand ethical policies and are aware of modern slavery (Schilling-Vacaflor 2021). Corporate compliance is also reflected in ethical sourcing, for example, companies can tighten their sourcing of cotton from Uzbekistan because cotton from that region carries the risk of seasonal slave labour being used (Cole and Shirgholami 2021).

4. Discussion

4.1. Conceptual framework

Based on the findings in Section 3, we present a conceptual framework that captures the antecedents of modern slavery, relevant practices against modern slavery, and the outcomes of the practices in the supply chain (see Figure 4).

Given the various sources of modern slavery in supply chains, we divide the antecedents of modern slavery into three groups: regulatory (i.e. incomplete legislation, lack of protection for vulnerable groups, bribes to government officials); organisational (i.e. irresponsible firm practices, forced labour, illegal employment, opaqueness of supply chains); and social (i.e. poverty, unemployment, education, culture, religion, race).

All three antecedents interact with each other to promote or deter the emergence of modern slavery (i.e. these are the two sides of the same coin). First, governments' ignorance or indulgence of modern slavery inevitably allow companies to ignore the dangers of modern slavery in pursuit of higher short-term profit. These companies may adopt measures that facilitate modern slavery, including hiring noncompliant labour agencies or outsourcing low-technology supply chains to noncompliant producers. Second, the neglect of modern slavery by the governments in some regions has provided opportunities for noncompliant multinational corporations to hire slave labour. Some firms even locate their lower-end supply chains in unregulated regions and hire labour at lower prices to lower production costs. Third, due to unequal sociocultural contexts

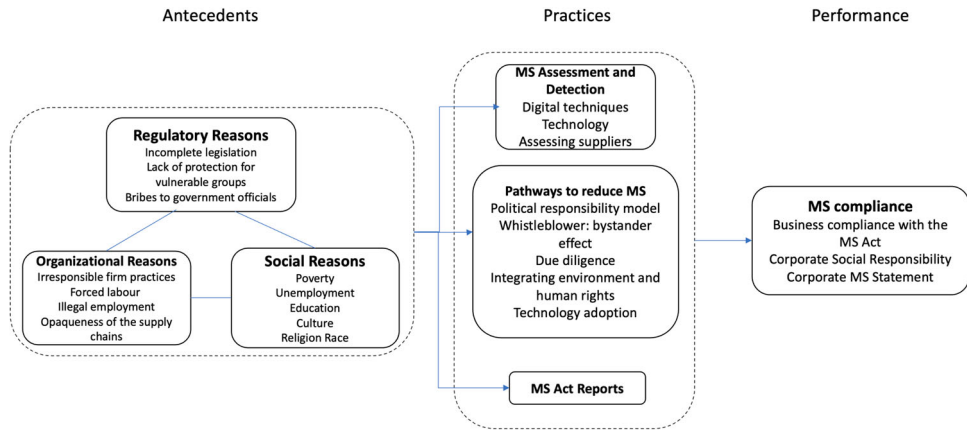


Figure 4. Modern slavery conceptual framework.

and low educational attainment in certain areas, some citizens accept their slave status, which hinders government intervention in modern slavery.

Based on these three causes or antecedents of modern slavery, in the middle section of the conceptual model, we summarise practices adopted to combat modern slavery. First, early assessment and detection of modern slavery in supply chains can help governments and companies identify the risks of modern slavery in specific areas. Using advanced technology such as satellite image recognition or compliance audits (e.g. on-site audits), modern slavery hidden in the supply chain can be exposed, allowing regulators to take steps to free the victims of slavery practices and remedy the consequences existing modern slavery. Second, some companies have taken concrete steps to avoid potential risks of modern slavery, such as developing appropriate codes of conduct, establishing whistleblowing mechanisms, and adopting technology to facilitate compliance. Third, governments around the world are passing modern slavery legislation, which puts more pressure on companies to comply and encourages companies to act against modern slavery.

By adopting the above practices, firm violations and the risk of modern slavery can be exposed and controlled. In addition, firms are increasingly focusing on their own compliance in dealing with modern slavery in the supply chain. For example, more companies are issuing modern slavery statements to improve the transparency of their supply chains. However, some companies continue to shirk their responsibility for modern slavery and issue only vague statements to satisfy government scrutiny without taking action. As a result, the reputation of compliant companies is higher than that of noncompliant companies, which places more pressure on noncompliant companies. In addition to issuing the modern slavery statements, some firms are also working to create the right corporate culture to curb modern slavery and enhance the protection of their employees.

Digital technology has also played a significant role in the disclosure of modern slavery. For example, Microsoft and BT have worked together to develop a cloud-based risk identification system to disclose modern slavery in provisioning (International Organization for Migration 2018). The failure of companies to identify the risks of modern slavery in their supply chains in a timely manner has led to rumours about scandals in their supply chain tarnishing the company's reputation, which will force regulators to pay more attention to corporate dynamics. In response to regulatory pressure and the need to protect their reputation, companies need to take measures to reduce and prevent modern slavery in their supply chains, including adopting digital technology (Benstead, Hendry, and Stevenson 2018).

Based on the above discussion, we present the interrelationship between the three-level themes (i.e. antecedents, practices, and outcomes) in the conceptual model. The different antecedents of modern slavery in supply chains cause organisations to combat modern slavery in different ways. For example, the UK government adopted the Modern Slavery Act to fight modern slavery crimes. Employee training within companies raises employees' awareness of modern slavery and prevents them from working in conditions of modern slavery. In addition, companies are trying to reduce the risk of modern slavery in their supply chains through various interventions for prevention, detection, and remediation. Companies will be more compliant with supply chain practices that prevent modern slavery when there is solid government regulation and increased employee awareness of modern slavery.

4.2. Future research directions

This study also aims to provide scholars with inspiration for further research on modern slavery in supply chains. This section summarises the gaps identified in the literature to suggest future research directions (see Figure 5 and Table 3).

First, most of the 44 articles reviewed focused on the social harms of modern slavery, with few focusing on how modern slavery affects corporate business activities or financial performance. Although the risk of modern slavery may expose focal companies to regulatory penalties and damage to their reputation, there is scant evidence of how modern slavery in supply chains

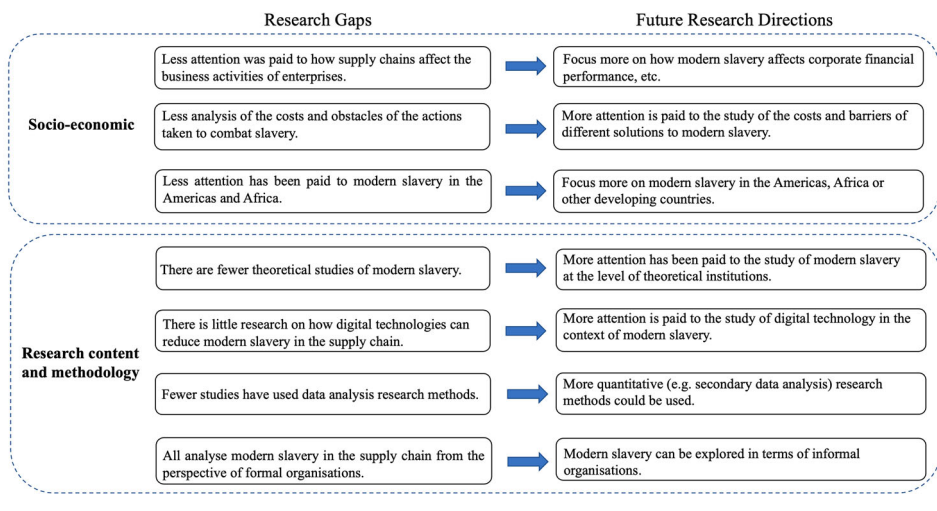


Figure 5. Research gaps and directions.

affects the financial performance of large multinational companies. Additionally, according to the UK Home Department (2019), since the adoption of the Modern Slavery Act 2015, approximately 40% of eligible companies are not complying with the legislation; however, no company has been punished for noncompliance. Thus, it remains unclear whether engaging in modern slavery will hurt a company’s financial performance. Therefore, we suggest that future research focus on the mechanisms by which modern slavery affects corporate financial performance and the factors that influence this mechanism, such as firm size, industry type, and the modern slavery type.

Second, the existing literature analyzes the effect of modern slavery from the perspective of formal organisations, while ignoring the interaction between underground organisations and modern slavery in the supply chain. More formal or larger organisations tend to attract more attention. For

Table 3. Research gaps and directions for further studies.

Research Gaps	Future Research Directions
Most focused on the social harm of modern slavery, while a few focused on how modern slavery affects corporate business activities or financial performance.	Future research focus on the mechanisms by which modern slavery affects corporate financial performance and the factors that influence this mechanism.
The existing literature analyses the impact of modern slavery from the perspective of formal organisations.	Future research can explore the drivers, practices, and consequences of modern slavery from the perspective of underground organisations.
The existing literature focuses more on modern slavery in Europe, Asia, and Oceania and less on modern slavery in the Americas and Africa.	Future research could focus on modern slavery in the Americas, Africa, or other developing regions.
While there is literature analysing the practices adopted by organisations to combat modern slavery, there are few articles that consider the costs and barriers faced by these practices.	Future research could explore barriers and costs to practices taken by companies to combat modern slavery and which barrier or cost is dominant.
Although we have proposed a conceptual framework for modern slavery in the supply chain, there has been relatively little theoretical research into modern slavery.	Future studies can further explore the drivers and outcomes of firm-level practices to combat modern slavery from the perspective of institutional theory, contingency theory, or stakeholder theory.
There is little literature on how digital technologies can reduce the risk of modern slavery in supply chains.	We propose that future research focus on the role of digital technology in combating modern slavery in order to provide additional solutions to modern slavery.
Previous literature has used mainly case studies (43%), surveys (25%) and modelling (21%), with a lack of studies related to data analysis.	we suggest that scholars may adopt empirical analysis (e.g. secondary data analysis) to investigate the influence of modern slavery in different dimensions.

example, the UK Modern Slavery Act 2015 makes modern slavery declaration mandatory only for companies with an annual turnover of more than £36 million (Islam and Van Staden 2021). However, modern slavery also exists in smaller companies and illegal underground organisations. Underground are more difficult to regulate than formal organisations, which provides a basis for modern slavery. Moreover, these organisations may contribute to modern slavery as part of the lower end of the global supply chains of some multinational companies. To the best of our knowledge, it is not clear how modern slavery operates in illegal underground organisations and the roles these illegal organisations play in global supply chains. Therefore, we suggest that future research explore the drivers, practices, and consequences of modern slavery from the perspective of underground organisations to complement existing organisational research on modern slavery.

Third, the existing literature focuses on modern slavery in Europe, Asia, and Oceania and less on modern slavery in the Americas and Africa. In addition, modern slavery has received less attention in developing countries than in the developed countries. The risks of modern slavery are more significant in developing countries than in developed ones. In addition, differences in geography, religious culture, and institutions may lead to different forms of modern slavery in different regions. Therefore, future research could focus on modern slavery in the Americas, Africa, or other developing regions to explore how modern slavery varies from place to place and how such differences affect the global supply chains of the focal companies.

Fourth, while there has been analysis in the literature of the practices adopted by organisations to combat modern slavery (e.g. detection, remediation, and prevention), few articles have considered the costs and barriers related to such practices. Given that different organisations may face different external and internal uncertainties, the proposed practices may not apply to organisations in a different context. In addition, ignoring the cost of adopting such practices may lead to companies facing greater financial pressure in combating modern slavery, which may, in turn, lead companies to adopt unsustainable practices for short-term profit. Therefore, to provide managerial suggestions for organisations, future research could explore barriers and costs to practices adopted by companies to combat modern slavery and examine which barrier or cost is dominant.

Fifth, we construct a conceptual framework to capture how the antecedents and consequences of modern slavery relate to practices that can combat modern slavery. In fact, the motivation for companies to combat modern slavery in their supply chains is primarily from pressure from external stakeholders, such as exposure from NGOs or the media, protests from consumers, and punishment from regulators (Flynn and Walker 2021). Therefore, future studies can further explore the drivers and outcomes of firm-level practices adopted to combat modern slavery from the perspective of institutional theory, contingency theory, or stakeholder theory, hence providing suggestions for policymakers to better eliminate modern slavery risks in supply chains.

Sixth, in the current context of Industry 4.0, digital technology (e.g. artificial intelligence, cloud computing, and biometric identification) is considered a potential means of combating modern slavery (Maloni and Brown 2006). However, there is little literature on how digital technologies reduce modern slavery risks in supply chains, nor is it clear how effective these technologies are in increasing supply chain transparency. In addition, digital technology may be used by the perpetrators of slavery to control their victims (Tech Against Trafficking 2018). Therefore, we recommend that future research focus on the role of digital technology in combating modern slavery to provide more solutions to modern slavery.

Seventh, previous literature has mainly used case studies (43%), surveys (25%), and modelling (21%) as the primary research method, which indicates a lack of empirical evidence on the relationship between modern slavery and its antecedents or outcomes. Meanwhile, it is unclear to what extent current policies, practices, and actions have mitigated modern slavery risks in supply chains. Therefore, we suggest that scholars adopt empirical analyses (e.g. secondary data analysis) to investigate the influence of modern slavery on different dimensions of firm

performance to provide strong evidence of the effectiveness of current practices designed to combat modern slavery.

4.3. Managerial implications

The findings from this review have several managerial implications. First, combating modern slavery in the supply chain is extremely challenging both for companies and for society. Particularly for companies, scandals related to modern slavery in the supply chain can damage the company's reputation and make the company less competitive in the market. It is therefore important for supply chain managers to take this issue seriously to avoid being connected with enabling or using slave labour.

Second, we analyzed the causes of modern slavery in supply chains from three perspectives: regulatory, organisational, and social. This will enable managers to better analyze the causes of modern slavery in the supply chain and the factors that contribute to these issues. Only by understanding the causes of slavery can companies better prevent and combat modern slavery in their supply chains.

Third, we offer some modern slavery mitigation approaches based on the causes of modern slavery in the supply chain, for example, establishing a sound whistleblowing mechanism, protecting the rights of employees, and using advanced digital technologies to combat modern slavery in the supply chain. Of these, the most important is the use of digital and other technological tools to tackle modern slavery in the supply chain. We therefore call on companies or supply chain managers to work with technology companies to develop more advanced technologies to prevent, assess, and combat modern slavery in supply chains.

5. Conclusions

This study conducted a systematic literature review of the existing modern slavery literature to identify themes and develop a conceptual framework to guide future research. After searching keywords in Scopus and applying the developed selection criteria, 44 articles published between 2003 and 2022 were reviewed, and three levels of themes were identified: antecedents (analyzed from regulatory, organisational, and social perspectives); practices (i.e. practices to mitigate modern slavery in supply chains); and manifestations (i.e. modern slavery compliance). We proposed a conceptual framework to reveal the relationship among constructs based on the findings. Finally, based on the gaps identified in the reviewed literature, we posed a number of suggestions for future research.

This study makes three theoretical contributions. First, it is the first systematic literature review of modern slavery in supply chains. Second, we proposed a conceptual framework that summarises the identified themes and how the different levels of the themes interact with each other, which increases understanding of the antecedents, practices, and outcomes related to modern slavery in supply chains. Third, we analyzed the gaps in current research to inspire future research.

However, this study has some limitations. First, we considered only literature in the English language, which may exclude relevant literature in other languages. Second, we focus only on modern slavery in supply chains, which limits the generalizability of this study. Third, the proposed conceptual framework is based on the 44 articles we reviewed. Therefore, empirical evidence is necessary to support our framework in further research.

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Appendix. All reviewed papers

No.	Author	Theme	Method	Pathways	MS Act	MS Compliance	
		Antecedents	Assessment and Detection				
1	Benstead, Hendry, and Stevenson (2018)		✓		✓		Action research
2	Boersma (2018)		✓	✓		✓	Survey
3	Boyd et al. (2021)		✓				Experiment
4	Bright et al. (2020)			✓			Case study
5	Broad and Turnbull (2018)		✓	✓			Case study
6	Bubicz, Dias, and Carvalho (2021)			✓			Modelling
7	Caruana et al. (2021)			✓			Case study
8	Christ and Burritt (2018)	✓			✓	✓	Survey
9	Christ, Rao, and Burritt (2019)	✓			✓		Survey
10	Christ and Helliar (2021)			✓			Modelling
11	Cole and Shirgholami (2021)					✓	Survey
12	Cousins et al. (2020)			✓		✓	Case study
13	Crane (2013)		✓			✓	Case study
14	Caruana et al. (2021)			✓			Case study
15	Flynn (2020)	✓				✓	Modelling
16	Flynn and Walker (2021)			✓			Modelling
17	Fracarolli Nunes, Lee Park, and Shin (2021)			✓			Modelling
18	Gadd and Broad (2018)			✓			Case study
19	Gold, Trautrim, and Trodd (2015)			✓			Case study
20	Gulenko (2018)		✓			✓	Literature Review
21	Islam and Van Staden (2021)					✓	Case study
22	Johnson and Christopher (2015)	✓		✓		✓	Modelling
23	Lafargue et al. (2021)			✓			Case study
24	Lalwani et al. (2018)			✓			Case study
25	LeBaron (2021a)		✓				Survey
26	LeBaron (2021b)	✓			✓		Survey
27	Lee, Lau, and Cheng (2013)	✓			✓		Survey
28	Mantouvalou (2018)		✓				Case study
29	Meehan and Pinnington (2021)			✓			Survey
30	New (2015)	✓	✓	✓			Case study
31	Monciardini, Bernaz, and Andhov (2021)			✓			Case study
32	Tambe and Tambay (2020)			✓	✓		Modelling
33	Rosile et al. (2021)			✓			Case study
34	Schaper and Pollach (2021)		✓	✓			Modelling
35	Schilling-Vacaflor (2021)				✓	✓	Case study
36	Schulte, Balasubramanian, and Paris (2021)	✓			✓		Survey
37	Simpson et al. (2021)		✓	✓			Modelling
38	Stevenson and Cole (2018)	✓			✓	✓	Secondary Data Analysis
39	Stevenson (2022)		✓	✓	✓		Secondary Data Analysis
40	Stringer and Michailova (2018)			✓	✓		Case study
41	Tickler et al. (2018)	✓				✓	Case study
42	Trautrim, et al. (2021)	✓		✓	✓		Survey
43	Van Buren, Schrempf-Stirling, and Westermann-Behaylo (2021)	✓		✓			Case study
44	Voss et al. (2019)	✓					Survey