A Performance Evaluation on the Detection and Prevention of Modern Slavery in Global Supply Chains

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ABSTRACT

The United Kingdom (UK) is a destination country for vulnerable children, women, and men, primarily from Africa, Asia, and Eastern Europe, who are victims of modern slavery. Notably, over the last decade, only a few systematic academic studies have been conducted on modern slavery in the supply chain. Therefore, research into the topic is still in the early stages. Accordingly, this research aims to analyse the enablers of modern slavery that significantly determine the overall performance of global supply chains and proposes a novel benchmarking framework that will integrate various anti-slavery strategies.

This study involves empirical studies within the UK supply chains using the benchmarking methodology to assess modern slavery mitigation strategies in supply chains in a quest to meet the requirements of the research objectives. Modern slavery risk assessment is conducted through two stages of questionnaire surveys and evaluated through the Analytic Hierarchy Process (AHP) and Total Interpretive Structural Modelling (TISM). Modern slavery mitigation strategies are identified through empirical studies and evaluated through MICMAC analysis. The findings of the AHP and TISM surveys indicate that "developing an advanced information technology and a benchmarking model will help in evaluating and tracking the production of goods from their source to final use and verifying the product origin, sourcing, and suppliers' workforce".

This thesis complements the existing literature by proposing a comprehensive framework that provides abundant insights into the rapid increase in modern slavery in global supply chain systems. Practitioners and policymakers can utilise the findings of such a study to build up global supply chains more efficiently. The research design is divided into three phases; first, modern slavery enablers and mitigation strategies are identified through an exhaustive literature review; next, the enablers and modern slavery mitigation strategies are verified by experts through empirical studies, i.e., high-level surveys and face-to-face interviews. Finally, the weight of modern slavery risk factors is estimated using the AHP, While TISM, a theory-building analysis tool, is utilised to examine the relationship and influence of each modern slavery enabler.

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Abbreviations

AHP	Analytical Hierarchical Process
AFI	Accountability Framework Initiative
ATMG	Anti- Trafficking Monitoring Group
AS	Antecedent Set
BHRRC	Business and Human Right Resource Centre
DFID	Department for International Development
DP	Driving Power
CBP	Customs and Border Protection
CSR	Corporate Social Responsibility
CI	Consistency Index
CR	Consistency Ratio
ETI	Ethical Trading Initiative
EU	European Union
ESG	Environmental Social Governance
ERIC	Education Resource Information Centre
FLA	Fair Labour Association
FRM	Final Reachability Matrix
FLEX	Focus on Labour Exploitation
FCO	Foreign and commonwealth Office
ILO	International Labour Organization
IOM	International Organization for Migration
ISM	Interpretive Structural Model
IRM	Initial Reachability Matrix
IS	Intersection Set
NAPTIP	National Agency for the Prohibition of Trafficking in Persons
NGO	Non-Governmental Organization
NCA	National Crime Agency
MCDM	Multi-Criteria Decision Making Model
MICMAC	Matriced'Impacts Croisés Multiplication Appliquéea'un Classement
MNE	Multi-National Enterprise
MNC	Multi-National Corporations
MSA	Modern Slavery Act
OECD	Organization for Economic Co-operation and Development
OSCE	Organization for Security Co-operation in Europe
OHCHR	Office of the United Nations High Commission on Human Right
RI	Random Index
RS	Reachability Set
SAP-FL	Special Action Programme to Combat Forced Labour
SDGs	Sustainable Development Goals
SAI	Social Accountability International
SC	Supply Chains

SCM	Supply Chain Management
SSCM	Sustainable Supply Chain Management
SME	Small and Medium Enterprise
SSIM	Structural Self Interaction Matrix
SSRN	Social Science Research Network
TISC	Transparency in Supply Chain
TISM	Total Interpretive Structural Model
THB	Trafficking in Human Beings
UK	United Kingdom
US	United States
UN	United Nations
UNGC	United Nations Global Compact
UNGIFT	United Nations Global Initiative to Fight Human Trafficking
UNGPs	United Nations Guiding Principles
UNHR	United Nations Human Right office of the high commissioner
UNODC	United Nations Office on Drugs and Crime
W.A	Weighted Average
WCO	World Customs Organization
WRO	Withhold Release Order

Chapter 1: Introduction

1.1: Research Background

Modern slavery is present in both private and public supply chains (OSCE, 2021). According to Fayezi et al (2025), Modern slavery constitutes a significant crime that devalues human life. It is a comprehensive term that covers a range of serious labour exploitation practices, including instances of forced labour. Modern slavery often takes place in emerging economies, although recent reports have highlighted occurrences of modern slavery in developed countries. Invariably, labour conditions in the global supply chain are major employment concerns worldwide (Uddin et al.,2022). There is no specific data on the frequency of modern slavery, a term used to encompass abusive practices, including forced labour, bonded labour, human trafficking, and child labour. According to the Walk Free Foundation (2023), an estimated 50 million people were victims of modern slavery in 2023. Of this, an estimated 28 million people were in forced labour, and 22 million were living in forced marriages. Over 71% of victims were women and girls. Although these are the most authoritative estimates of modern slavery, they are incomplete, as notable gaps prevail in the data for specific regions and forms of modern slavery (Alvis, 2020; LeBaron, 2020). The research conducted by Szablewska and Kubacki (2023) outlines a range of strategies to combat modern slavery. These strategies include enhancing collaboration among various stakeholders, enacting transformative changes within business cultures, establishing robust legislation, enforcing penalties for noncompliance, utilizing self-regulatory and normative frameworks, promoting initiatives led by employees, launching awareness campaigns against modern slavery, and harnessing technology to address this critical issue. Dhakal Adhikari and Adhikari (2023) posited that the persistent existence of modern slavery highlights a deeply rooted societal challenge, illustrating the intricate difficulties that society encounters in tackling this issue. Modern supply chains are often characterized by significant fragmentation, and amid cost constraints and supply chain disruptions, social concerns frequently receive insufficient attention.

The susceptibility to modern slavery exists across domestic, individual, and international dimensions. Assan and Kharisma (2023) investigate the susceptibility of young internal migrants to poverty and livelihood instability, as well as their potential victimization by exploitative labour practices. Victims predominantly include women, children, migrants, and refugees (Dawood and Seedat-Khan, 2023; Gadd and Broad, 2024). At the international scale,

there is an increasing volume of research examining the connections between political instability, socio-economic challenges, and the heightened risk of exploitation and trafficking (Marmo and Bandiera, 2021). On a domestic front, scholars have proposed various regulatory and legislative measures that may exacerbate vulnerability; for instance, a nation's visa policies and migration trends can render individuals more susceptible to exploitation (Alvis, 2020). Furthermore, at the individual level, the factors that contribute to a person's vulnerability are complex; abuses can manifest at any stage of the supply chain and in any nation (Han et al, 2022; Alzoubi et al, 2023).

Numerous studies have underscored that contemporary slavery represents a multifaceted and formidable issue that could obstruct the sustainable advancement of the global supply chain (Han et al., 2022; Pinnington and Mehaan, 2023; Kim and Olsen, 2023; Lofti and Pisa, 2024; Lotfi and Guix, 2023). Addressing modern slavery has the potential to redirect consumer expenditure towards sustainable goods, thereby alleviating environmental and climatic damage (Wang and Lofti, 2024). Research indicates that a considerable share of these practices transpires upstream, particularly in the production of raw materials and other inputs for goods that are ultimately exported (Boersma and Nolan, 2022; Assan and Kharisma, 2023; Dawood and Seedat-Khan, 2023; Madhavika et al., 2024; Ullah et al., 2025; Guix and Lofti, 2025). In their study, Ahmed and Uddin (2022) examined the prevalence of workplace bullying and the intensification of labour controls within the clothing supply chain. In the informal day labour sector, individuals may accept employment under conditions they perceive as unjust, including wage theft, excessive working hours, and inadequate working environments (Suprun et al., 2022; Kammer-Kerwick et al., 2023; Pinnington and Mehaan, 2023; Carvalho et al., 2025).

In recent years, there has been a growing awareness among private sector companies and investors regarding the issue of modern slavery (Strand et al., 2024). The drive to combat modern slavery has been fuelled by a significant understanding of the extent and nature of this exploitative practice, as well as ongoing policy discussions, including national legislation aimed at eradicating modern slavery, which aligns with the United Nations (UN) Sustainable Development Goal (SDG) target 8.7. This presents an opportunity to tackle major social and environmental issues. As a widely accepted framework, these goals provide a means to engage stakeholders globally and have led to increased scrutiny from both the media and civil society (Alexander et al., 2022). Consequently, modern slavery poses a significant challenge for companies across various sectors, particularly concerning their supply chain strategies. The

research conducted by Ford and Nolan (2020) highlighted the influence of regulatory transparency on human rights and modern slavery within corporate supply chains. Companies are likely to encounter numerous risks and challenges as they navigate an increasingly competitive global market with diverse supply chains spanning different sectors and countries (Avis, 2020; Geng et al., 2022). They may face commercial risks that hinder their ability to adapt quickly to market demands. Nevertheless, it is crucial for major brands to gain a deeper understanding of the factors that allow slavery to persist within their supply chains (Crane et al., 2022). In a globalized environment, the supply chains for products and services extend across various nations and continents (Lambrechts, 2020).

The increasing global reach and complexity of many multi-tier global supply chains pose challenges for 'lead' firms trying to manage social sustainability (Han et al, 2022). According to the Walk Free Foundation (2023), there are risks of modern slavery at each stage of the garment supply chain, from growing and producing raw materials to processing these into inputs to manufacturing. Accordingly, businesses have the power to assess risk and vet third parties for modern slavery risks at an unprecedented level. Therefore, it is necessary to use all available tools to understand the global business of forced labour and promote transparency (LeBaron, 2018; Ethixbase 360, 2023). Carvalho et al. (2025) highlighted that Multinational corporations (MNCs) are under significant examination regarding their economic, social, and environmental sustainability. Khan et al. (2021) explored the implications for sustainable development through a systematic approach to Triple Bottom Line (TBL) mapping. This method enables companies to analyse their supply chains, thereby gaining insights into their operational impact and evaluating contextual risk factors to identify potential overlaps (Mack and Pomati, 2022). By employing this supply chain mapping technique, organizations can focus their resources on segments of the supply chain that are most susceptible to modern slavery concerns (Alzoubi et al., 2023). LeBaron et al. (2017) highlighted the role of ethical audits in governing global supply chain sustainability. Nevertheless, the establishment of context-specific key performance indicators is essential for achieving supply chain sustainability, allowing both investors and companies to comprehend what is being measured and the implications of various outcomes. Additionally, technology-driven worker-reporting tools can enhance the transparency of workplaces that lack sufficient oversight from investors and companies (Fayezi et al., 2025). Ullah et al. (2025) offered novel perspectives on challenges to social reintegration that have been insufficiently examined in the past.

Adequate reporting and disclosure mechanisms enable the monitoring of interventions aimed at combating modern slavery (Gadd and Broad, 2024). Effective internal reporting and monitoring practices are essential for ensuring organizational commitment and for identifying critical issues that may otherwise go unnoticed (Lotfi and Noleen, 2024). According to Szablewska and Kubacki (2023), multi-stakeholder initiatives play a vital role in the developing global regulatory landscape, which acts as a form of private governance. Lotfi and Walker (2024) conducted a study that identified barriers to managing modern slavery risks in supply chains, revealing that the existence of modern slavery-like practices has prompted considerable investment in anti-slavery measures. Liu et al. (2022) stressed the necessity of establishing a framework to evaluate the readiness of construction industry stakeholders to address modern slavery. However, effectively combating modern slavery requires a multifaceted approach that includes governance, risk assessment, ongoing due diligence, risk mitigation, grievance and remediation processes, performance monitoring, reporting, as well as education and capacity building (Marques et al, 2024).

Modern supply chains are often characterized by significant fragmentation, and amid cost constraints and supply interruptions, social concerns frequently receive less attention (Fayezi et al., 2025). Numerous studies have demonstrated that both governmental and civil society organizations are actively engaged in addressing the issue of modern slavery (Burmester et al., 2022; Geng et al., 2022; Gadd and Broad, 2024). Ahmed and Arun (2023) suggested that interventions within supply chains are designed to empower global corporations to avert modern slavery or, at the very least, to project an image of proactivity to broader stakeholders. In their research, Strand et al. (2024) examine the dynamics of collaborations between businesses and NGOs in relation to the prevention, detection, remediation, and response to modern slavery within supply chains. Montgomery (2025) conducted a study on the social implications of modern slavery in supply chains through the lens of six theoretical perspectives. To effectively address and combat modern slavery within the supply chain, a theory-driven social supply chain management framework has been proposed, incorporating indicators and countermeasures related to modern slavery (Bodendorf et al., 2022).

The growing demands from non-governmental organizations and regulatory authorities have made it imperative for multinational corporations to integrate social considerations into their supply chains to achieve long-term sustainability (Madhavika et al., 2024). Furthermore, both private and public entities are facing heightened scrutiny from various stakeholders regarding their social performance. This scrutiny encompasses not only the treatment of their employees

and the communities in which they operate but also increasingly focuses on the social practices of their suppliers and their treatment of workers and local communities (Montgomery, 2025). In this context, worker-driven monitoring plays a crucial role in enhancing human rights governance within supply chains by promoting accountability, enforcement, and repercussions for any violations (Sparks et al., 2022). Consequently, issues related to workers' rights, health and safety, wages, racial and gender equality, and broader human rights concerns are integral to socially responsible purchasing practices, particularly in the early stages of the production life cycle (Lambrechts, 2020). Research by Lofti et al. (2023) has explored the management of modern slavery risks in asset-light business models.

This study seeks to inform future studies and contribute to developing best practices for socially sustainable supply chain management by critically evaluating existing research. Chapter one presents and explains formally the reasoning behind the study and indicates its ideal goals. The methodological approach is briefly described, followed by a quick preview of the thesis's organisational framework.

1.2: Scope of this Research and Statement of the Problem

The research outlined in this thesis was conducted in alignment with the UN SDGs, particularly focusing on target 8.7 decent work and economic growth. This target emphasizes the necessity of implementing prompt and effective actions to eliminate forced labour and eradicate modern slavery, particularly within global supply chains, while also fostering decent work and economic growth. This endeavour is rooted in the principles of the 2030 agenda for sustainable development, which advocates for inclusivity and ensuring that no individual is marginalise or excluded. While sustainability encompasses environmental, economic, and social dimensions, the social aspect has garnered comparatively less attention. For instance, consumers often prioritize cost, quality, and availability when purchasing products, frequently overlooking the working conditions of those who produce them. Furthermore, the global supply chain's demand for inexpensive labour and goods continues to be a major factor contributing to modern slavery. This research seeks to determine which anti-slavery initiatives are most effective in addressing modern slavery.

Policymakers are advocating for protective measures that focus on health, education, social protection, and livelihood initiatives (Gregory, 2022). Various assessments indicate that laws prohibiting trafficking and child labour may have unintended negative consequences. Therefore, it is essential to prioritize the development of a transparent benchmarking

methodology that encompasses all relevant efforts aimed at enhancing labour and working conditions (Alliance 8.7, 2019; Wilhelm et al., 2020). Furthermore, it is crucial to incorporate business culture and significant risk factors, such as pandemics, as new institutional elements; to recognize external stakeholders, including recruitment agencies and auditing firms, as vital to comprehending the business landscape of modern slavery; and to categorize prevention and remediation alongside detection and response in the management of modern slavery risks (Strand et al., 2024). Lotfi and Walker (2024) identifies obstacles that hinder the detection, prevention, and resolution of modern slavery incidents within supply chains. A conceptual framework is proposed, drawing from literature on supply chain risk management and the challenges associated with modern slavery. Sègbotangni et al. (2025) examined how supply chain integration can enhance transparency and environmental performance in Small and Medium-sized Enterprises (SMEs). Utilizing stakeholder theory, the research emphasizes the importance of customer and supplier integration, as well as internal integration within the supply network's operations.

From a decision-making standpoint, assessing and analysing interventions aimed at combating modern slavery can be particularly intricate in specific geographical regions, particularly within emerging economies (Benstead et al., 2020; Carrington et al., 2021). Geng et al. (2022) highlight that the lower tiers of supply chains are where the risk of modern slavery is most pronounced, characterized by limited visibility and a workforce that is both vulnerable and socially marginalized. The intricate nature of supply chains, which often span multiple tiers across various continents and legal jurisdictions, complicates the effort to ensure fair working conditions for all individuals involved (Montgomery, 2025). Trautrims et al. (2022) examined how effective supply chain governance is in tackling modern slavery within these extensive and complicated networks. Strand et al. (2023) emphasize the necessity for further research in sectors that produce goods with a heightened risk of modern slavery, particularly those that rely on recruitment agencies. Upholding employment standards within supply chains is integral to the ethical and sustainable practices of businesses. The Covid-19 pandemic has significantly disrupted supply chains and their associated workforces (Flynn et al., 2021). Lofti et al. (2021) offer insights into the reasons behind the failure of supply chains to protect workers' rights by aligning the UN SDG with the social foundations of the doughnut model, specifically concerning workers' rights within supply chains. Nevertheless, numerous supply chains have committed to safeguarding workers' rights as part of their social sustainability initiatives across

extensive supply networks (Lotfi et al, 2021; Suprun et al, 2022; Pinnington et al, 2023; Saha et al, 2024; Marques et al, 2024).

Globalization has led to ethical and social responsibility challenges for numerous businesses, as companies often encounter varying cultural norms and expectations when engaging with international partners (Caruana et al., 2020; Crane et al., 2021). Wang and Lotfi (2024) explored the interplay between climate change and modern slavery within supply chains. Guix and Lotfi (2024) argue that forced labour arises not only from individuals exploiting the vulnerabilities of others for profit but also from structural elements within regulatory frameworks that create conditions conducive to such exploitation. Currently, labour standards and environmental concerns are prominent on the international trade policy agenda, increasing the risks associated with global business operations if these issues are not effectively addressed (Carvalho et al., 2025). Consequently, it has become essential for companies to ensure that their sourced products are produced in a socially responsible manner (Gregory, 2022). Gadd and Broad (2024) have noted instances of notable corporate media behaviour, including the implementation of codes of conduct and monitoring systems. Various governments, alongside a diverse array of national and international organizations, have actively sought to address the challenge of modern slavery (Peter and Daphne, 2023; Alzoubi et al, 2023; Arun and Olsen, 2023; Strand et al, 2024; Pesterfield and Rogerson, 2024; Sebotangni et al, 2025). Lambrechts (2020) identified that selecting the most suitable supply sources has historically been viewed as a vital aspect of the purchasing process. Outhwaite and Martin-Ortega (2019) examined how anti-slavery advocates adopt various supply chain strategies to tackle the issue of modern slavery.

1.3: Research Aim and Objectives

This work aims to analyse the enablers of modern slavery that significantly determine the overall performance of global supply chains and proposes a novel benchmarking framework that will integrate various anti-slavery strategies. The research is fundamentally motivated by the need for collaboration among all essential stakeholders in both the private and public sectors to investigate modern slavery within global supply chains. The preferred strategy among global anti-slavery policymakers for enhancing transparency regarding working conditions within corporate supply chains is the implementation of mandatory annual reporting (Pinnington et al., 2023). However, despite the existence of legislation and comprehensive guidance advocating for a collaborative approach, the annual

reports produced by corporations have been underwhelming, offering minimal evidence of meaningful efforts to combat modern slavery. Furthermore, a collaborative strategy for identifying and addressing modern slavery becomes ineffective if a company does not consistently evaluate its internal practices.

A research framework consists of essential assumptions or principles that facilitate intellectual discussions and actions. In accordance with the main aim of this study, the research objectives are crafted to achieve specific and measurable results, particularly in evaluating the performance related to the detection and prevention of modern slavery in global supply chains. These objectives function as practical tools rather than mere theoretical concepts, enabling an examination of the influence of benchmarking global supply chains on combating modern slavery. The research objectives are as follows:

1. To conduct case studies to justify and demonstrate applicability of the proposed framework.

2. To analyse the appropriate legal and policy framework addressing the trafficking of human beings for labour exploitation in government and corporate supply chains and identifying best practices.

3. To develop a multi-criteria analytical framework for the enablers of modern slavery in the supply chain that will measure and quantify the different forms of labour exploitation and then inform the policies and practices that underpin this anti-slavery effort.

4. To validate the framework using the AHP and TISM techniques, obtaining an analysis of stakeholders' perceptions and expectations in terms of information on sourcing, purchasing, recruitment, and the entire process of manufacturing goods to enable sustainability based on a successful benchmark, which are key elements of the proposed framework.

This study is firmly grounded in the context of modern slavery, drawing its motivation and foundation from the abovementioned discussions and limitations. Therefore, in light of the complexities and risks associated with modern slavery in recent times, this study responds to the urgent need for more investigations on modern slavery in supply chains to ensure social sustainability. Consequently, this study defines research questions, aims, and objectives that must be met to realise the research purpose.

These research questions include:

RQ1. What constitutes an anti-slavery supply chain management framework?

RQ2. What are the enablers of modern slavery, and how are they categorised?

RQ3. What is the relative importance of the enabling factors of modern slavery?

RQ4. What strategies are currently implemented to mitigate and tackle modern slavery in supply chains?

RQ5. What are the priorities of the supply chain strategies to tackle modern slavery?

1.4: Research Methodology.

Research on modern slavery in supply chains is evolving, with several proposals put forth for empirical investigations as well as the integration of mixed methodologies in social science and complex supply chain studies. The current inadequacy in employing mixed-method research designs and the limited empirical data in published works are undermining the depth and applicability of modern slavery research (Weibelzah and Weber, 2001; Alsamaray, 2017). By aligning empirical studies, the field can expand its understanding and increase awareness of real-world scenarios, thereby enhancing the effectiveness of academics, practitioners, and policymakers. Therefore, a mixed-method research design is utilized to fulfil the primary objective, which examines how various decision-making approaches can improve the visibility of lengthy and intricate supply chains in preventing and addressing modern slavery, contributing to a more sustainable future.

In this study, the empirical investigation explores the global dimension of modern slavery, although the study is primarily focused on the global links to United Kingdom (UK) supply chains. The necessary data is meticulously retrieved through various methods, including reviewing relevant articles, official documentation, modern slavery-related websites, and reports. Several rounds of high-level surveys and interviews were conducted to establish the validity and reliability of the data. Accordingly, each survey went through a rigorous pilot test before the deployment of the questionnaire survey. Diverse experts in the supply chain, ranging from middle to senior level, were invited to examine the survey and provide relevant comments. These comments were then used to modify the questionnaire, ensuring its effectiveness before deployment.

The systematic literature review addresses strategies for identifying modern slavery risk. However, scholarly inquiry about modern slavery in supply chains falls short of addressing the importance of these strategies and their potential application in mitigating exploitative practices in supply chains (Lofti and Walker, 2024). Hence, the justification for conducting research using primary data and utilising data collection tools such as surveys and interviews, among others, is evident.

The research problem addressed here is the lack of an analytical framework for the risk assessment of long and complex supply chains that are riddled with modern slavery issues. Benstead et al. (2020) investigated the modern slavery detection process and provided empirical evidence involving collaboration with a large multinational NGO and the customers of an audited supplier. Bodendorf et al. (2022) also carried out an investigation analysing possible indicators of the occurrence of modern slavery in companies and possible countermeasures for combating modern slavery in the supply chain. Rezghdeh and Shokouhyar (2020) developed a six-dimensional risk analysis model to mitigate social issues in supply chains. Zhou and Xu (2018) developed an integrated sustainable supplier selection based on hybrid information aggregation in similar research.

The methodology adopted in this research presents a novel approach to modern slavery risk assessment in global supply chains by examining the attributes of different enablers of modern slavery. To verify the discovered modern slavery risk factors and applicable anti-slavery strategies, high-level questionnaire surveys and face-to-face interviews were conducted with experts from academia, industry, government, and non-governmental organisations. In addition, face-to-face interviews were conducted to investigate the suitability of the designed interpretive structural model and anti-slavery interventions currently implemented in the supply chain. The TISM summarises validated modern slavery enablers in global supply chains.

The selection of a suitable list of indicators is essential to conduct surveys that represent both the insight and assumptions of the stakeholders that function within and beyond a complex supply chain. The selected case studies in North-west England allowed the employment and application of Cronbach Alpha, AHP and TISM models for decision-making based on primary data collected with multiple participants from industry. A multi-criteria decision-making analysis tool is utilised in this study. The AHP is employed to determine the weights of various criteria that impact supplier selection and a theory-building analysis tool known as the TISM.

Empirical evidence proposes a connection between slavery and problems such as corruption, conflict, poverty, discrimination, the impact of a weak rule of law, and poor or declining economic conditions.

1.5: Intended contribution to knowledge

This research serves as a foundation for the empirical study by emphasizing formal theorization, which establishes a clear connection between theoretical frameworks and practical methodologies for assessing supply chain interventions. It aims to identify performance deficiencies and promote initiatives that address labour exploitation within supply chains. The theoretical implications derived from this study are intended to enhance the operational efficiency of the firm's supply chain. Additionally, the research seeks to tackle the critical practical issue of benchmarking global supply chains to combat the escalating problem of modern slavery. The proposed benchmarking framework will scrutinize modern slavery concerns and require businesses to provide a thorough account of the factors influencing their efforts. This will illustrate the relevance of the benchmarking model within the context of modern slavery, thereby establishing a crucial theoretical basis for future investigations. Consequently, subsequent research can utilize the benchmarking framework to explore contemporary slavery issues across various levels, including firm, supply chain, industry, and country, thereby deepening the understanding of business supply chains in relation to modern slavery. The purpose of benchmarking is to uncover internal areas for enhancement, allowing firms to establish baselines for ongoing improvement by evaluating their strategies against best practices concerning modern slavery.

1.6: Structure of Thesis

Beyond the introduction, this thesis contains seven chapters. These chapters are arranged as illustrated in Figure 1.1 and are briefly described as follows:

Chapter One- serves as the gateway to the research. It not only provides a comprehensive background on the research topic but also poses crucial research questions that form the backbone of this study. These questions, along with the identified gaps, aim and objectives, and a brief clarification of the methodology, are the key drivers of this research. This chapter sets the stage for the subsequent literature review in chapter two.

Chapter two reviews the literature on modern slavery in global supply chains, thereby providing an understanding of the present state of global supply chains regarding this growing social issue. In addition, the report covers various specific aspects relating to the broader topic of global supply chains and modern slavery: these include socially sustainable supply chain management, logistical social responsibility, corporate social responsibility, digitalisation, and the effectiveness of existing initiatives to prevent modern slavery in the supply chains.

Chapter three- unveils the unique research design and methodology: After a brief review of the research structure, the chapter delves into the research philosophy of social enquiry and management, highlighting the researcher's personal philosophical stance on the current study. The discussion then shifts to the research methods, which are based on the innovative 'research onion' approach. The survey strategy adopted is explained, and a justification is given for using questionnaire surveys as the primary method of data collection. The TISM and AHP, two key components of this unique methodology, are briefly explained. This chapter concludes by presenting the tools employed for data analysis and data interpretation, which are instrumental in determining the relative importance (weights) of the criteria and prioritising them according to their importance to organisational sustainability.

Chapter Four- Findings on modern slavery enablers in global supply chains through an integrated set of indicators: A decomposition method was applied to categorise the unstructured indicators into different sub-indicator groups. The study conducted reliability and validity tests to affirm the quality of the analysis. Cronbach's Alpha was used to evaluate the content and validate the measures; this indicates the degree to which individual experts consider a respective attribute "essential".

Chapter Five- Analysis and discussions of results, using AHP to prioritise and detect the critical risk factors that can lead to labour exploitation in global supply chains. Furthermore, it analyses those critical risk factors and enablers using the TISM to provide a comprehensive outline by considering their interconnectedness. The proposed integrated AHP-TISM-based performance indicator framework will be implemented in the supply chain during the performance assessment stage.

Chapter Six—Conclusion and Recommendations: This chapter presents the conclusion reached by this work and recommends further research in socially sustainable supply chain decision-making within Northwest England, where, despite, improved awareness of UK labour supply

chain issues, managers have become further distanced from action relating to global materials supply chains.

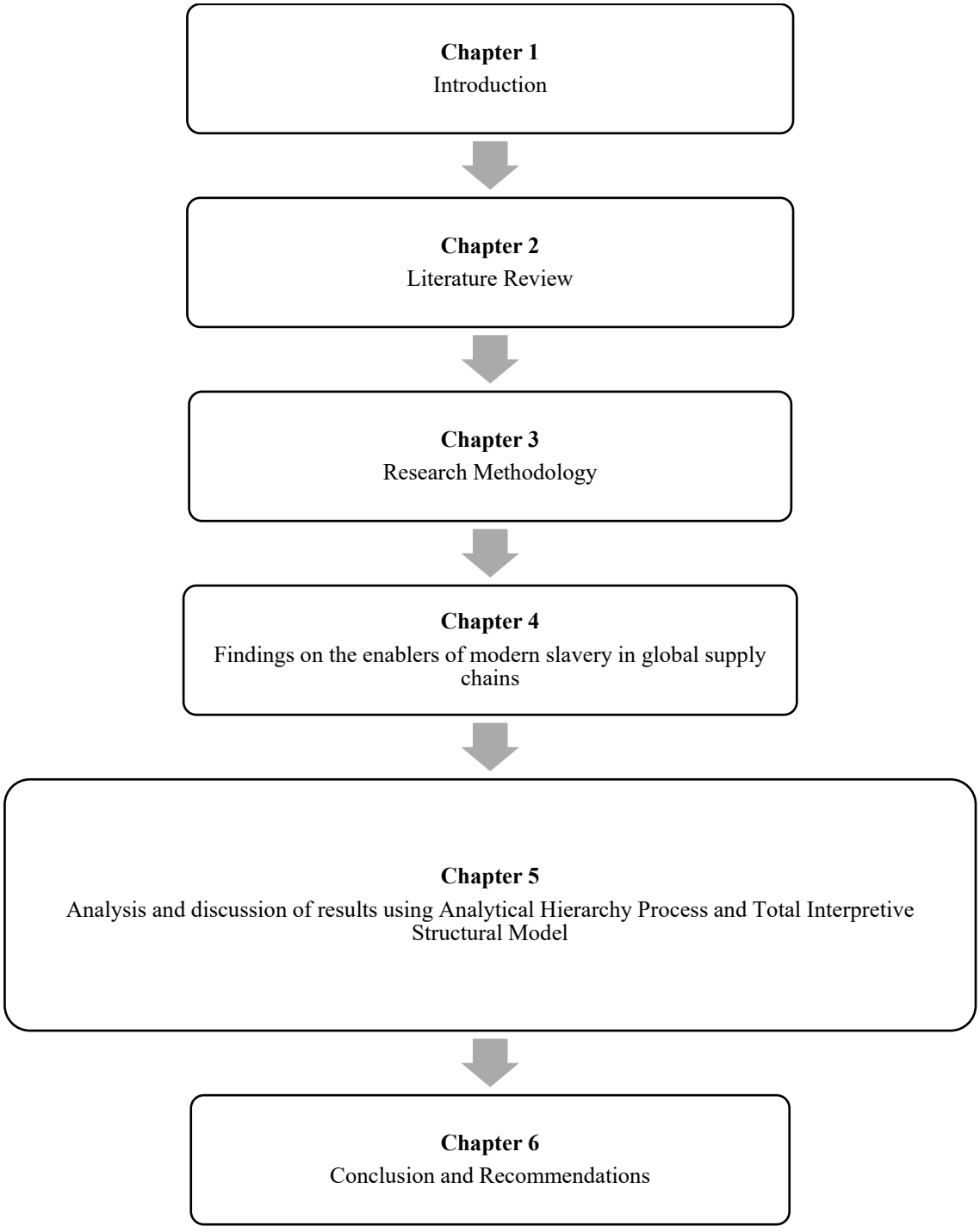


Figure 1:1The structure of the thesis
Source: Author

1.7: Publications Generated from the Research

During this research, two publications were produced. These are outlined as follows:

Ishaya, B.J., Paraskevadakis, D., Bury, A. and Bryde, D. (2024). A systematic literature review of modern slavery through benchmarking global supply chain. *Benchmarking: An International Journal*, 31(2), pp. 558-589. https://doi.org/10.1108/BIJ-09-2022-0554 (Published)

Ishaya, B.J., Paraskevadakis, D., Bury, A. and Bryde, D. (2024). Problematizing Socially Sustainable Global Supply Chains: Theoretical Insights, Contextual Challenges, and the issue of Modern Slavery. *International Studies of Management & Organization* https://doi.org/10.1080/00208825.2024.2398911 (Published)

CILT LRN 2024 Conference paper
Presented in Dublin September 2024
(Published)

Chapter 2: Literature Review

2.1: Introduction to the chapter

Globalisation has brought about a dramatic increase in cross-border trading. In addition, the selection by organisations of suppliers from different countries to source materials and products has increased the issue of modern slavery in global supply chains. These social issues in global supply chains have drawn attention to the importance of verification, monitoring, and mapping of supply chains, especially those that are lengthy and complex. At the same time, the advent of digital technologies and benchmarking methodologies has enabled Key Performance Indicators (KPIs) for measuring the effectiveness of law enforcement and compliance with supply chain standards.

This literature review provides an understanding of the current situation of global supply chains concerning the growing social issue of modern slavery. It collects and reviews various reports on modern slavery affecting global supply chains. It also considers various specific aspects of the broader topic of global supply chains and modern slavery: socially sustainable supply chain management, logistical social responsibility, corporate social responsibility, and digitalisation. The chapter focuses on the effectiveness of existing initiatives to prevent modern slavery in the supply chains. A schematic diagram of the review's organisational framework is given in Figure 2.1.

2.1.1: Background

The global supply chain has been overwhelmed by the issue of labour exploitation and unethical activities (Quarshie and Salmi, 2014; Yusuf et al., 2014; Gold et al., 2020). Gold *et al.*'s (2015) study indicated that globalisation had increased international trade and cross-border sourcing of goods and services, making the use of slave labour present in all industries. The conceptual underpinnings of unethical supply chain standards identify slavery as the coercion of individuals by physical, economic, and social means to involuntarily engage in work-related activities under exploitative, harsh, poor, and unhealthy working conditions for economic gains (Bales and Trodd, 2013; Bodenheimer, 2018).

The violation of workers' rights persists in today's corporate supply chains. Datta and Bales (2013) highlighted that identifying the various forms of labour exploitation in supply chains and tackling them is an essential dimension of corporate social performance; every form of modern slavery is harmful to total economic output and social development (Huq *et al.,* 2016;

Yawar and Seuring, 2017). Growing environmental, social, and ethical concerns have forced most organisations to consider sustainability in their operations (Mani *et al.,* 2018).

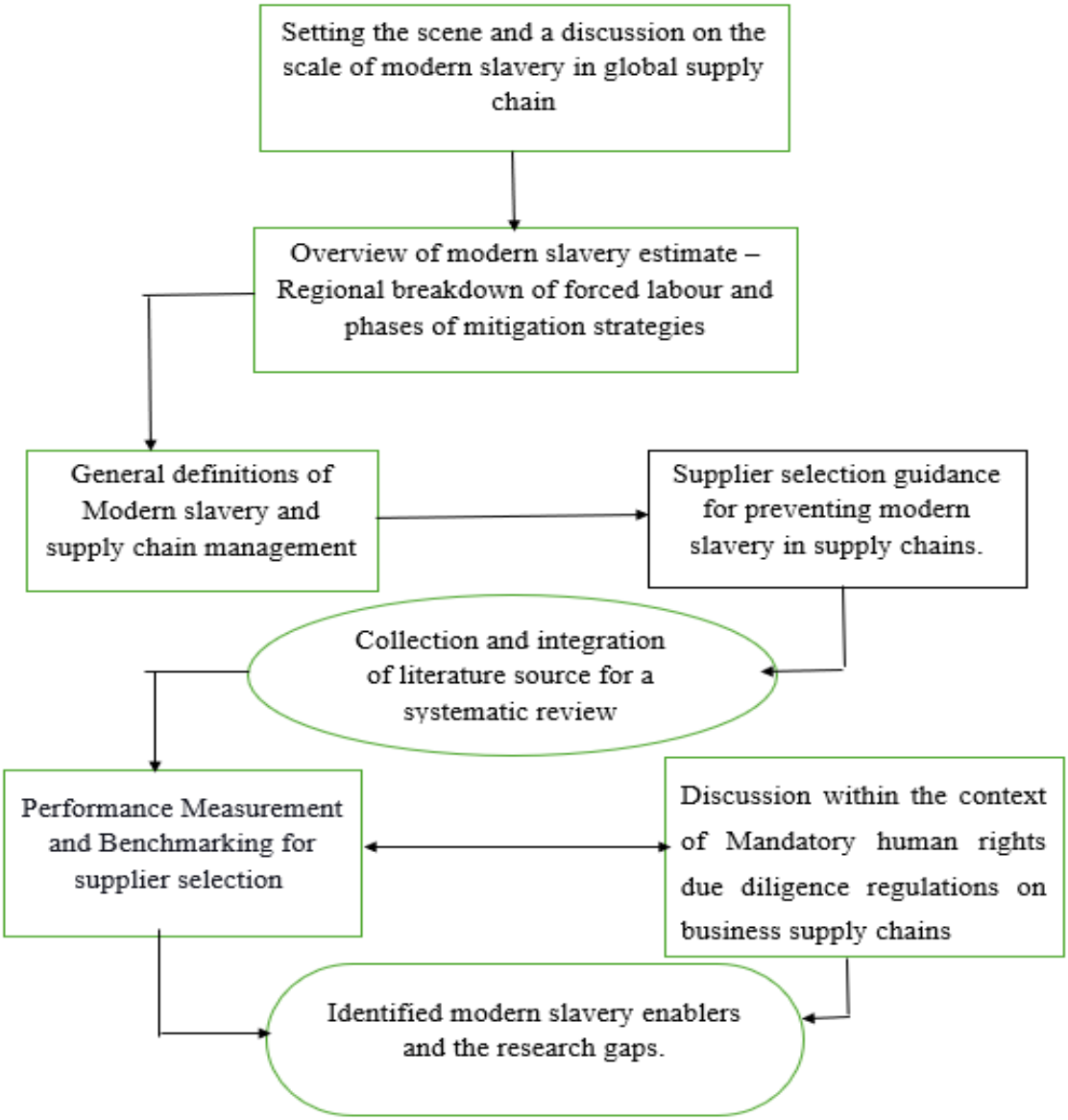


Figure 2:1Literature Review Structure
Source: Author

Over the years, business organisations have upgraded their operational efficiency, product enhancement, and profit by applying intelligent business automation software and re-engineering business processes (Incea, 2013). Business organisations have modified the concept of operation management using innovative supply chain operations and digital technology to monitor the upstream stage, which refers to production processes in supply chains that occur closest to raw materials production, and downstream, which refers to

activities that occur closest to the consumer (Arenkov et al., 2019; Alsamawi et al., 2019). Figure 2.2 illustrates the flow of modern slavery in global supply chains.

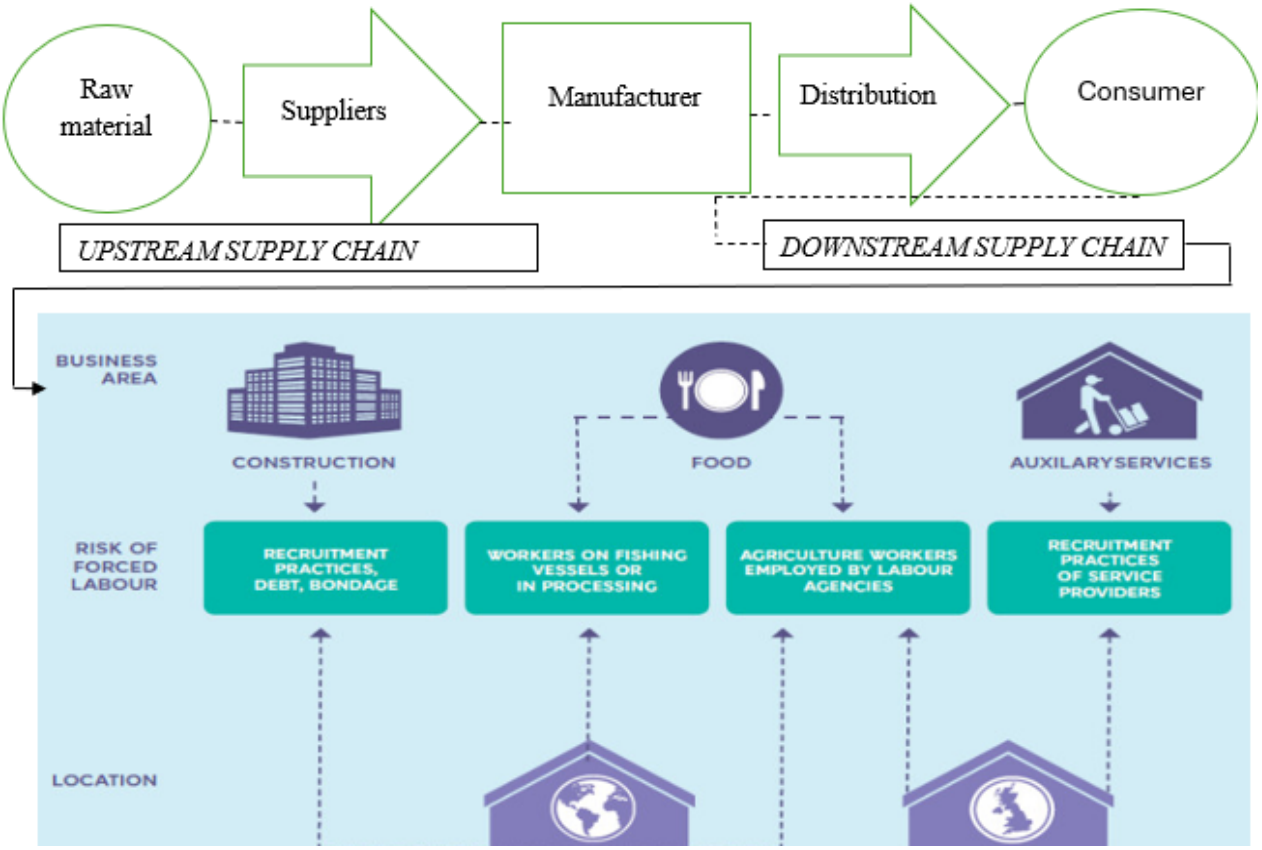


Figure 2:2Modern slavery in global supply chains
Source: Author

A supply chain is a network of organisations connected through upstream and downstream linkages in the different processes and activities that produce value, products, and services to customers (Winter and Lasch, 2016; Michalski et al., 2017; Chalmeta and Santos-deLeón, 2020). A typical supply chain involves multiple businesses, resources, people, technologies, and information for buying, manufacturing, distributing, storing, and selling products efficiently and effectively (Paul et al., 2021). Essentially, in adapting to the evolution of digital technologies and strategies, procurement can change the activities in the supply chain in respect of process efficiency and social responsibility (Santos et al., 2012; Kersten *et al.,* 2017). In addition, digital software like the SAP Ariba and Blockchain can serve as tracing, monitoring, and verification tools in ensuring ethical procurement (Benton, 2018; Saberi *et al*., 2019).

Modern slavery refers to circumstances in which individuals are exploited by others for personal or commercial benefit (Marques et al., 2024). Victims may be deceived, coerced, or compelled, resulting in a loss of their autonomy. Lotfi and Pissa (2024) presented an argument

concerning the presence of child slavery in supply chains. This phenomenon includes, but is not limited to, human trafficking, forced labour, and debt bondage. The clarifications as outlined in Table 2.1 presents a collection of definitions pertaining to modern slavery, encompassing both its general concept and its specific implications within supply chains.

Table 2:1Modern slavery definitions in supply chains and in general terms

Modern slavery in supply chains	Modern slavery in general terms
The issue of modern slavery is widespread across various global supply chains (ILO, 2020). It encompasses the exploitation of individuals who have been deprived of their freedom at any point in the supply chain, from the initial extraction of raw materials to the end consumer, for the purposes of providing services or producing goods (Gold et al., 2015; OSCE, 2020; Montgomery, 2025). Characteristics of modern slavery include forced labour, bonded labour, human trafficking, and child labour, along with labour exploitation, unsafe working conditions, violations of human and labour rights, exploitative hiring practices, dehumanization of workers, and restrictions on or loss of freedom of movement (Caspersz et al., 2022; Crane et al, 2022; Flynn and Walker, 2021). According to Strand et al. (2023), modern slavery in supply chains involves the recruitment and exploitation of individuals who are stripped of their liberty at any stage of the product, human, or labour supply chain, ultimately serving the final customer for service or production. This situation entails one party compelling another to work, exerting control through threats, limiting their movement, commodifying them, and exploiting them financially (LeBaron and Rühmkorf, 2017b; Buck, 2019; Crane et al., 2019; Vaughn *et al.,* 2019; Flynn and Walker, 2021, p. 296).	The International Labour Organization's (ILO) Forced Labour Convention of 1930 (No. 29) characterizes modern slavery as any work or service demanded from an individual under the threat of penalty, where the individual has not willingly consented to such conditions (UNGC, 2016;) Alsamawi *et al.,* 2019; ILO, 2024). As noted by the ILO et al. (2022), modern slavery encompasses various legal definitions, including forced labour, debt bondage, forced marriage, other slavery-like practices, and human trafficking. In contrast, the Walk Free Foundation (2023) describes modern slavery as a state of exploitation where an individual is unable to refuse or escape due to threats, violence, coercion, deception, or an abuse of power. In certain areas, factors such as ongoing conflict, political instability, and forced displacement significantly contribute to the prevalence of modern slavery (Lotfi and Noleen, 2024). Additionally, addressing underlying issues such as poverty, gender discrimination, and inequality is crucial for combating and preventing modern slavery, thereby contributing to the achievement of UN Sustainable Development Goal 8.7 by 2030 (UNHR, 2014; UNODC, 2018; Alexander et al., 2022; Pinnington et al, 2023).

Source: Author's presentation based on ILO et al. (2022) and ILO (2024)

Numerous studies have characterized modern slavery as a broad term that includes the most egregious forms of worker exploitation, such as forced labour, which refers to situations where

individuals are compelled to work against their will due to threats of punishment, intimidation, or violence, as well as through more insidious means like manipulated debt bondage, retention of identity documents, or threats of reporting to immigration authorities (Buck, 2019). Child labour which is defined as any work that robs children of their childhood, potential, and dignity, adversely affecting their physical and mental development (OECD, 2013; FLA, 2019 Zimmerman and Kiss, 2017; Bodendorf et al., 2022). Verité (2018) reports that millions of individuals in global corporate supply chains belong to vulnerable populations, including migrant workers, student interns, and women. The patterns of exploitation differ between male and female victims worldwide. A significant 60 percent of detected female victims are trafficked for sexual exploitation, while 45 percent of detected male victims are trafficked for forced labour, with an additional 47 percent subjected to other forms of exploitation, such as forced criminal activities and begging (UNODC, 2024). Many individuals become trapped in these circumstances while striving to escape poverty or insecurity, aiming to improve their lives and support their families (Crane, 2013; Bales, 2016; Fayezi et al., 2025).

The International Labour Organisation (ILO) and the Walk Free Foundation, in collaboration with the International Organisation for Migration (IOM), have released global estimates regarding modern slavery, revealing that approximately 50 million individuals are currently subjected to modern slavery worldwide. Among these, 28 million are victims of forced labour, with 63% (16 million) being female and 37% (9 million) male. Additionally, 19% of these cases involve state-imposed forced labour (UNODC, 2024). It is further estimated that 22 million of the 28 million forced labour victims are exploited within the private sector, predominantly in domestic services, construction, manufacturing, and agriculture, while 4 million are subjected to forced labour by state authorities (Walk Free Foundation, 2023). According to the ILO (2020), there are an estimated 160 million children engaged in child labour globally, comprising 63 million girls and 97 million boys. This statistic accounts for nearly 1 in 10 children worldwide and reflects an increase of 8.4 million over the past four years (Lofti and Pisa, 2024). Among these children, 79 million are involved in hazardous work. In 2024, the ILO, through its various reports and initiatives, continued to emphasize the widespread nature of modern slavery, particularly forced labour and its economic ramifications. The ILO has estimated that the illicit profits generated from forced labour amount to nearly $236 billion each year (ILO, 2024). In Figure 2.3 a regional analysis of modern slavery within global supply chains is presented., where it is severe in the lower tier of the chain (Walk Free Foundation, 2017). The ILO and the Walk Free Foundation develop

global estimates of modern slavery, providing the best available data and information on the scale and regional distribution of modern slavery (Vaughn et al., 2019; Alsamawi et al., 2019).

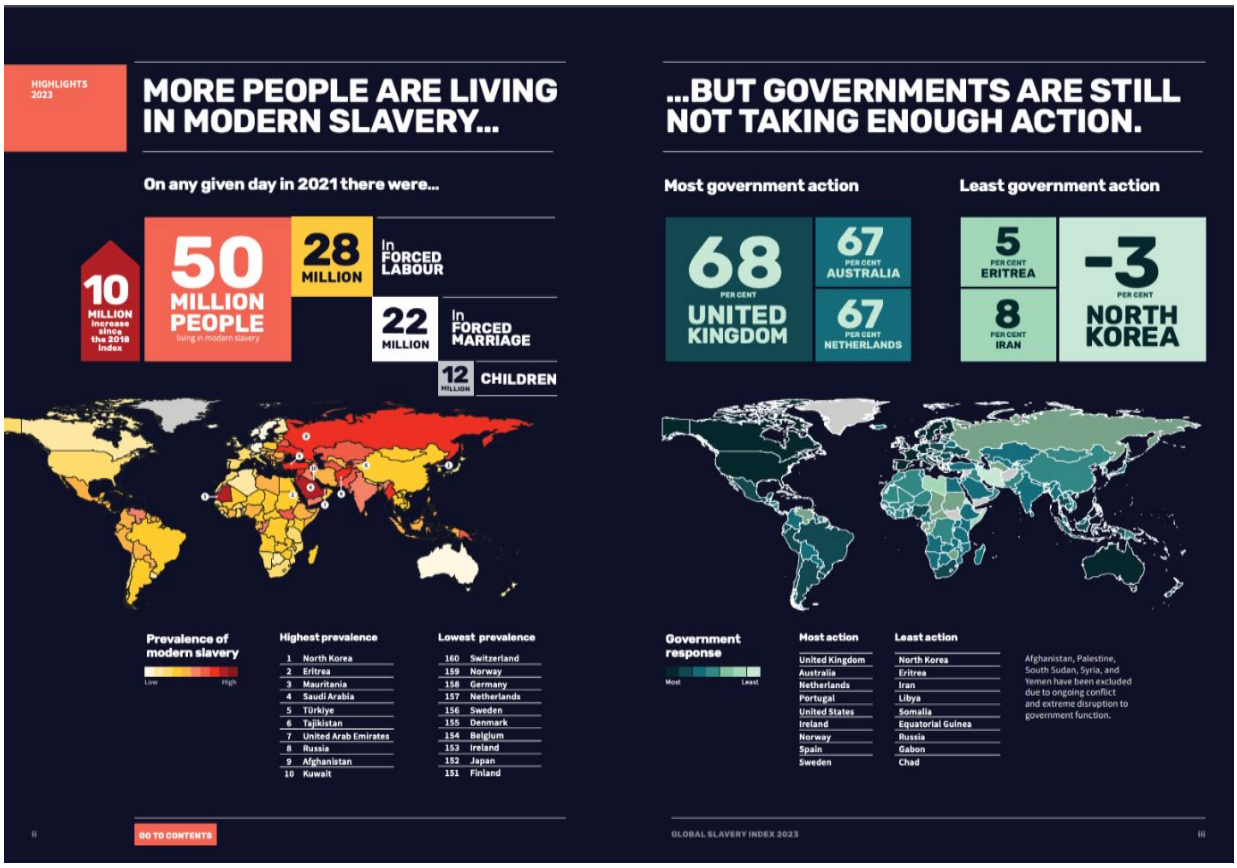


Figure 2:3Regional breakdown of modern slavery
Source: Walk Free Foundation (2023)

Indicators of forced labour can manifest at any stage of a worker's employment cycle (Moss and Hwang, 2010; Bansal and Wyss, 2013). The following outlines various indicators and enablers of modern slavery present in global supply chains (OSCE, 2018). This study established twelve social criteria, mainly based on a literature review, that highlight the factors contributing to modern slavery within global supply chains, as detailed in Table 2.2. Nevertheless, such efforts are limited, hindering business corporations from developing the necessary resources and capabilities to effectively and systematically address human rights due diligence and the societal implications of their operations (Martin-Ortega, 2013; Govindan et al., 2016).

Table 2:2List of identified social criteria

Social Criterion	References	Short description
Work, Health, and Safety factors.	Crane (2013), Mani et al. (2016)	This relates to the firms' focus on health and safety practices in both their own operations and those of potential suppliers.
Employment and business practices	Gold, Trautrims and Trodd (2015)	This concerns programs and practices related to employees.
Volatile consumer demand	Dubey et al. (2017), Giannakis et al. (2020).	This relates to the adverse effects that come with changes in consumer demand
Commercial pressure	New (2015), LeBaron (2021)	This relates to pressure on suppliers to produce goods, overstretching the workers.
Wrong business model and ethics	Martin-Ortega and Davies (2016), Islam and Van Staden (2021)	This relates to lack of robustness in the business model that will propel sustainability
Technology	Farbenblum et al. (2018), Paliwal et al. (2020)	This relates to ineffective utilisation of technology to help tackle modern slavery
Human rights	Lund-Thomsen and Lindgreen (2014), Yawar and Seuring (2017),	This relates to the level of human rights violation in supply chains
Socio-economic vulnerabilities	Nwogu (2014), Obarisiagbon and Ijegbai (2019)	This relates to vulnerability as a result of economic challenges, leading to exploitation
Lack of corporate commitment	Arowoshegbe et al. (2016), Saeed and Kersten (2017).	This relates to the lack of commitment by business organisations to ensure sustainability
Lack of awareness, training, and capacity building for workers	Lake et al. (2016), Trautrims et al. (2020)	This relates to the need for awareness and capacity building for workers in supply chains
Lack of information disclosure	Kersten et al. (2017), Green and Owen (2019)	This relates to the restriction of information flow across the supply chains in accordance with applicable regulations and prevailing industry practices. Ambiguous disclosure of information regarding labour force, health and safety practices, business activities, financial situation, and performance.
Gaps in Legislation	LeBaron and Rühmkorf (2017b), Mende and Drubel (2020)	This relates to the gaps in statutory legislation especially on enforcement and prosecution of perpetrators of modern slavery practices.

The identification of a single indicator in various contexts may occasionally imply the existence of modern slavery. Consequently, Crane (2013) investigated the circumstances and capabilities that facilitate human exploitation. The research conducted by Wang and Lotfi (2024) resulted in the creation of a conceptual model that investigates the interactions between modern slavery and climate change in the context of supply chains. However, businesses are encouraged to seek multiple indicators that may indicate modern slavery cases. In this regard, LeBaron et al. (2018) explored the underlying causes of forced labour within supply chains, emphasizing the importance of mitigating risks and protecting workers' rights. In total, a framework of ten indicators encompasses the primary elements associated with modern slavery, thereby serving as a foundation for evaluating whether an individual worker is subjected to human rights violations (Islam and Van Staden, 2018). Nonetheless, supply chains have broadened across various industries where labour exploitation is common, including garment production, agriculture, fisheries, construction, and more (Forde and Slater, 2014).

2.1.2: Rationale for the review

A fundamental philosophic question today is how imperative it is that businesses address all values in mitigating the continuous occurrence of social issues in supply chains. Notwithstanding, the global supply chain has been overwhelmed with challenges and opportunities. With this in mind, Felice (2015) developed business and human rights indicators to measure corporate responsibility in respect of the fundamental rights of workers in supply chains so that their activities will not cause reputational damage to the business, not only for today's population but for future generations. This conscious awareness and modification of policies and procedures has been named 'sustainable development' (Mani *et al.,* 2015) and is part of the TBL of the twenty-first-century business, along with social, environmental, and economic aspects (Elkington, 1997). Correspondingly, research on social sustainability in developing countries has recently gained importance among academics and practitioners.

This research seeks to synthesize existing literature regarding the roles of suppliers, manufacturers, and consumers, while introducing the notion of social sustainability within supply chains, which encompasses social challenges throughout both upstream and downstream processes. Furthermore, this research advocates for the establishment of a more cohesive and comprehensive framework to assist manufacturing industries in embedding social sustainability into their supply chains. Key principles such as respect for human rights, ethical labour practices, employee welfare, safety, and security are essential for achieving social sustainability in supply chains (Mani et al., 2016; Duangjan, 2018). For instance, Alexander

(2018) investigated sustainability within global production networks, presenting the concept of extended supplier networks. Other research within the supply chain management domain tends to focus on either the supplier or manufacturer viewpoint, primarily addressing corporate social responsibility (CSR) concerns, including issues like modern slavery in international supply chains (Quarshie et al., 2016).

Globalisation is a factor in economic growth and a necessity for social progress (Pager and Priest, 2020). Reed et al. (2018) conducted a study on the economic and social cost of modern slavery. Similarly, Saeed and Kersten (2017) detailed guidance to better assess the social sustainability-related performance of an organisation and its supply chain. Nonetheless, the production of goods in a sustainable manner has become a global issue, with production systems organised across contractually and geographically distributed supply chains (McGrath, 2013). Therefore, global supply chains have a governance gap, resulting in limited regulatory and contractual oversight of human rights and labour standards, especially in factories in the lower tiers of production (Barrientos, 2013). Consequently, the issue of labour exploitation continues to persist in today's global supply chains, despite the existing initiatives designed to address modern slavery activities.

Global shipping is particularly susceptible to modern slavery, given that seafarers are often from nations with human rights, labour rights, and corruption challenges (Piecyk and Bjorklund, 2015; Zhang et al*.,* 2019). The rapid rise of the globalised economy has resulted in an international labour system incapable of ensuring fundamental human rights for the people who manufacture, transport, and distribute products (Lang, 2018). According to Lake et al. *(*2016), most shipping and logistics management companies generally sub-contract labour supply to employment agencies, creating vulnerability to exploitation. Krifors (2020), in his study, observed the logistics of migrant labour and how they fit global economies. Not only are transport and logistics an essential part of any supply chain and play a vital role in the economy, but many companies now rely on goods' timely and safe transportation (Szymonik, 2012; Leon and Juan, 2014). Accordingly, business organisations should balance the demand and supply of goods and services as they significantly contribute to social issues (Hoejmose *et al.,* 2013).

Recent studies by academics and civil society organisations have expressed doubt over conventional mapping and monitoring models, including the nature of auditing processes and the structural problems inherent in distributed supply chains, which place downward pressure

on factories that are producing goods and components for global brands (McGrath and Mieres, 2017). However, business organisations lack effective methodologies to protect workers from consequences if they speak out about poor conditions (Wichaisri and Sopadang, 2014; Jardine and Trautrims, 2021). To counter these issues, multinational organisations doing business both locally and internationally should adopt evidence of good practice in the movement of goods for consumption (Crane, 2013).

Supply chain monitoring enables appropriate action when there is a failure to meet agreed or desired standards or processes (Outhwaite and Martin-Ortega, 2017). Traditional monitoring models include in-house monitoring of codes of conduct undertaken by corporate brands, as well as third party auditing and multi-stakeholder initiatives. Similarly, due to supplier selection issues in supply chain management, Aliakbari and Seifbarghy (2011) designed a socially responsible supply chain model to improve the existing monitoring approach that will facilitate an ethical supplier selection. According to an AEB white paper (AEB, 2015), one of the consequences of the unbundling and out-sourcing of manufacturing processes has been the fragmentation and increased complexity of supplier networks. Kersten et al. (2017) discussed the relevance of digital solutions in sharing information to map and monitor supply chain management activities. This would enable businesses to increase their visibility and influence over the lower tiers of long and complex supply chains to prevent the risk of modern slavery from occurring (Idris, 2017).

Much research is on responsible supply chains (Hoejmose *et al.,* 2013), business ethics (Yusuf et al., 2014), and manufacturing (Dubey et al., 2015) and distribution (Wichaisri and Sopadang, 2014). However, the study by Datta and Bales (2013) confirmed the notion that little data and empirically driven research exists on labour exploitation. Additionally, due to the complexity of global production networks, quantitative accounting of modern slavery is not straightforward, making it difficult to develop a consistent quantitative means of tracing social issues in global supply chains (Alsamawi et al*.,* 2019). There is also a gap in the literature for a standardised legal framework that outlines the process for the prosecution of perpetrators of modern slavery activities internationally (Weitzer, 2015). The study by LeBaron (2014) identified the deepening concerns about forced labour and slavery which have paralleled the rapid growth of the world's biggest retail and brand companies in the era of globalisation: the risk of slavery and forced labour in global supply chains is now significant. Verité's (2014) study reported that the Know the Chain benchmark methodology measures the effectiveness of modern slavery action plans in eradicating forced labour.

2.1.3: Methodology

Systematic literature reviews aim to find as much relevant research on the research question as possible and to use direct methods to map out what can reliably be said based on these studies (Cruz-Benito, 2016; Tikito *et al*., 2019; Kruse, 2019). Denyer and Tranfield (2006) found that conducting reviews of existing research is a critical competence for a scholar in the management field to position their contribution to knowledge and construct reasoned logical, and substantiated arguments. According to Moher et al. (2009), the value of a systematic review depends on the clarity of reporting. However, the systematic review methods should be straightforward and organised to produce diverse and reliable results concerning modern slavery in global supply chains. In their study, Geng et al. (2022) discovered that individuals fall victim to exploitation due to the range of circumstances that constitute contemporary slavery and the high demands for labour and services facilitated by economic and political changes and the social environment. Victim demographics are also diverse, though similarly impacted by changes caused by shifts in the global economic and political landscapes: traffickers and exploiters take advantage of the socio-economic uncertainty of individuals and groups made vulnerable by these shifts (LeBaron, 2014).

Adopting a systematic review for this research minimises bias and provides reliable findings to draw conclusions and ensure justification for further research (Moher *et al*., 2009; Livinski *et al*., 2015; Kruse, 2019). In this study, a systematic literature review is used to carefully analyse papers published from 2011 to 2024 and covering current technological developments and challenges inherent in global supply chains concerning mapping out issues of modern slavery within long and complex supply chains. Lame (2019) defined a systematic literature review as synthesising scientific evidence to answer a particular research question in a transparent and reproducible way while seeking to include all published evidence on the topic and appraising the quality of this evidence.

Contemporary supply chains are emerging as critical areas for urgent attention in modern slavery research (LeBaron, 2013). This research will summarise and identify the inherent challenges of long and complex global supply chains for labour exploitation. However, the global supply chain's complexity can create a risk that workers will be left vulnerable to exploitation (Martin-Ortega and O'Brien, 2017). Over the years, lead firms have employed benchmark methodologies to improve social sustainability by comparing best practices from highly developed countries (Wu and Pagell, 2011). In a different approach, Meehan and Pinnington (2021) provided insight through strategic ambiguity.

The present study followed the systemic literature review and mapping in the literature review pattern laid out by Cruz-Benito (2016), including the scientific process of academic literature search and assessment of information retrieved proposed by Kruse (2019). The review utilises four main steps: planning and source identification, selection and extraction, evaluation, and category generation.

2.1.3.1: Planning the systematic literature review and mapping

This systematic review aims to contribute to an informed debate on how best to address modern slavery issues within global supply chains' overall agenda. Essentially, the study outlines five research questions to support the intended goal of the review.

RQ1. What constitutes an anti-slavery supply chain management framework?

RQ2. What are the enablers of modern slavery and how are they categorised?

RQ3. What is the relative importance of the enabling factors of modern slavery?

RQ4. What are the strategies currently implemented to mitigate and tackle modern slavery in supply chains?

RQ5. What are the priorities of the supply chain strategies implemented to tackle modern slavery?

A research question is a specific inquiry to which the study seeks to respond. It resides at the core of systematic investigation and helps clearly define a path for the research process (Mattick et al., 2018). In this review, the first research question addresses the inherent and current issues identified in various academic literature. The motive is to understand how effective the antitrafficking framework and multi-agency partnerships are in identifying, preventing, and managing modern slavery in the global supply chain.

LeBaron (2014) indicated that the recent wave of government legislation drives corporate involvement in antislavery efforts and raises awareness about the links between consumer products and forced labour. The second research question seeks to identify recent activities and research on benchmarking global supply chains and digital technology innovations to tackle and manage modern slavery in supply chains. Furthermore, the study reviews the research questions after establishing the current research works relevant to the topic of interest and potential importance to answering the specific questions posed.

A systematic search of peer-reviewed literature on modern slavery in global supply chains assists in identifying search databases and strings (Cruz-Benito, 2016; Moher *et al*., 2009; Tranfield *et al*., 2003). According to Lame (2019), literature reviews and evidence syntheses

are essential research products that help us advance science incrementally by building on previous results.

2.1.3.2: Literature sources

For a detailed review of existing literature, Figure 2.4 displays the strategic steps of the literature review, including the various relevant sources of literature used. The decision taken to conduct the review of relevant kinds of literature will assist the researcher in understanding the fundamental social issues of global supply chains. Furthermore, it will help the researcher gain knowledge of the current study of modern slavery in the global supply chain by comparing different research studies and identifying the gaps in knowledge to facilitate solutions and future recommendations. The tangible steps are source identification, selection and extraction, evaluation, and category generation.

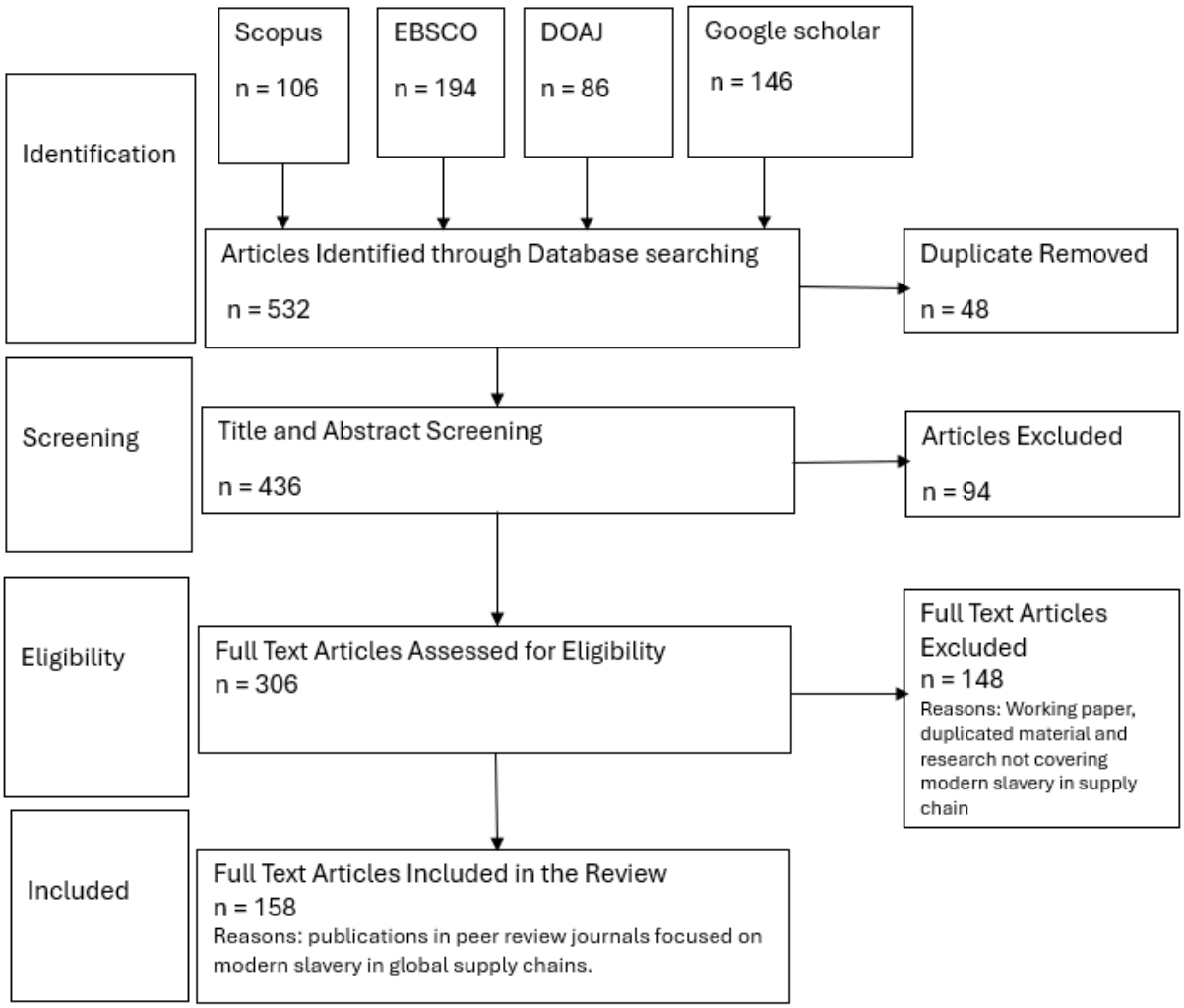


Figure 2:4A systematic literature review diagram
Source: Author

The first step is source identification, selecting the literature on modern slavery in global supply chains, based on keywords, title and abstract (Liu *et al*., 2017). The second step is resource selection and extraction. This step will extract the target literature from the literature retrieved in the first step: only studies with relevant or direct links to modern slavery in global supply chains are selected. The third step is source evaluation. Among the various definitions of a socially sustainable supply chain, the most central ideas are ethical procurement, ethical supplier selection, supply chain mapping and modern slavery disclosure measures to identify any issue of human trafficking, child labour or forced labour (Tachizawa and Wong, 2014). Business models configured around modern slavery are evident in various sectors. They are widespread in those that are labour intensive and where labour costs comprise a high proportion of low-value-added activities characterised by high levels of subcontracting and intermediaries (LeBaron and Rühmkorf, 2021). Various definitions of a socially sustainable supply chain have emerged in the literature, with core themes focusing on ethical procurement, the selection of suppliers based on ethical standards, supply chain mapping, and the implementation of modern slavery disclosure practices. These components are essential for identifying problems such as human trafficking, child labour, forced labour and debt bondage (LeBaron, 2014).

Different parameters are considered before commencing this review to ensure the correctness and suitable responses to the research question (Mattick *et al*., 2018). As each study can influence and be a part of humanity's changing life, the author takes a consistent approach to the research field (Tikito *et al*., 2019) and a robust research model is distinguished for selecting and dismissing research papers in the review. This study will cover a wide range of information related to the topic and ensure the objectivity and validity of the research (Denyer and Tranfield, 2006).

Subsequently, the approaches are explained that are used to select the key steps to follow for selected articles. Essentially, high-quality and valuable research is necessary, and an explicit methodology is employed to avoid misunderstandings. Accordingly, an attempt has been made to map relevant intellectual databases to specify the research question, which will further develop the knowledge phase (Tranfield et al*.,* 2003). The initial search strings included the following key terms: "Social sustainability", "Socially sustainable supply chains", "Labour exploitation", "Modern slavery", "Human Trafficking", "Mapping, traceability, and supplier selection", "Supply chain", "UN Sustainable Development Goals", "technological developments and innovation", Digital technology "Forced labour", "Corporate Social Responsibility", "Benchmarking", "Performance measurement". According to Siksnelyte-

Butkiene et al. (2021), various keywords used for choosing papers and logical operators like AND and OR make the inquiry in a systematic review more precise.

2.1.3.3: Searching

A systematic literature review requires adequate evaluation when sourcing relevant literature to identify, appraise and synthesise all the empirical evidence that meets pre-specified eligibility criteria to answer a given research question (Cruz-Benito, 2016; Kruse, 2019). Therefore, locating and retrieving quality and relevant literature can be very challenging, yet is crucial to the successful outcome of the review. In his study, Piper (2013) argued that poorly conducted systematic reviews could mislead, just like any other exploratory study, yet careful planning and execution of the study design can lessen the compromising factors. Essentially, the relevant material sourced to conduct the review provides the information from which evidence, conclusions and recommendations are drawn (Marx et al., 2018). Therefore, the process of sourcing the material must involve a thorough and comprehensive search to find all suitable published and unpublished work that addresses one or more research questions and a systematic presentation and integration of the characteristics and findings of the result of that search (Siddaway *et al*., 2019). Denyer and Tranfield (2006) found that the validity of a review's findings depends on the comprehensiveness of the search and the comparability of the studies located. Ultimately, this review synthesises studies to draw a broad theoretical conclusion linking evidence to theory.

This comprehensive search was conducted between March 2022 and April 2024 and was limited to peer-reviewed papers published between 2011 and 2024. The most commonly used academic database reviews the past and present relevant literature , as reported in Table 2.3 to find online journals and peer-reviewed scholarly journal articles by a keyword search through different research databases, e.g., SCOPUS, Core, Science Open, Directory for Open Access Journal papers (DOAJ), Education Resource Information Centre (ERIC), Social Science Research Network (SSRN), Science Direct, Public Library of Science (PLOS) Emerald Insight, EBSCO, Google scholar, E-Resource, E-Journal, E-Books and Liverpool John Moores University Library Hub. Identifying existing literature relevant to the topic cleared the way for the research design process by initiating critical approaches for analysis.

Table 2:3The application of Abstract, title and keywords when searching for relevant papers

Source: Author

Search Database	Searched Metadata	Search Strings
Scopus	Title, Abstract, Keywords	TITLE-ABS-KEY (MS, HT OR FL) OR (modern slavery in supply chains OR forced labour in global supply chain) OR (Digital technology OR technological advancement for supply chain verification) OR (Supply chain OR Logistic social responsibility) OR (Contemporary initiative OR state-of-the-art to combat modern slavery in SC) OR (Socially sustainable supply chain OR Ethical supply chain) AND (Mapping, Verification, monitoring and risk assessment of supply chain) AND (barriers OR drivers) AND (NGOs OR civil Society) AND (Civil society OR Non-Governmental Organisation) AND (technology OR technological)
Web of Science	Title, Abstract, Keywords	Search (AND was used to narrow the search and OR is applied to broaden the search). E.g., (Supply chain AND Modern slavery) AND Benchmarking AND Performance measurement OR (Force Labour OR Labour Exploitation) OR (Supply chain Mapping OR supply chain Verification OR Monitoring OR Traceability).
EBSCO	Title, Abstract, Keywords	("All metadata": SSCM OR SC OR ILO OR UNGP) AND (Supply chain OR Transportation) AND (digital technology OR technological advancement) AND (production and consumption) AND (manufacturer and consumer)
Google Scholar	Title, Keywords	(Intitle: SC OR keyword: GSC) OR (SSC OR keyword: ETI) OR (Intitle: technology or keyword: technology) OR (Intitle: innovation OR keyword: innovation) AND (Intitle: supply chain OR keyword: supply chain) OR (Intitle: distribution OR keyword: distribution) OR (Intitle: ethical OR keyword: ethical) AND (Intitle: digitalisation OR keyword: digitalisation) OR (Intitle: sustainability OR keyword: sustainability) OR (Intitle: drivers or keyword: drivers)
SSRN	Title, Abstract, Keywords	("All metadata": SSC OR GSC) AND (manufacturing OR distribution) AND (efficacy OR influence) AND (human rights OR civil rights) AND (factory OR production site) AND (supply chains OR planning OR organisation)
Emerald Insight	Title, Abstract	(Title: SSC OR title: GSC) OR ((abstract: SSC OR abstract; GSC)) AND ((title: modernisation OR title: state-of-the-art)) AND ((abstract: supplier OR abstract: producers) OR (title: procurement OR title: purchasing))
ERIC	Title, Abstract, Keywords	TITLE-ABS-KEY (MS OR FL OR HT) AND (procurement OR purchasing) AND (civil society OR non-governmental organisation) AND (drivers OR facilitators) AND (effect OR impact OR influence)

Source: Author

The Scopus database has been instrumental in sourcing relevant material for this review. Thelwall and Sud (2022) described Scopus as an abstract and indexing database with full-text links produced by Elsevier Co. Accordingly, Scopus is considered one of the most suitable databases for literature searches for global research. Furthermore, academic researchers have used it extensively in conducting systematic reviews in various disciplines. According to Iqbal

(2018), Scopus serves researchers' information needs across the entire academic community. Scopus has one of the largest abstract and citation databases of peer-reviewed literature, scientific journals, books, and conference proceedings, invariably delivering a comprehensive overview of the world's research output in supply chain management, science, technology, social science, and humanities.

The Scopus database collects relevant articles with the following phrases in the article's title, abstract, and keywords: “Socially sustainable supply chain management” AND “modern slavery” OR “Forced labour” OR “labour exploitation”. From the initial literature search, most studies on Anti-slavery initiatives and frameworks in global supply chains were published before 2011, as shown below in Table 2.4. Based on this observation, in this review, the literature on modern slavery in the global supply chain is systematically reviewed from the years 2011 to 2024.

After the preliminary search in Scopus, the search database uses the following criteria:

- Document type: Article.
- Source type: Journals and Articles
- Year: 2011–2024
- Language: English

Other databases, such as the Social Science Research Network (SSRN), Education Information Resource Centre (ERIC), Web of Science and Google Scholar, were used to enhance the search. This review recommends various electronic database searches relevant to the topic of interest to cover an extensive range of information, reduce bias and systematically ensure the objectivity and validity of the research (Kruse, 2019).

2.1.3.4: Inclusion and exclusion criteria

Filtering the inclusion and exclusion criteria affected the progress of the review phase. The refining techniques of review papers is a vital effort as it locates the actual topic of interest, which is highly significant to answer the specific research question. Distribution of key papers for systematic review was actualised as represented above in Table 2.4. This study included peer-reviewed papers published in academic journals, fully accessed text written in English, and research papers covering technological developments for modern slavery in global supply chains.

Table 2:4Distribution of some key papers for the systematic review

Year	Title/ Article/ Paper	Author
2011	A Supplier Selection Model for Socially Responsible Supply Chain (*Journal of Optimization in Industrial Engineering)*	Aliakbaria, A., and Seifbarghy, M.
2012	Experiences of force labour in the UK food industry: Inspiring social change (*Joseph Rowntree Foundation report*)	Scott, S., Craig, C, and Geddes, A.
2013	Addressing contemporary forms of slavery in EU external policy (*Briefing Paper*)	Bales, K. and Trodd, Z.
2013	An integrated management systems approach to corporate social responsibility (*Journal of Cleaner Production)*	Asif, M., Searcy, C., Zutshi, A., & Fisscher, O. A. M.
2014	Using Big Data and Quantitative Methods to Estimate and Fight Modern Day Slavery, (Review *of International Affairs)*	Datta, M, N.
2014	The effects of Agency Workers Regulations on agency and employer practice (*Research Paper*)	Forde, C. and Slater, G.
2015	Modern Slavery and the Supply Chain: The Limits of Corporate Social Responsibility *(Supply Chain Management an International Journal)*	New, S.
2015	Benchmarking global supply chains (*Review of International Studies)*	LeBaron, G., and Lister, J.
2016	Transparency in Supply Chains – the UK Modern Slavery Act (*The Business and Human Rights Review*)	Townsend, M., Watkins, C, and Hughes, H.
2016	The Ethical Trading Initiative: Negotiated solutions to human rights violations in global supply chains *(Corporate Accountability Research)*	Connor, T., Delaney, A. and Rennie, S.
2017	A Framework of Sustainable Service Supply Chain Management (*Journal of Sustainability*)	Liu, W., Bai, E., Liu, L, and Wei, W.
2017	Human rights in business: Removal of barriers to access to justice in the European Union	Rubio, J.J.A and Yiannibas, K.
2018	Modern slavery in the global supply chain: The challenges of legislation and mandatory disclosure,	Odia, J, O.
2018	Conflict minerals and supply chain due diligence: an exploratory study of multi-tier supply chains *(Journal of Business Ethics)*	Hofmann, H., Schleper, M, C and Blome, C.
2018	Storytelling and Corporate Social Responsibility Reporting: A Case Study of Leading UK Retailers. *European Journal of Sustainable Development Research*	Jones, P. and Comfort, D.
2019	Measuring child labour, forced labour and human trafficking in global supply chains: A global Input-Output approach	Alsamawi, A., Bule T., Cappa C., Cook, H., Galez-Davies, C, and Saiovici, C.
2019	Digitalization" Technology Solutions for Advancing Human Rights in Global Supply Chains *(Article by Human Rights Centre)*	Nishinaga, J. and Natour, F
2020	Ethical and Sustainable Sourcing: Towards Strategic and Holistic Sustainable Supply Chain Management (*Encyclopaedia of the UN Sustainable Development Goals*)	Lambrechts, W,
2020	Key Drivers of Modern Slavery	Avis, W.
2021	Modern Slavery Disclosure Regulation and Global Supply Chains: Insights from Stakeholder Narratives on the UK Modern Slavery Act. *Journal of Business Ethics*	Islam, M.A., Van Staden, C.J.

Year	Title/ Article/ Paper	Author
2021	Supplier Selection in Sustainable Supply Chains: A Risk-Based Integrated Group Decision-Making Model, (*Article in Research Square)*	Wu. C., Zou, H., and Barnes, D.,
2021	How frugal innovation shape global sustainable supply chains during the pandemic crises: Lessons from the Covid 19 (*Supply Chain Management an International Journal)*	Dubey, R. Bryde, D. Foropon, C. Tiwari, M. Gunasekaran, A.
2021	Modern Slavery in Supply Chains, (*The Routledge Companion to Corporate Social Responsibility)*	Bhakoo, V., and Meshram, K.
2022	Developing a framework for assessing the readiness of entities in the construction industry in addressing modern slavery.	Liu, T., Suprun, E., Stewart, R.A., and Duran, S.
2022	Modern slavery and the employment relationship: Exploring the continuum of exploitation. (*Journal of Industrial Relations*	Boersma, M., & Nolan, J.
2022	Modern slavery risk disclosures in business operations and supply chains. *Environmental sustainability and agenda*	Ahmed, S., Chapple, L., Christ, K., & Osborne, S.
2022	Research Note: How modern slavery legislation might reimagine New Zealand companies' supply chains, *New Zealand Journal of Employment Relations*	Burmester, B., Stringer, C., Michailova, S., and Harré, T.
2023	Framework to Develop Interventions to Address Labor Exploitation and Trafficking: Integration of Behavioral and Decision Science within a Case Study of Day Laborers.	Kammer-Kerwick, M.; Yundt-Pacheco, M.; Vashisht, N.; Takasaki, K.; Busch-Armendariz, N. A
2023	A Review of the Leading Information Technology Companies' Modern Slavery Statements Athens *Journal of Business & Economics*	Peter. J., & Daphne. C.
2023	Learning to see modern slavery in supply chains through paradoxical sensemaking, *Journal of Supply Chain Management*	Pinnington, B., and Mehaan, J.
2023	Transparency in Supply Chains (TISC): Assessing and Improving the Quality of Modern Slavery Statements, *Journal of Business Ethics*	Pinnington, B., Benstead, A., and Meehan, J.
2024	Does Readability of Textual Disclosures in Modern Slavery Reports Pay Off? Evidence from a Regulatory Setting. *Accounting in Europe*	Saha, A., Bose, S & Khan, H. Z.
2024	Institutional Logics in the UK Construction Industry's Response to Modern Slavery Risk: Complementarity and Conflict, *Journal of Business Ethics*	Pesterfield C., and Rogerson, M.

Source: Author

On the other hand, the exclusion criterion encompassed grey literature, conference papers, working papers, commentaries, editorials, book review papers, dissertations, books, and studies published before 2010. In addition, papers published in other languages were excluded, which may impact the analysis results. Accordingly, exclusion criteria were as follows: review articles, conference proceedings; editorial letters; non-English papers, and papers which were not primary research (Marx et al., 2018).

2.1.4: Existing studies of modern slavery in global supply chains

Modern slavery is a complex crime that thrives in every society (Heerden, 2015), but Crane (2013) found that modern slavery had received limited business and management literature attention. Therefore, a growing set of tools has emerged to assist companies by providing better

visibility and transparency to assess risk, diagnose problems, act on issues, and monitor supply chains' labour practices and working conditions (Taylor and Latonero, 2018; Buck, 2019). For example, Allain et al. (2013) developed a business model to identify forced labour indicators in supply chains. Magesh (2016) designed a modelling approach for a socially sustainable supply chain in a similar context. Gold et al. (2015) analysed the challenges of modern slavery in supply chains. Lotfi (2024) performed an empirical research study that explored the challenges involved in the management of modern slavery risks within supply chains. A few studies have reviewed the need to develop a standardised legal enforcement framework to prosecute those carrying out current slavery practices. Alternatively, policymakers could adopt effective benchmark methodologies to overcome barriers to these social sustainability issues (Musto and Boyd, 2014).

Studies by researchers from trade unions and non-governmental organisations (NGOs), e.g., Verité, Amnesty International, Hope for Justice, and Know the Chain, have indicated labour abuses occurring in the activities of labour contractors within modern retail value chains (Ogunyemi et al., 2016; Strand et al, 2024). According to Mani et al. (2014), developing countries are experiencing more social issues, such as health, safety, child labour, forced labour, and bondage labour in supply chains. A study by Gardner (2017) discussed the effectiveness of modern slavery collaboration and the various anti-slavery partnerships in the UK. Collaborating with stakeholders such as private industry, government and civil society organisations can further boost data availability and transparency and promote the conformity of statistical standards and suitable approaches (Idris, 2017).

The review of literature on modern slavery in the global supply chain provides an inconclusive account of the organisational performance outcomes of corporate social responsibility, with results suggesting both positive and negative effects (Marx *et al*., 2018). The study by Flynn (2019) identified the determinants of corporate compliance with modern slavery reporting in the global supply chain. Consequently, failures at all levels within global supply chains have contributed to deficits in decent work and undermined labour rights (Vandergeest *et al*., 2017). However, social activists have succeeded in raising awareness of the existence of slavery and in forcing governments and firms to tackle this problem (Smith and Johns, 2020). However, the inherent lack of transparency within globalised companies has created a gap in global SCM (Birnie and Rotchild, 2018).

Access to more formalised business sectors and practices reduces opportunities for labour exploitation. Kammer-Kerwick and colleagues (2023) created a program aimed at tackling labour exploitation and human trafficking. Accordingly, Brandenburg et al. (2019) developed a conceptual framework to examine the impact of socially sustainable SCM on mitigating modern slavery practices. Farsang et al. (2017) conducted a quick human rights compliance assessment to showcase a global value tool, while Buck (2019) analysed published preventive statements and frameworks to protect businesses and individuals. Essentially, global supply chains have the potential to generate growth, employment, skill development and technological transfer (Judge, 2018). On the other hand, deficits in decent work, including child labour, forced labour and human trafficking, have been linked to economic activity supported by global supply chains (Martinez, 2015; Green and Owen, 2019).

The global supply chain demand for cheap labour and products remains a significant systemic driver of modern slavery (McGrath, 2013). Therefore, recruitment abuses are the main entry points for forced labour and human trafficking in global supply chains. Therefore, promoting fair recruitment is critical in tackling these violations and abuses (Vandergeest and Marschke, 2019). According to Jereb et al. (2011), risk assessment helps understand where supply chains might be vulnerable to slavery and enables resources to be allocated to these areas to tackle the crime. Reports on labour exploitation and human trafficking show that child workers, undocumented migrants and some ethnic minorities are at risk of extreme labour exploitation (Zimmerman and Kiss, 2017; Emberson, 2019). Irving (2016) remarked on how modern slavery regulations will impact supply chain stakeholders, especially consumer companies. Lambrechts (2020) observed that awareness of social issues, including unethical recruitment and labour exploitation, is a recent phenomenon in global supply chains.

2.1.5: A systematic review of current modern slavery research in global supply chains

Previous research has provided modern slavery descriptions and practices as shown in Appendix I, showing that child labour and human trafficking for forced labour are mainly prevalent in the lower tier of global supply chains and have not been systematically explored yet (Liu *et al*., 2017; Benstead *et al*., 2020; Islam and Van Staden, 2021). Further study indicates that countries progressing towards decent work and sustainable development have strengthened institutions that promote respect for fundamental principles and rights at work, eliminating workplace discrimination, allowing freedom of association and the right to collective bargaining (Sereni and Baker, 2018). However, the 2030 agenda for sustainable development, universally adopted by all 193 UN Member States, calls for immediate and

effective measures to eradicate child labour, forced labour and human trafficking (Arowoshegbe *et al*., 2017; Alsamawi *et al.,* 2019). In addition, other related issues, such as the environmental and social governance implications, have been researched (Baharoglu *et al*., 2018; Duchon, 2019).

All forms of labour exploitation represent a violation of fundamental human rights that undermines economic and social development (New, 2015). They contradict moral aspirations and play against governments, businesses, and societies (Huq *et al*., 2014). Trautrims (2020) discovered many mixed methods approaches in detecting labour abuse in supply chains. These efforts have mainly focused on identifying child labour, forced labour or human trafficking in producing and distributing goods and services for consumption (Martin-Ortega and Davies, 2016; Trautrims et al., 2020; Burmester et al, 2022). Logistical social responsibility comprises the environment, ethics, diversity, labour rights, working conditions and human rights (Carter and Jennings, 2002). The research conducted by Boersma and Nolan (2022) delved into the continuum of exploitation, emphasizing the employment relationships that exist within complex supply chains. The study by Szymonik (2012) indicated that the international labour and logistics network seeks to identify and confront the complex challenges impacting workers in the global logistics industry, where workers often face poor working conditions, such as underpayment of wages, a dangerous working environment, and long working hours (Sitran and Pastori, 2013). In addition, several jurisdictions have sought to compel businesses to undertake audits of their transport and logistics base to ensure that their suppliers' operations are free from modern slavery (Allain *et al*., 2013; Leon and Juan, 2014).

Modern slavery is a severe problem in many sectors of the global economy, and it presents a challenge for the information technology industry (Jones and Comfort, 2023). Nishinaga and Natour (2019) explored using digitalisation to prevent modern slavery through its monitoring and mapping capabilities. Therefore, identifying and tackling the risk of modern slavery within supply chains gives rise to significant challenges for information technology companies (Datta, 2014). According to Suprun et al. (2022), modern slavery is a globally prevalent problem, predominantly affecting workers in labour-intensive markets, and these issues linger within multiple tiers of a supply chain. Liu (2022) established a framework aimed at evaluating the preparedness of organizations within the construction sector to confront the issue of modern slavery.

However, there is an enormous body of literature on slavery and modern slavery from various historical, philosophical, and socio-cultural perspectives (Bhakoo and Meshram, 2021). Modern slavery is increasingly understood as a continuum of exploitation, reflecting the complex nature of the practices that are found in different contexts. According to Boersma and Nolan (2022), the rise of global sourcing and production has had considerable adverse side effects on global supply chains (Forde and Slater, 2014). However, there has been increased recognition from governments, businesses, and civil society of the need to address risks and avoid exploitation: modern slavery is a composite and challenging situation that may prevent the sustainable development of global supply chains (Han et al., 2022).

Pesterfield and Rogerson (2024) conducted significant research focusing on the UK construction industry to understand and prioritize modern slavery risks. Their findings provide a valuable case study for the broader discussion on this issue. In their 2024 study, Pinnington and Mehaan investigate how paradoxical sensemaking can enhance the understanding of modern slavery in supply chains. Geng et al. (2022) further suggested that firms should be more motivated and capable of addressing these problems when they source from nations with heightened slavery risks; this would increase their performance in corporate sustainability.

The global pandemic significantly disrupted supply chains because many large brands cancelled orders and refused to pay for goods already produced (Sarkis, 2020; Dubey *et al*., 2021). The COVID-19 pandemic impacted global supply chain sustainability in the worst way and, at the same time, created an opportunity to explore new, innovative ideas that can positively shape the global supply chain in the long run (Pinnington *et al*., 2021). Sajjad (2021) provided a critical pathway to develop an initial understanding of how organisations can create more resilient and socially sustainable supply chains in a post-COVID world, while Dubey et al. (2021) suggested that lead companies build resilience in their supply chains by advancing technology innovations and adopting employee protection schemes through stakeholder collaboration.

Extensive research has been carried out on modern slavery in the global supply chain, as shown in Table 2.3. However, Yawar and Seuring (2017) found that the social dimension of sustainable development and its impact on the supply chain had received less attention than the environmental and economic dimensions. Nevertheless, contemporary studies on social responsibility issues termed modern slavery are shifting towards governance responses that underpin community resilience against labour exploitation (Sarkis, 2020; Dubey *et al*., 2021).

Therefore, the emergence of the UN Sustainable Development Goals (SDG) has created a road map for business organisations to incorporate Sustainable Supply Chain Management (SSCM) and social commitment in their practices to gain a competitive advantage (Allain *et al*., 2013; Lake *et al*., 2016). For example, SSCM has been considered increasingly crucial by industry and academia in facing today's ever more complex and fragmented supply chains due to global sourcing (Gong et al*.,* 2021).

The disclosure of modern slavery risks has received increased attention, focusing on greater transparency in business operations and supply chains (Townsend *et al*., 2016; Ahmed et al*.,* 2022). Ahmed and Arun (2022) discussed the role of disclosure in improving work practices within the ready-made garments supply chain. Another research study, by Jones and Comfort (2018), offered an exploratory commentary on how leading UK retailers employ storytelling in the corporate social responsibility reporting process. Mandatory annual reporting to improve the transparency of working conditions in firms' supply chains is the favoured approach of UK policymakers for reducing modern slavery risks in supply chains (Pinnington and Meehan, 2023). However, Islam and Van Staden (2021) examined the shortcomings of the disclosure and transparency requirements of the UK's Modern Slavery Act (MSA) of 2015. Pinnington et al. (2023) argued that transparency rests at the core of most modern slavery reporting legislation. Yet, while publication of statements is mandatory, conformity with content guidance is voluntary, so that overall corporate responses have been poor: Saha et al. (2024) examine the association between textual disclosure readability in modern slavery reports and business supply chains. Invariably, supply chains have become important over the last three decades as companies increasingly outsource production, relying on a succession of legally independent suppliers (Burmester *et al*., 2022).

The gap in policies prosecuting perpetrators of modern slavery activities in global supply chains has had little attention, although it is difficult to regulate the activities of multinational companies in such a way that they conform to international human, labour, and environmental rights standards (Rubio and Yiannibas, 2017). A more coherent legal and policy approach is therefore required to mitigate labour abuse in the supply chain (Bernards, 2017). Bansal and Wyss (2013) assessed the impact of human rights legislation on business activities. For example, international human rights law can play an important role in private litigation against human rights abuses by multinational corporations (Crane *et al*., 2019), while the study by Irving (2016) detailed how new regulations would impact consumer companies.

2.1.5.1: Distribution of some key identified literature.

This section analyses the distribution of related literature papers found in the review: the significance of this study is the extraction of ideas from academic experts from different regions, including Europe, America, Asia and Africa. Only a few papers have addressed modern slavery challenges using a quantitative approach, but interest among academic scholars is growing because of the continuous and strategic awareness in the developed regions of the global supply chains about fostering sustainability through a sustainable SCM framework (Wu and Pagell, 2011). According to Paul et al. (2021), SSCM integrates the supply chain's economic, social, and environmental goals to improve long-term business performance and ensure better sustainability.

2.2: Theoretical Analyses of Modern Slavery Initiatives Through Benchmarking

The expansion of theoretical perspectives is essential for achieving a more profound understanding of modern slavery in supply chains, characterizing it as a complex and multifaceted issue that requires interdisciplinary approaches to the social narratives surrounding bonded and forced labour (Cousins et al., 2020). Stevenson and Cole (2018) have noted that modern slavery is significantly under-researched within the domain of SCM. There are established theories regarding modern slavery that aim to aid in the formulation of relevant policies. The primary reason for employing these theories is to examine the economic factors that compel individuals into modern slavery. The phenomenon of modern slavery in supply chains is intricate, involving social, legal, organizational, and managerial aspects (Benstead et al., 2021). Some research extends beyond the identified approaches, particularly the ethnographic work of Mountz (2010) on state responses to smuggling, and Spener's (2009) anthropological insights into the U.S.-Mexico border. Research findings indicate that empirical studies have largely been exploratory and often lack theoretical frameworks; when theories are applied, they are frequently limited to a few disciplines such as management, economics, sociology, criminology, and psychology.

The prevailing management theories can be categorized into two main groups: the first investigates modern slavery as a management strategy within organizations, where the exploitation of labour is utilized for competitive advantage, while the second emphasizes the interactions among stakeholders across organizations, incorporating ideas such as relational perspectives, global value chains, regulatory intermediaries, and institutional theory. While the management theories addressing modern slavery in organizational contexts yield important

insights, this research promotes the adoption of a wider array of theoretical perspectives that recognize modern slavery in supply chains as a complex and multifaceted challenge, rather than simply a management issue (LeBaron and Lister, 2015). The sociotechnical systems (STS) theory, as described by Fayezi et al. (2025), explores the dynamic relationship and reciprocal influence between human and technological elements within any work environment. Conversely, the Doughnut theory proposed by Lofti et al. (2021) offers a conceptual framework for imagining a sustainable world.

This study seeks to construct a theoretical basis for stakeholder engagement in combating modern slavery within global supply chains through the application of the Total Interpretive Structural Model (TISM). This strategy aims to develop interventions that create a more just environment for businesses, workers, governmental and non-governmental organizations, and non-profit entities. The existing research on socially sustainable supply chains has largely depended on inductive and case study methods associated with qualitative research (Crane 2013; Amatucci et al. 2015; Dubey et al., 2015; Arun et al., 2020), which fail to address several significant factors. Markman and Krause (2014) highlighted the importance of inductive approaches in their call for papers on 'theory building surrounding sustainable supply chain management,' suggesting that deductive methods may limit the scope of inquiry. Furthermore, Baird (2013) explored the theoretical aspects of human smuggling. This study seeks to leverage the power of interpretive logic to develop theoretical frameworks where traditional inductive methods may fall short in providing valuable insights. To this end, the research employed the TISM approach to formulate a theory focused on stakeholder engagement in addressing modern slavery within supply chains. This work aims to build upon the contributions of Pagell and Wu (2009), who endeavoured to create a sustainable supply chain theory through ten illustrative case studies. Nevertheless, this research posits that, in certain instances, the absence of support from industry experts and stakeholders may render alternative methodologies, such as ISM and TISM, equally viable for constructing theories related to social sustainability (Dubey et al., 2015). It is important to note that this study has its limitations; primarily, it relies on a sample size that is not statistically adequate for rigorous theory testing. Future research is encouraged to apply Fuzzy TISM in contexts where larger sample sizes can be utilized for theory development.

Stakeholder theory serves as a significant theoretical framework for understanding modern slavery, yet its application in current research remains limited. As the issue of modern slavery gains traction among stakeholders related to multinational corporations—including

policymakers, governments, NGOs, consumers, and activists—only a few studies have utilized stakeholder theory to examine these corporate entities (Antonini et al., 2020). The framework developed by Lofti and Guix (2023) addresses the management of modern slavery risks in asset-light business models, taking into account the perceptions of various stakeholders. According to Strand et al. (2023), a diverse array of actors and stakeholders exists both within and outside the supply chain, each contributing to the prevention, facilitation, or experience of modern slavery and forced labour. in another research Strand et al. (2024) underscored the necessity of combating modern slavery in supply chains by promoting cooperative efforts between businesses and NGOs. These stakeholders encompass the focal firm, first-tier suppliers, upstream suppliers, workers, governmental bodies, third-party organizations such as NGOs, recruitment agencies, auditing firms, social activists, and consumers. Stakeholder theory is instrumental in analysing the various categories of stakeholders associated with multinational corporations, their significance, and their roles in combating modern slavery (Alosani et al., 2016). Some corporations engage in multistakeholder ethical organizations, like the ethical trading initiative. This theoretical framework also allows for an examination of the effectiveness of these collaborative efforts in addressing modern slavery.

Multinational corporations (MNCs) are at risk of losing their legitimacy if they do not satisfy stakeholder expectations regarding the fight against modern slavery. With the increasing awareness of modern slavery among stakeholders, MNCs will likely face greater pressure to disclose their efforts in addressing this critical issue. This trend is further supported by legislative measures such as the UK Modern Slavery Act (2015) and the Australia Modern Slavery Act (2018), which require organizations to report on their modern slavery initiatives. Research shows that suppliers in developing areas may respond to stakeholder demands for social sustainability through either compliance or avoidance strategies (Alamgir and Banerjee, 2019). Moreover, stakeholder coercion can encourage companies to enhance their sustainability awareness and implement socially responsible practices within their supply chains. The roles of NGOs and the media are essential as influential stakeholders in the sustainability of corporate supply chains, alongside intermediate managers and employees. Campaigns ought to prioritize engaging with communities to better comprehend the factors that contribute to modern slavery and to identify effective interventions through benchmarks and performance evaluations (Dragolea and Cotîrlea, 2009; Manetti 2011; Rinaldi et al, 2014; LeBaron and Lister, 2015). This strategy will ultimately enhance community awareness regarding the risks associated with modern slavery and human trafficking (Hicks, 2021).

However, it is vital for authorities to implement the necessary measures to identify, prevent, and mitigate the risks of human rights violations in our supply chains.

2.2.1: The main situations and challenges highlighted by researchers in the field of study.

The benchmarking of the global supply chain is a critical area for urgent attention in modern slavery research (Martin-Ortega and O'Brien, 2017). However, the lack of research attention to the ambiguity of what firms are reporting is significant for global supply chains as, perhaps surprisingly, the focus for legal compliance is transparency in the publication of supply chain statements, not the changes adopted or commitments to act (Meehan and Pinnington, 2021). Thus, several countries worldwide have introduced new legislation that pressurises organisations to increase the transparency of their supply chains, which is expected to encourage the dissemination of sustainable practices up the chain (Stevenson and Cole, 2018). In their research Kim et al. (2023) utilized a time-use framework to examine the severe impact of child labour within supply chains in India. For example, the Rana Plaza case action by the international community led to an enforceable contract between downstream buyers and Bangladeshi labour representatives, pressuring Nike to tighten its recruitment procedures (Trautrims *et al*., 2020). Nevertheless, current research studies on modern slavery in global supply chains have highlighted challenges and issues related to several areas (Ruggie, 2014).

2.2.2: Modern slavery in global supply chains

The expression 'global supply chains' refers to goods and services that cross international borders for consumption (Rubio and Yiannibas, 2017). The goods and services consumers purchase comprise inputs from many countries worldwide and are processed, assembled, packaged, transported, and consumed across borders and markets (Gold *et al*., 2015). Mapping these complex supply chains is demanding. Moreover, identifying where and to what extent child labour, forced labour and human trafficking occur along these supply chains is even more complicated (Michailova and Stringer, 2018). However, Buck (2019) addresses the need for standard tools and criteria governing organisations' actions. Hence, a global muti-regional input and output database is needed to trace supply chains and understand regional loopholes (Hertwich and Peters, 2010; Zhang *et al*., 2021). Such tools and criteria would be reliable in combating modern slavery within corporations and throughout global supply chain tiers (Felice, 2015). Organisations operating in global supply chains present various opportunities for growth through capacity building, employment, and local economic development. However, organisations that fail to conduct business responsibly contribute to social and environmental impacts such as forced labour and human trafficking (Martinez, 2015; Birnie

and Rotchild, 2018). Therefore, the complexity and interconnectedness of global markets present a challenge for traditional statistics and accounting methods. Hence, risk assessment along every supply chain tier will improve traceability (Tran and Kummer, 2018).

The social and environmental impact of firms' participation in global supply chains increases interest in policies regarding socially responsible sourcing and procurement activities (Santos *et al*., 2012; Zorzini *et al*., 2015). However, according to Buck (2019), supply chain managers need more resources to investigate lower-tier suppliers in general geographic operations. According to Monaghan et al. (2018), companies overwhelmingly focus their efforts on the first tiers of their supply chains, with few working to understand the same risks associated with more profound levels. Similarly, Sanchez-Flores et al. (2020) examined the extent of socially sustainable SCM, especially in the supply chains of emerging economies. On the other hand, McGough (2013) demonstrated the existing anti-human trafficking effort established to end modern-day slavery activities in lengthy and complex supply chains.

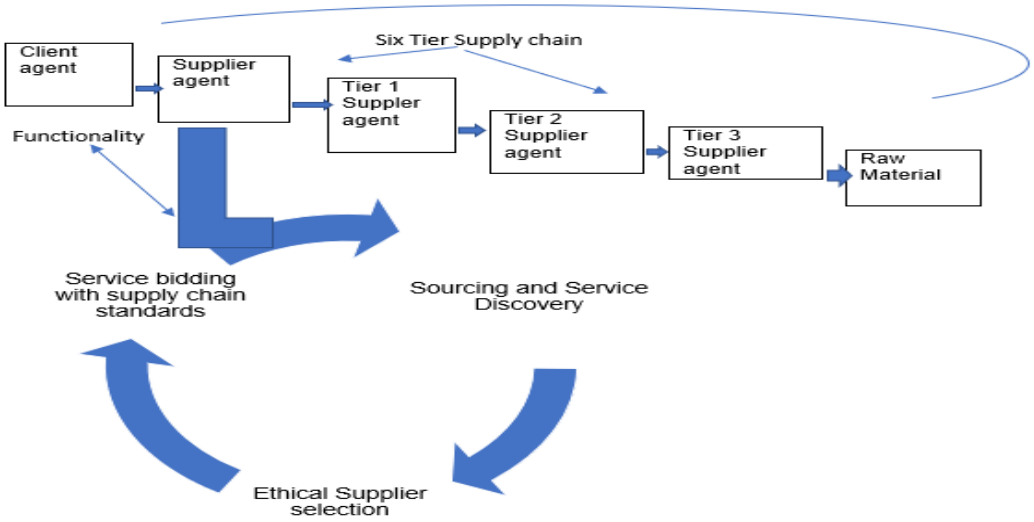


Figure 2:5multi-agent supply chain functionality scope
Source: Author's work based on Brintrup (2010)

The power asymmetry between big multinationals at the top of the supply chain and the lower-tier suppliers could create the conditions that lead to modern slavery (New, 2015). For example, Figure 2.5 demonstrates the behaviour adaptation of a multi-agent supply chain and its functionality scope (Brintrup, 2010). However, company due diligence beyond immediate suppliers could present one of the most significant opportunities to suppress human rights abuse.

2.2.3: Supply chain mapping.

Supply chains extend from direct suppliers and responsible businesses with better visibility of their supply chains. Accordingly, through information technology, supply chain visibility involves the visualisation and monitoring of all supply chain processes, from the supplier to the end customer (Martinez, 2015). Today, all major global brands have labour codes of conduct or are part of multi-stakeholder ethical alliances, and business organisations are expected to ensure progress towards respect for those standards within their own and their suppliers' operations (Lindsay et al, 2017; Marmo and Bandiera, 2021).

However, buying companies may not know where human rights abuse occurs along their supply chains (Huq *et al*., 2016). According to recent studies, abusive employment conditions like modern slavery continue to thrive in the upstream operations of global commodity supply chains as diverse as conflict mineral mining in the Democratic Republic of Congo, plantation farming and shrimp fishing in Thailand, cotton harvesting in Uzbekistan, Assam tea plantations in India and coffee growing in Ghana (Trautrims *et al*., 2020). Therefore, it occurs within informal work environments where indirect suppliers along the supply chains are not subject to routine labour and safety inspections (Parella, 2019).

Modern supply chain mapping is a verification process across companies and suppliers to document the exact source of every material, every process and every shipment involved in bringing goods to market (Green and Owen, 2019). Mapping is needed because long and complex global supply chains make it harder for businesses to have visibility of the people, places and operations that make up their supply networks. According to Judge and Tomlinson (2016), businesses and NGOs have an essential role in the visibility of their supply chains, such as promoting decent work to tackle various poor and unlawful working practices. For example, Hope for Justice, a global NGO, has raised awareness by mapping the risk of using slave labour in the transport logistics and warehouse sector to end modern slavery practices (Walk Free Foundation, 2014). Figure 2.6 is a representation of the supply chain mapping network. Knowing the steps concerning the supply base will help understand each supplier's services and where each supplier is located (Pinnington *et al*., 2021). However, organisations should establish and increase their visibility and influence over the lower tiers of long and complex supply chains to prevent or mitigate the risk of modern slavery.

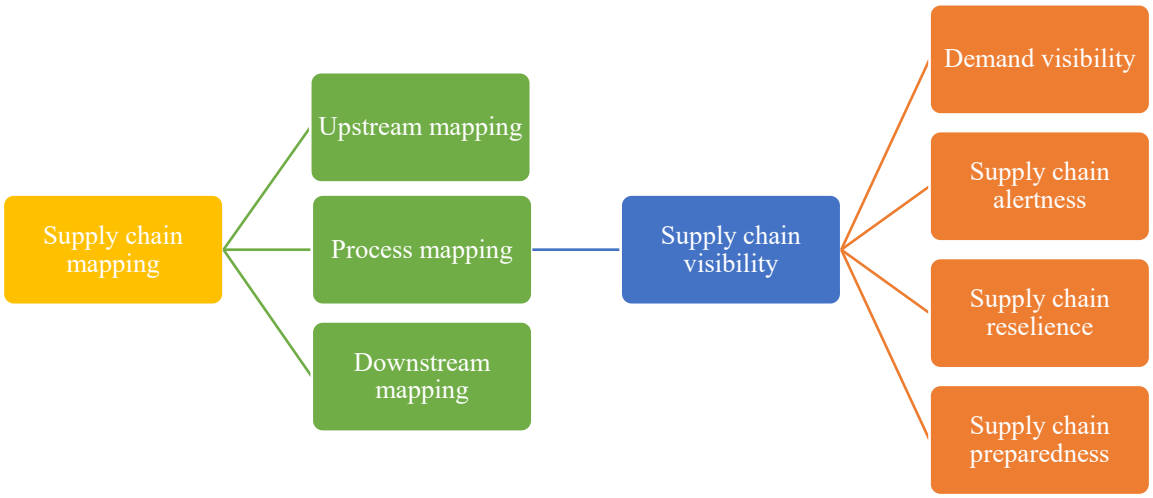


Figure 2:6Supply chain mapping network
Source: Vakil (2021)

Some multinational enterprises believe that outsourcing production does not give them the moral right to assume responsibility for the conditions of their suppliers' workers. That is why the lack of visibility of lower-tier suppliers and intermediaries has made the oversight of employee conditions more difficult. McGrath and Mieres (2017) addressed the demand side in and through the supply chain, especially in supply chain mapping. Similarly, Beadle and Davison (2019) remarked on the issue of mapping the vulnerabilities of victims of trafficking, especially from Vietnam to Europe. Brandenburg et al. (2014) developed a theory for increasing downstream awareness of vulnerabilities to encourage action and decrease parent company liability for such crimes using quantitative models for sustainable supply chain management. Essentially, a lack of supply chain mapping and meaningful due diligence can hinder the identification of key actors in a business supply chain (Allain et al., 2013). According to Mani et al. (2014), effective mapping and verification of the supply chains will assist the business organisation in ethical supply selection, ethical sourcing, and ethical procurement.

2.2.3.1: Ethical supplier selection

Business organisations should be aware of products or services from suppliers whose production delivery is associated with forced labour or human trafficking (Huq *et al*., 2016). Martin-Ortega and Davies (2016) found that business organisations were beginning to incorporate social aspects during supplier selection, slightly different from the usual economic considerations when procuring products and services from suppliers. According to the study by Winter and Lasch (2016), sustainability criteria are crucial for supplier evaluation. Trautrims et al. (2020) suggested that training procurement professionals would identify

modern slavery risks during supplier selection. In this way, companies could improve the working conditions of those employed by exploitative suppliers, whilst rewarding those who treat workers with dignity and respect. Similarly, Carter et al. (2010) examined the influence of culture on supplier selection decision-making by industrial procurement managers during sourcing. However, achieving supply transparency is challenging as firms outsource or subcontract low-value or high-risk activities (Crane, 2013).

Ethical supply selection in emerging economies is essential for corporations to consider strategic advantage (Zhou and Xu, 2018). Figure 2.7 demonstrates ethical supplier selection guidance for preventing modern slavery in the global supply chain. Davies and Crane (2003) remarked on ethical decision-making in fair trade companies and its influence on protecting human rights in the global economy. However, lead companies are encouraged to demonstrate continuous functions that systematically collect data on specific indicators to assess and document action, performance, and compliance during supplier selection (Taherdoost and Brard, 2019; Gold *et al*., 2020). Aliakbaria and Seifbarghy (2011) designed a supplier selection model for a socially sustainable supply chain while considering corporate social responsibility factors. Alternatively, Bai and Sarkis (2014) emphasised adopting and applying sustainability key performance indicators when selecting product suppliers. According to Martin-Ortega et al. (2015), working with a small number of credible suppliers with proactive management practices is one way to increase confidence in the integrity of supply chains.

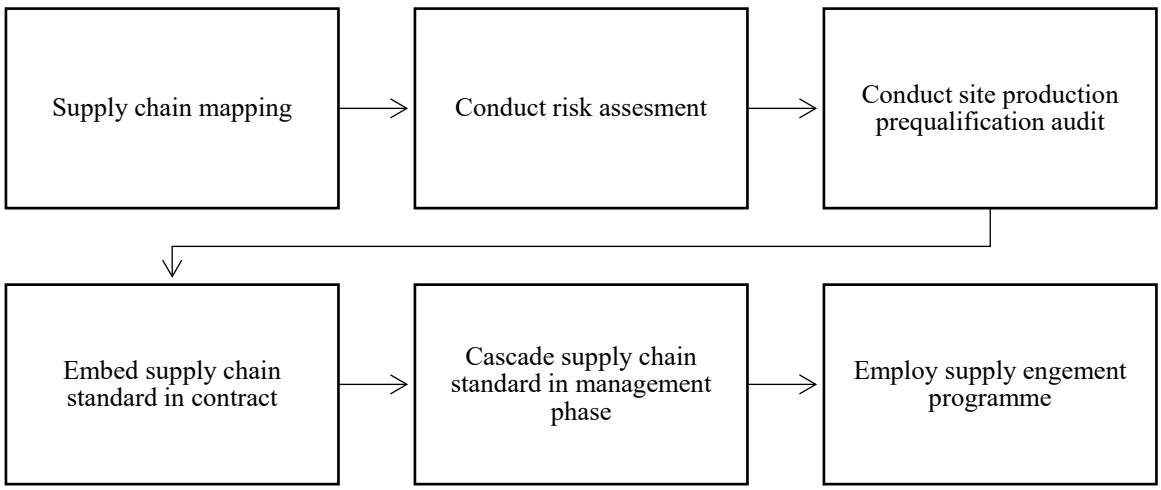


Figure 2:7Supplier selection guidance for preventing modern slavery in supply chains
Source: Trautrims et al. (2020)

2.2.3.2: Ethical Sourcing

Buyers are expected to collect, monitor, and verify data from their sourcing portfolio to inform decision-making towards full compliance and provide composite information about the fulfilment of commitments (Hoang, 2019). The buying power of member states and the European Union gives them substantial power over companies and the ability to influence business commitment to human rights by cascading labour standards throughout their supply chains (BIICL, 2018). However, researchers from trade unions and NGOs have highlighted labour abuses in multi-tier supply chains and amongst labour contractors within modern retail value chains (Barrientos, 2013; Mani *et al*., 2014). Therefore, it is essential to initiate sustainability in various multi-tier supply chains, yet Gong et al. (2021) argued that this adds further complexity to an already complex problem where, according to Locke et al. (2013), low margins and stiff competition among manufacturers have led to poor working conditions and environmental standards in facilities producing goods for global brands.

Global production is expanding through outsourcing to developing countries through networks of producers and agents coordinated by large global and regional buyers (Barrientos, 2013). However, offshoring, outsourcing, and subcontracting can cloud the distribution of responsibility along the value chain, particularly regarding social and environmental standards (Brintrup, 2010; Heerden, 2015). For example, tracing back the origins of a final product or its components requires capturing statistics in the market where the product is consumed and along its supply chains (Taherdoost and Brard, 2019). Zubar and Parthiban (2014) analysed the supplier selection method through a conceptual model and empirical study, while Mani et al. (2014) suggested that working with a smaller number of credible suppliers with proactive management practices is one way to increase confidence in the integrity of supply chains. Gold et al. (2015), more comprehensively, suggested that a multi-stakeholder initiative, community-centred engagement, supplier development and capacity building are all necessary to address the root causes of slave labour in upstream and downstream supply chains.

2.2.3.3: Ethical procurement.

Ethical procurement refers to how organisations meet their needs by considering their value chain's environmental, social, and economic impacts (Birnie and Rotchild, 2018). Multinational enterprises aim to buy and supply products in a sustainable way, known as ethical procurement (Martin-Ortega *et al*., 2015), which aims to use procurement and supply to reduce the negative impact on the environment, economy, and society (Walker and Jones, 2012).

Consequently, sustainable supply chain management (SSCM) is a new standard among focal companies to ensure that their suppliers act in socially responsible ways (Wu et al., 2021). In addition, companies are held accountable for their internal practices and supplier behaviour during procurement (Winter and Lasch, 2016). Benton (2018) detailed the critical role SAP Ariba software can play in defining the future of procurement as the supply chain industry evolves.

Some countries have succeeded in integrating modern slavery standards and commitment to public procurement practices, such as the US federal acquisition regulations and the UK public contract regulations, which prohibit the government from awarding a contract unless the company certifies that it will not sell a product suspected of being produced with forced labour or child labour (Yusuf et al., 2014). In their research, Kim et al. (2016) analysed that it is imperative to ensure goods are sourced ethically. Zorzini et al. (2015) found that multinational corporations now use their buying power to enforce social standards and organisational commitment to their suppliers to ensure human rights across the supply chains. Therefore, policymakers and NGOs have advised procurement professionals to address any exploitative situation by the suppliers instead of completely cutting ties with them (Lambrechts, 2020).

2.2.3.4: Ethical trading initiative.

Lambrechts (2020) defined ethical sourcing as a "process of sourcing a material, product and service an organisation needs from its supplier in an ethical and socially responsible way". A recent survey shows that global brand participants have labour supply standards or are part of multi stakeholder ethical coalitions such as the Ethical Trading Initiative (Mezzadri, 2014). The Ethical Trading Initiative is a multi-stakeholder organisation that promotes respect for human rights and provides insights about promising practices to mitigate forced labour within the supply chains (Heerden, 2015; Lake *et al*., 2016). Yusuf et al. (2014) described ethical trade as providing goods and services to customers while subscribing to a moral code of conduct. The study by Lambrechts (2020) elaborated that the ethical trading initiative expects companies to ensure that their first-tier suppliers become involved with their suppliers to abide by the ethical trading initiative base code throughout the supply chain. Quarshie and Salmi (2014) examined the supply network's ethical and corporate social responsibility issues, in which the goal is to promote respect for workers' rights within the supply chains. In their study, Connor et al. (2016) argued that reducing product demand was one of the most effective ways of preventing labour exploitation.

Forced labour is prevalent in global supply chains. However, companies endeavour to progress toward respect for those standards in their suppliers' operations (Bansal and Wyss, 2013; Marmo and Bandiera, 2021). Companies are encouraged to ethically verify their entire production process before sourcing any product (Yusuf *et al*., 2014; Bodenheimer, 2018). According to Mezzadri (2014), companies usually contract out the production process to first category suppliers, and those foremost category suppliers have contracts with other suppliers, but the relevant production processes occur in factories and farms beyond the first tier of the supply chains (Baur and Palazzo, 2011; Annamma *et al*., 2012; Tatzenko et al., 2019).

2.2.4: Performance measurement and benchmarking for supplier.

Over the past decade, most developed countries, e.g., the UK and the US, have developed a series of measurement frameworks that enables robust monitoring and evaluation of the progress towards protecting and promoting equality and human rights in a systemic way (Sherman, 2021). The UK government has a statutory duty under section 12 of the Equality Act 2006 to monitor social outcomes from an equality and human rights perspective by developing indicators and reporting progress (Brahler *et al*., 2017).

Performance measurement is necessary to review the effectiveness of policy implementation on social standards (Monaghan *et al*., 2018). Measuring the sustainable social performance of an organisation's supply chain will demonstrate how well it is operating in meeting the targets of the UN SDGs (Morais and Barbieri, 2016). Accordingly, business organisations should employ KPIs to monitor the effectiveness of the steps taken to ensure that modern slavery does not occur in their supply chains. However, Taghavi et al. (2014) argued that currently established KPIs did not give the necessary decision support to address future challenges proactively. As an alternative, Giannakis et al. (2020) evaluated supplier sustainability performance using the analytic network process.

The standard variable measuring social performance relates to equal opportunity, human rights and business ethics (Azfar et al., 2014; Yun et al., 2018). Organisations that employ an effective supplier performance measurement system can engage with the business society to deliver reasonable customer satisfaction (Saeed and Kersten, 2017; Mani *et al*., 2018). The study by Brahler et al. (2017) demonstrated a measurement framework that enables the monitoring and evaluation of progress towards equality and promotion of human rights in a systemic way. In Table 2.5, a methodology for benchmarking is described in relation to the theme of the research.

The UK global supply chain benchmarking initiative is dedicated to evaluating the transparency of corporations (Martin-Ortega and Davies, 2016; Sereni and Baker, 2018). Consequently, this benchmarking framework delivers an extensive analysis of the risks of forced labour that may exist within a company's supply chain; a company that is forthright about its suppliers will reveal how it engages with workers throughout its supply chains (Monaghan et al., 2018). However, various research has highlighted that the UK global supply chain benchmarks allow stakeholders to closely investigate a company and hold it accountable for its professed standards (AEB, 2015; Timpanaro et al. 2018; Pager and Priest, 2020).

Table 2:5Know-the-Chain Benchmark Methodology

Indicator name	**Indicator description and indicator element**
1. Commitment **Supply chain standards.** **Management and accountability** **Stakeholder engagement**	The company publicly demonstrates its commitment to addressing human trafficking and force labour. The company has a supply chain standard that requires suppliers throughout its supply chain to uphold workers' fundamental rights and freedoms. The company has established clear responsibility and accountability for the implementation of its supply chain policies and standards relevant to human trafficking and forced labour. The company engages with relevant stakeholders on human trafficking and forced labour
2. Traceability and risk assessment	The company has a process to trace and assess forced labour identified in the different tiers of its supply chain.
3. Purchasing practice **Supplier selection**	The company is taking steps towards responsible raw material sourcing and purchasing. The company assesses the risk of force labour at potential suppliers prior to entering any contract with them.
4. Recruitment practices	Ensuring recruitment agencies uphold the fundamental human rights of the employees by preventing workers from paying recruitment fees.
5. Workers' voice **Grievance mechanism**	Ensuring the workers can understand and express their labour rights. The company makes available to supplier workers a formal and effective mechanism to report grievances to an impartial entity regarding labour condition in its supply chain. e.g., UK National referral Mechanism
6. Monitoring and Auditing	The company audits its suppliers to measure compliance with applicable regulations and with its supply chain standards, e.g., non-scheduled visits, interviews with workers, reviews of relevant documents, visits to production sites.
7.Remedy and corrective action plan	The company has a process to provide remedy to workers in its supply chain with respect to human trafficking and forced labour.

Source: Irvin (2016)

SCM program evaluation and monitoring depend on developing and applying performance indicators (Felice, 2015). To understand social phenomena, some organisations and private businesses rely on metrics or indicators to monitor their performance over time; for example, Bai and Sarkis (2014) identified a sustainable supply chain key performance indicator (KPI) used to evaluate suppliers' sustainability pea. To standardise such individual efforts, a benchmark methodology can help create a broader consensus on social priorities and provide concrete, practical tools for enforcing human rights and measuring their implementation (Felice, 2015). In their report, LeBaron and Lister (2015) investigated the growing power of a practical ethical compliance audit regime through benchmarking global supply chains.

2.2.5: Benchmarking the effectiveness of existing initiatives.

One of the objectives of this review is to benchmark the effectiveness of the existing initiatives to combat modern slavery in supply chains and provide guidance on the decision-making process across businesses to help guide their employees to do business in a compliant way, with integrity, and to make ethical, responsible decisions. The benchmark model requires governments to lead in preventing modern slavery by designing and implementing feasible and effective policies, such as awareness campaigns and strategic cross-border preventive initiatives in supply chains (Simatupang and Sridharan, 2003). This will create a level playing field for firms attempting to do the right thing; for example, setting clear standards for businesses, workers and investors that seek to address the causes of labour exploitation and enforcing those standards (New, 2015). In addition, the benchmark model includes examining the governance framework such that action on modern slavery will be seen as an essential corporate value and a potential source of competitive advantage. It also includes ensuring public commitment through clear policy statements and codes of conduct available to stakeholders in relevant languages and consistent with legislation and global frameworks, such as UN guiding principles on business and human rights.

Benchmarking involves comparing the performance of a company's products, services or processes against those of another business considered the best in the industry (Bhattacharya and David, 2018). It is a tool organisations use to learn best practices from other organisations to enhance their performance and maintain continuous improvement. The government has conducted a sustained international campaign to raise awareness, successfully lobbying for a reference to 'modern slavery' in the 2015 Sustainable Development Goals and persuading many governments to sign an international Call to Action (Bales *et al.,* 2018; Pinnington *et al.,* 2021).

A key purpose of benchmarking is to identify internal opportunities for improvement. The review proposes to benchmark the initiative on modern slavery risk identification, such that a robust process to identify risks across high-risk populations, geographies, products and services will be effective. Furthermore, the review analyses the effect of the worker-driven social responsibility initiative on the premise of its action plan to mitigate risk such that trained employees and suppliers are provided with a code of conduct to assist in monitoring and managing modern slavery risks. Essentially, effectiveness will be measured using key performance indicators and relevant metrics to evaluate progress and shortfalls against current slavery operations among key service providers, such as recruiters. However, firms can set baselines for continuous improvement by analysing the company's approach to modern slavery in relation to best practices (Dragolea and Cotîrlea, 2009).

2.3: Problematizing Socially Sustainable Global Supply Chains: Theoretical Insights, Contextual Challenges, and the Issue of Modern Slavery

Undocumented immigrant workers are often vulnerable to exploitation due to their lack of legal status (Strauss, 2012; Carvalho et al, 2025). This exploitation can take many forms, including low wages, dangerous working conditions, and denial of fundamental labour rights (Clarke and Boersma, 2017). The consequences of this exploitation can be far-reaching for workers and society (Gabriel et al., 2015). It can lead to increased poverty, decreased access to healthcare and education and a breakdown of trust between immigrant communities and law enforcement (Phillips, 2015). Addressing the issue of exploitation of undocumented immigrant workers is crucial for creating a more just and equitable society (Gold et al., 2015). Anti-slavery measures boost the company's profitability, as it can save money on labour costs (Montgomery, 2025). Many organised sectors have hired workers who are not eligible for minimum wage payment (Awaysheh and Klassen, 2010; Clarke and Boersma, 2017). These workers are usually from marginalised groups and cannot access better job opportunities but unfortunately, some companies prioritise their profit over the well-being of their employees. This practice should be discouraged, and companies should be required to provide fair wages to all workers. Practices like this are often associated with other unwanted practices, such as human trafficking or slavery.

The term 'modern slavery' refers to a range of exploitative practices, such as forced labour, human trafficking, and child labour (Boersma and Nolan, 2022). Forced labour is a significant issue worldwide, with an estimated 28 million victims, according to the International Labour

Organization (ILO). Labour exploitation is especially prevalent in the global apparel supply chain, prompting researchers to investigate the causes and characteristics of forced labour. Unfortunately, these practices are also widespread in other global supply chains, especially in industries like agriculture, mining, and manufacturing (Hsin, 2020): it is a complex crime that is apparent in every country (Heerden, 2015). For example, Uzbekistan has the second highest prevalence of modern slavery globally. According to Bhat (2013), Uzbekistan, the largest exporter of cotton, has been accused of using underaged children to harvest cotton.

Cases of modern slavery have continued to increase in all sectors, despite government anti-trafficking legislation (Meehan and Pinnington, 2021). In particular, the trafficking of human beings and labour exploitation are ongoing issues in the southeastern part of Asia, including Thailand, which is both a source and destination for exploited migrant labourers (Vandergeest et al., 2017). Severe labour abuse continues in the Thai fishing and seafood processing factories, where over a hundred thousand Burmese and Cambodian migrants are exploited (Page and Priest, 2020). Child labour is also apparent in western Africa, especially in Ghana's cocoa supply chain. Invariably, victims of modern slavery lose their liberty and are physically, mentally, and psychologically affected (Quraisha and Seedat-Khan, 2023). Companies must identify and eliminate modern slavery in their supply chains to protect workers' human rights and maintain ethical business practices (Caspersz et al., 2022). In countries like India, Bangladesh, Pakistan, Sri Lanka, and areas like Africa and the Middle East, modern slavery often remains unnoticed due to a lack of adequate infrastructure to address the issue (Qian et al., 2021).

Globalisation has resulted in the emergence of international labour systems that operate without prioritising fundamental civil rights for workers in the manufacturing and distribution sectors (Lotfi et al, 2021). Slavery and human trafficking are severe violations of human rights, and despite significant progress in the fight against them, they still pose a global threat (Assan, 2023). Unfortunately, due to a lack of comprehensive knowledge and awareness, these issues often go unnoticed and unaddressed, leading to continued suffering and exploitation. Therefore, it is crucial to continue raising awareness and taking action to combat this grave violation of human rights (Geng et al 2022; Szablewska and Kubacki, 2023).

There is a pressing need to develop effective strategies and policies to address this problem and ensure supply chains are free from exploitation and abuse. This lack of strategy has created an environment where exploitation and unfair labour practices are prevalent. Krifors (2020)

conducted an in-depth analysis of how migrant labour logistics affect the global economy. Despite this, developed countries often lack the power to regulate the labour practices of their suppliers, as there is no reliable governance structure in place. Although the globalisation of manufacturing and the development of complex international production chains have the potential to reduce labour abuse, it is still rampant in the form of contemporary slavery, which includes forced labour, child labour, and human trafficking (Gregory, 2022).

This issue has been previously discussed by experts like Buck (2019), Phillips and Mieres (2014), and Benstead et al. (2020). Although modern slavery in the supply chain is a complex and often hidden issue, its victims are typically controlled through debt bondage and the threat of harm or punishment by authorities if they try to escape (Bansal and Wyss, 2013; Alzoubi et al, 2023). Lambrechts' (2020) research sheds light on a significant breakthrough in global supply chains, highlighting the growing prominence of sustainable sourcing and manufacturing practices, and providing valuable insight into the latest developments in this critical business area. Although there is a considerable amount of literature on the subject, the study suggests that there is still much to learn about the issue, and more research is needed to fully understand the scope and impact of modern slavery in supply chains.

2.3.1: Stakeholders involved in advancing the objectives of UN SDG target 8.7.

This portion of the research discusses a range of factors that can support the attainment of the UN SDG target 8.7, which calls for immediate and effective actions to eliminate modern slavery and to achieve decent work and economic growth—both essential for sustainable development (Marques et al, 2024). These elements promote inclusive societies and contribute to overall prosperity (Miles and Ringham, 2020). This discussion is consistent with the research scope outlined in Chapter 1.2, which highlights the common neglect of the workers in production sites responsible for the goods we consume, as the focus often remains on pricing and availability. A significant challenge is the informal economy, where millions of workers are without basic rights and protections (Weitzer, 2015; LeBaron et al., 2018; Rasche and Waddock, 2021; Han et al., 2022). Fundamentally, decent work encompasses more than mere employment; it ensures that all individuals have access to fair job opportunities, social protection, and the resources necessary for full economic participation (Arun and Olsen, 2023; Marques et al., 2024).

Modern slavery represents a significant societal challenge and serves as a barrier to achieving the SDGs target 8.7 (Sereni and Baker, 2018; KPMG, 2019; Benstead et al., 2020; Muchlinski,

2021). The presence of modern slavery within business supply chains has led to the formulation of action plans and collaborative efforts among governments, corporations, and civil society aimed at fulfilling SDG 8.7. Figure 2.8 illustrates various facilitators that contribute to sustainability (Rinaldi et al., 2014; Avis, 2020; Barakat et al., 2023). Nevertheless, it is imperative for corporations to take proactive measures to safeguard workers from forced labour, rather than exacerbating the demand for such practices within their supply chains. Idris (2017) argued that modern slavery is an urgent societal concern and a major hindrance to the realization of the UN SDGs target 8.7. Additionally, Lotfi et al. (2021) introduced a doughnut theory perspective to analyse the shortcomings in workers' rights in relation to the SDG compass. Alexander et al. (2022) offered a decision theory viewpoint on social issues and the influence of SDGs and stakeholders in ensuring due diligence. The research conducted by Van Buren et al. (2021) revealed that the examination of due diligence obligations has largely shaped the corporate response to modern slavery in supply chains. Furthermore, Bonnitcha and McCorquodale (2017) provided an in-depth analysis of the concept of due diligence.

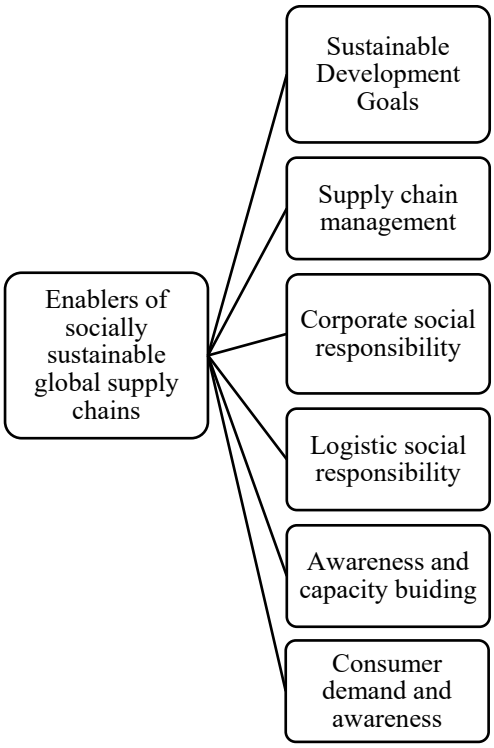


Figure 2:8Enablers of social sustainability in global supply
Source: Author

2.3.1.1: Sustainable development goals

As defined by Elkington (1997), sustainability is the practice of meeting today's needs without compromising the needs of the future generation. However, managing the supply chain is a

significant challenge for companies across various industries, as Seuring (2012) highlighted. Global competitiveness has compelled companies to be mindful of their social, environmental, and economic impact, as Arowoshegbe et al. (2016) and Saeed and Kersten (2017) noted. The UN SDGs are a challenge and an opportunity to serve the global population sustainably in the long term. For instance, target 8.7 sets a clear and urgent goal to eradicate forced labour and eliminate child labour by 2025, underlining the immediate challenges that must be addressed in global supply chains.

The SDGs facilitate improving global supply chains' economic, environmental, and social performance (Taghavi et al., 2014). Oncioiu et al. (2020) confirmed this point of view, which reinforces the need to understand better the role of businesses in contributing to the development of a sustainable society by vigorously presenting products and services that are not only economically intriguing and environmentally friendly but that advance the fulfilment of a social need. Akhtar et al. (2020) explored linkages between macro- and micro-level dynamic capabilities and environmental sustainability, which urge multinational corporations in emerging economies to reconsider their environmental policies and practices to compete with enterprises from developed countries.

2.3.1.2: Supply chain management

Supply Chain Management (SCM) has advanced into a crucial component of a competitive strategy, enhancing the efficiency and effectiveness of the organisation to meet customer needs in a socially sustainable manner (Al-Odeh and Smallwood, 2012). However, the clandestine nature of modern slavery poses a significant challenge, as it is hard to detect in the complex, multi-tiered structure of supply chains (Silvester, 2016). New (2015) and Gold et al. (2015), as well as the socially sustainable research by Mani et al. (2017) and LeBaron (2021), have made substantial contributions to the expanding literature on SCM. Yet, SCM also recognises that risks are among the most pressing management issues, capable of causing disruption and other supply chain problems (Silvester, 2016; Yun et al., 2019; Brandenburg., Grutchmann and Oelze, 2019). Moreover, Mani et al. (2016) have underscored that SCM is a complex amalgamation of logistic transportation, operations management, information technologies (IT), marketing, purchasing and distribution management.

Supply chain management is also an essential environmental and social aspect of corporate sustainability (Seuring, 2012; Kilian and Hennigs, 2014; Dubey et al., 2017; Alghababsheh and Gallear, 2020). According to Seuring and Müller (2008), SCM allows organisations to

incorporate sustainability performance objectives into their decision-making. Carter and Rogers (2008) identified a framework of SSCM to move towards a new theory that demonstrates the relationship between economic, environmental, and social performance within a supply chain management context. The study by Baah and Jin (2019) remarked on the importance of SSCM and organisational performance. In addition, Jermsittiparsert and Srihirun (2019) examined the role of ethics in supply chain management. Finally, Liu et al. (2017) explored sustainable service supply chain management to facilitate ethics across supply chains. Behl and Dutta (2019) remarked on the impact of humanitarian supply chain management in emerging economies.

2.3.1.3: Corporate social responsibility

Corporate Social Responsibility (CSR) encompasses the responsibility of corporations to include social and environmental impacts in business operations and interactions with stakeholders (Lund-Thomsen and Lindgreen, 2014; Yawar and Seuring, 2017; Birnie and Rotchild, 2018; Flynn and Walker, 2021). The link between CSR and company performance is one of the most widely recognised issues in research, particularly in the purchasing function. One of the critical elements for improving a business supply chain is performance measurement, and Rettab et al. (2021) demonstrated the value of measuring the impact of CSR performance. CSR is one element which Asif et al. (2013), say should be enhanced in an integrated management of global supply chains, to do which an organisation needs to explore the conditions that allow human exploitation to occur. This was also discussed by Crane (2013), while the study by Buck (2019) highlighted the analysis of published preventive statements and frameworks to protect businesses and individuals.

Michalski et al. (2017) explained that a new model approach is required to ensure CSR in supply chain management, while the report by Kilian and Hennigs (2014) remarked on the importance of corporate social responsibility and environmental reporting in controversial industries. However, business organisations need to provide negotiated solutions to human rights violations in supply chains in conjunction with the ethical trading initiative (Connor et al., 2016; Jones and Comfort, 2018; Birnie and Rotchild, 2018). Furthermore, mandating disclosure of fundamental corporate social responsibility and sustainable labour practices allows the downstream supply chain to know how seriously companies are committed to preventing the worst forms of modern slavery (New, 2015; Quarshie et al., 2016; Lang, 2018; Miles and Ringham, 2020).

2.3.1.4: Logistical social responsibility

Academics often use logistics social responsibility to examine CSR issues concerning logistics management (Piecyk and Bjorklund, 2015). For example, Leon and Juan (2014) encouraged corporate social responsibility in logistics and transport to facilitate social sustainability because customers constantly seek socially and environmentally respectful products and services. According to Carter and Jennings (2002), logistics social responsibility is socially responsible SCM from a cross-functional perspective. Guja and Sady (2014) analysed the role of logistics social responsibility in gaining a competitive advantage in business. Jardine and Trautrims (2021) argued that businesses and employers have an essential role in addressing poor labour and employment practices, including adequate time and rest for all workers and appropriate compensation to enable workers' voice and empowerment. It is evident from all these studies that companies involved in the movement of materials and products should ensure that their supply chain human rights due diligence extends to the workforce of their transport logistics and suppliers. This would be an instance of worker-driven social responsibility (Alliance 8.7 2019; Krifors, 2020).

2.3.1.5: Awareness and capacity building

Awareness and capacity building should be an ongoing activity in a company's supply chain, with a specific focus on advocating actions and targeting key groups (Geng et al, 2022). For instance, Trautrims et al. (2020) recommended capacity building across stakeholders in the supply chain to help mitigate modern slavery. However, it is of the utmost importance to adhere to international standards, frameworks, and best practices designed for identifying and eradicating labour exploitation in supply chains (Michailova and Stringer, 2018). Comprehensive capacity building for workers in supply chains and raising awareness among businesses about human rights abuse indicators on the worksite is significant (Lake et al., 2016). For example, in Kent and Essex, new publicity materials have been created for the counties' police forces to raise awareness, highlighting the importance of international standards in this context.

Over the years various studies have emphasised that, education and awareness-raising can address the vulnerability of those at risk of trafficking and educate other audiences by raising the profile of the issue (UNGP, 2011; McGough, 2013; Carbone *et al.,* 2014; Martinez, 2015; Scarpato et al. 2019; Burcu *et al.,* 2021; Monciardini *et al.,* 2019; Trautrims *et al.,* 2020; Trautrims, 2020; Know the Chain, 2020; Scaturro, 2021). Carrington et al. (2021) highlighted

the importance of enhancing consumer awareness and taking proactive measures against modern slavery. Another important step is to build the capacity of people at risk of exploitation through programmes that equip them with the skills necessary for employment opportunities, thus reducing their need to migrate through unsafe and risky channels or to take on jobs in exploitative conditions. Several studies have corroborated this strategy (Cockayne, 2015; Nwogu, 2014; Monaghan *et al.,* 2018; Marschke, 2019; Obarisiagbon and Ijegbai, 2019; Parella, 2019; Alghababsheh and Gallear, 2020; Benstead *et al.,* 2020; Islam and Van Staden, 2021; European Asylum Support Office, 2021).

Stakeholder engagement with workers is a valuable tool that identifies modern slavery and human rights abuse. For example, the UK government has been trying to conduct a sustained international campaign to raise awareness of modern slavery globally. However, it is yet to build sufficiently on the experience of others by analysing what set of effective awareness-raising initiatives works best (Idris, 2017). According to Gardner (2017), approximately 5,000 frontline individuals from the business, private, and public sectors received training from a multi-agency partnership to recognise and report crime indicators. Nevertheless, Pager and Priest (2020) argued that the lack of awareness of modern slavery might contribute to continued abuses by employers.

2.3.1.6: Consumer demand and awareness

Despite the complexity of global supply chains, consumers have the right to know if they are purchasing a product that may violate fundamental norms of ethical behaviour; they also have a vested interest in seeing material improvements to worker outcomes within the system (Lang, 2018). Kara (2011) highlighted that human trafficking is impacted by supply and demand, in which demand encourages modern slavery practices and makes it more profitable for perpetrators. Although consumers of products and services primarily consider cost, quality, and availability when purchasing (Dubey et al., 2017; Giannakis et al., 2020), much attention has been paid recently to consumers' concern over the conditions of the workers producing their products. This is known as ethical consumption (Shah and Wiese, 2018; Smith and Johns, 2020). Brandenburg et al. (2014) explained ethical consumption as the behaviour of sustainable and ethically minded consumers who feel responsible and accountable for the environment and society, and consumers increasingly demand socially responsible products and services (Mani et al., 2014; Niinimäki, 2015; Vural, 2015; Irving, 2016). Accordingly, pressure from consumers is an essential driver of social sustainability in supply chains (Birnie and Rotchild,

2018). Carrington et al. (2021) further addressed consumer awareness and action towards modern slavery.

2.3.2: The enablers of modern slavery in a business corporation

The complex nature of global supply chains increases the risk of human rights violations, with forced and child labour being among the most serious (Parella, 2019). Policymakers lack a systematic approach to building evidence on what kind of intervention effectively tackles modern slavery risk in supply chains (Lake et al., 2016); audits alone cannot address forced labour risk or identify modern slavery. However, the OSCE has developed due diligence processes that enable business corporations to identify, prevent, and mitigate direct and indirect risks. Jereb et al. (2011) designed a risk assessment model and supply chain risk catalogue to identify the potential threat to all organisations involved in international trade, as well as to the supply chain itself, especially to the logistics resources: manufacturing, the flow of goods, services, information and people. Baur and Palazzo (2011) detailed partnerships between NGOs and companies, which have received considerable attention in corporate social responsibility. Meaningful stakeholder engagement and multi-stakeholder collaboration are necessary to mitigate the risk of labour exploitation.

2.3.2.1: Wrong business model in a business corporation

Business organisations should be accountable for the environmental and social outcomes of raw material production and primary processing through adequate supply chain monitoring (Martin-Ortega and Davies, 2016). Benstead et al. (2020) described monitoring as an iterative process companies use to assess and demonstrate compliance, performance, and progress concerning their supply chains (Islam and Van Staden, 2018). Supply chains are often opaque in industries that rely heavily on subcontractors and in ones that are characterised by a high degree of informality in contracting at lower tiers in the supply chain, such as when a subcontractor depends on a verbal agreement with an independent supplier to minimise regulation or taxation (Ezeilo, 2012; OSCE, 2014; ILO, 2015; Trautrim et al., 2022). However, companies should determine progress towards fulfilling compliance by ensuring the implementation of commitments (Grimm et al., 2016). Islam and Van Staden (2021) argued that business organisations should consider developing a framework to monitor and verify implementation and outcomes related to company commitment. For example, the Independent Anti-Slavery Commissioner's office, in conjunction with the Rights Lab at the University of

Nottingham, has developed an online toolkit to assist local organisations and agencies in working together to tackle modern slavery (Trautrims, 2020).

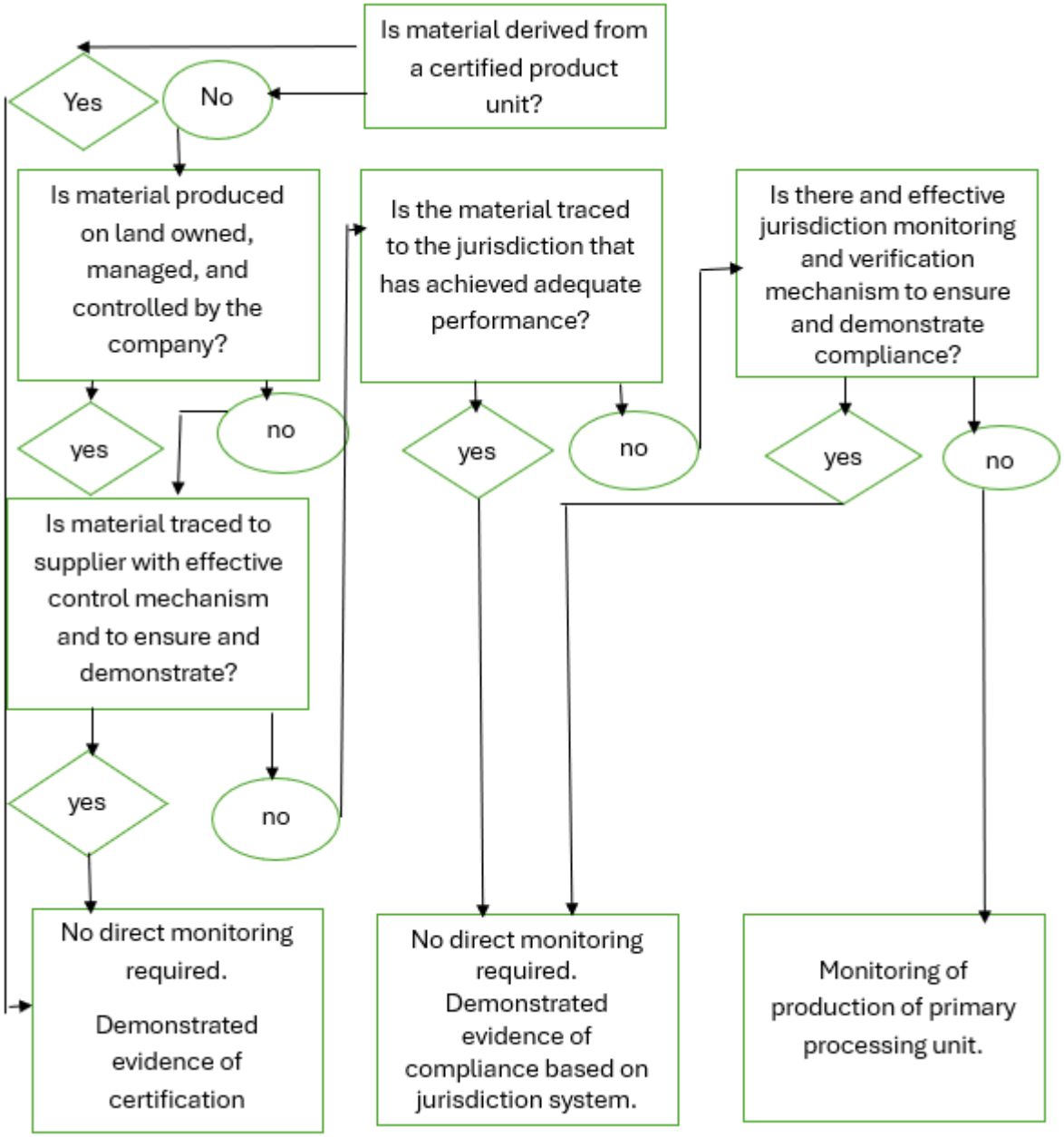


Figure 2:9Recommended monitoring approach towards fulfilment of commitment
Source: Author's work as seen in Accountability Framework Initiative (2019)

Governments should regulate business models based around forced labour and the associated purchasing practices and contractual dynamics in such a way as to make them completely unviable as illustrated above in Figure 2.9. Lebaron et al. (2021) indicated that business models shape the broader dynamics of corporations and the supply chain relations they establish. Thus, workers will continue to experience forced labour and overlapping forms of exploitation until prevailing business models and the economic and social realities that govern their construction

are overhauled. This means it will not be possible to eliminate forced labour in supply chains without a fundamental change to purchasing practices and the commercial contracts that formalise them (Geng et al., 2022). According to Martin-Ortega (2017), corporations should innovate business models to prevent forced labour in their supply chains and integrate commercial strategies and social standards by changing purchasing practices, reducing outsourcing along supply chains, and enacting internal governance reforms to address perverse incentive structures.

2.3.2.2: Socio-economic pressure

The socioeconomic vulnerability of individuals and workers within the global supply chain can lead to modern slavery (OSCE, 2014). This exposure is such that people from developing countries where job creation is low and the means to sustain livelihood is poor can become vulnerable populations looking for alternatives in informal economies to survive. Amnesty International (2013) highlighted the connection between informal economies and modern slavery practices. For example, due to the level of socioeconomic pressure in countries such as Nigeria and the Democratic Republic of Congo, people are being coerced to work under poor conditions with little pay and, in some cases, trafficked to developed countries under false promises of a better life (Nwogu, 2014; Obarisiagbon and Ijegbai, 2019). In such circumstances, poverty, informalities, violence, and discrimination by gender or other characteristics limit sustainable livelihoods (FLEX, 2018; Alliance 8.7, 2019).

2.3.2.3: Commercial pressure

Modern slavery issues in global supply chains have been the subject of much recent concern, such as in the case of the Rana Plaza fire incident in Bangladesh and the issue of NHS rubber gloves produced by people under debt bondage labour in Malaysian factories (New, 2015; Monaghan et al., 2018). Furthermore, economic and commercial pressures facing suppliers within the global supply chains can, in combination, lead to modern slavery (Verité, 2014). For example, short deadlines for large amounts of a product may force a trusted supplier to look outside its operations and engage in unvetted third parties for additional capacity. Accordingly, LeBaron (2021) analysed the role of supply chains in the global business of modern slavery, stating that commercial pressure is fundamental to whether decent work flourishes in any business supply chain.

Multinational organisations often source goods from suppliers in large quantities and are expected to do so ethically (Kim et al., 2016). However, in doing so, the suppliers should be given enough prior notice and on-time payment to enable efficient production with adequate welfare for their workforce (Quarshie et al., 2016; Rubio and Yiannibas, 2017). When buyers place orders from their suppliers at short notice, the supplier's workforce is often overstretched to meet the demand (Phillips, 2016). Hence, volatility in order volumes and timing, late changes to order contents and specifications, and delayed payments increase the risk of labour exploitation in global production networks (Phillips and Sakamoto, 2012).

2.4: Trafficking for labour exploitation

Human trafficking is the abuse of human rights and a profitable crime that is highly organised and widespread, impacting many people across the world. According to Gardner (2017), human trafficking is a multidimensional human rights violation that centres on the act of exploitation, which can affect people of all genders and ages and have devastating consequences. The United Nations defines trafficking in human beings as the recruitment, transportation, transfer, harbouring, or receipt of persons through menace or use of force (Weitzer, 2015). The study by Liu (2010) described human trafficking as an illegal action that commodifies human life, making it sellable, exploitable, and disposable. McGrath (2013) argued that poverty and abysmal working conditions have historically been blamed for encouraging irregular migration, termed human trafficking. For example, the tragedy in which 21 Chinese migrants died picking cockles in the unsafe tides off Morecambe Bay in February 2004 resulted in increased public awareness of the unethical employment relations and poor living conditions of migrants working in the United Kingdom (Anderson and Rogaly, 2005; Han et al, 2022). Knowing the methods that traffickers use and the signs associated with them is an essential aspect of awareness (United State Department 2018a; 2018b).

Labour migration is an economic and social mobility strategy that benefits millions of people worldwide, yet human trafficking and the exploitation of low-wage workers are pervasive (Phillips and Mieres, 2014; Zimmerman and Kiss, 2017). For example, Jaffee and Bensman (2016) outlined dangerous work and labour actions in the logistics sector, characterised by low wages and unstable employment. While migration within and across national borders has been an economic and socially sustainable strategy, there is growing recognition that labour exploitation of migrant workers has become a problem of global proportions (Bloch and McKay, 2015; Weitzer, 2015).

2.4.1: Counter-trafficking measures to prevent human trafficking

At governmental level, measures are required to strengthen laws and policies that enhance enforcement actions against forced labour and human trafficking for strict border control (LeBaron et al., 2018). However, there has been minimal effort to critically evaluate many anti-trafficking programs and projects operating in global supply chains (Ford et al., 2012; Arun and Olsen, 2023). The Anti-Trafficking Monitoring Group (ATMG) observed that the UK had expanded its governance framework and commitment to building up information on the causes of trafficking (Sereni and Baker, 2018).

Alternatively, business organisations should develop methods to prevent human trafficking in their supply chains; Bernards (2017) highlighted measures businesses could take to guarantee that trafficking in human beings does not occur in their workplaces or suppliers. However, the share of trafficking for forced labour contributing to export varies across regions; hence the need for a targeted audit approach and counter-trafficking data collaboration, which collects case data on victims of trafficking (Benstead et al., 2020). The UK Department for International Development has been involved in various counter-trafficking interventions to tackle modern slavery in supply chains (Idris, 2017), but a unique action programme to counter trafficking in persons and forced labour is needed to enhance the positive development of global supply chains (Taylor et al., 2017; Arun et al, 2020).

Recently, studies have focused on documenting the role of international agencies and NGOs in counter-trafficking programs, laws, and policies (Ford et al., 2012). Figure 2.10 presents six ways to prevent human trafficking within business supply chains. According to Kersten et al. (2017), counter-trafficking interventions require real-time monitoring and evaluation to assess the impact of vulnerability to exploitation. Innovative approaches to eradicating modern slavery in supply chains include the implementation of policies in contracts with suppliers and businesses, the validation of training and awareness programs for employees to recognise signs of modern slavery, continual monitoring of trafficking risks and the provision of helplines to report trafficking incidents (Arun 2018; OSCE, 2018). Accordingly, an effective response to trafficking at the border needs a scale of statutory and non-statutory agencies to work together to exchange information and maximise their shared capability, because the government and law enforcement agencies cannot tackle human trafficking alone (Peter and Daphne, 2023).

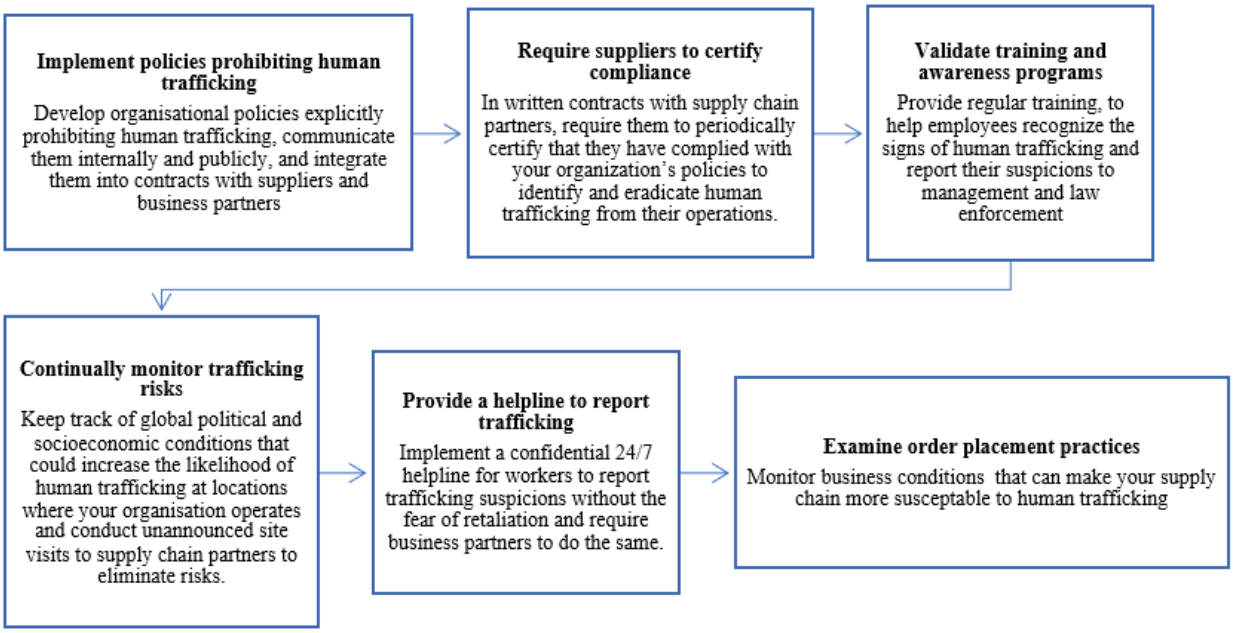


Figure 2:10Six ways to prevent human trafficking within business supply chains.
Source: Author's work as seen in OSCE (2018)

2.5: Modern Slavery Disclosure Measures

To address the issues of modern slavery, various legislative measures have been introduced such as the U.S.–California Transparency Act (2010) (Pinnington et al, 2023), the U.K. Modern Slavery Act (2015) (Saha et al, 2024), the Australian Modern Slavery Act (2018), and the German Act on Corporate Due Diligence Obligations in Supply Chains (2023) (Fayezi et al, 2025). The European Union has also recently enhanced corporate sustainability due diligence obligations, thereby strengthening human rights protections and justice for victims (Alzoubi et al, 2023). In their research Ahmed and Arun (2022) discussed the limits to disclosures in global supply chains. Nevertheless, this collective legislative effort must address the formidable challenge of uncovering modern slavery and other extreme forms of exploitation that are often obscured within intricate supply chains, in addition to focusing on remediation and prevention (Gold et al., 2015; Carvalho et al, 2025). LeBaron (2021) further notes that "forced labour is a porous category in the context of business and supply chains, meaning that it is challenging to isolate because workers can move in and out of forced labour and more minor forms of exploitation in relatively short periods of time." Moreover, the Nationality and Borders Act 2022 and the Illegal Migration Act 2023 have introduced changes that diminish protections for those who have survived trafficking (Madhavika et al, 2024).

The growth of human rights disclosure and due diligence law around the globe is a welcome development in business and human rights. The investigation by Guix and Lofti (2024) focused

on the ethical justification of modern slavery disclosures in the context of hospitality. Chambers and Vastardis (2021) examined the role of regulatory oversight in ensuring corporate accountability through human rights disclosure and due diligence laws. The call for due diligence laws is in response to intense civil society pressure and increased public awareness of the dreadful human rights impacts of business, including working conditions amounting to modern slavery (Sègbotangni et al, 2025). This awareness has led to governments making immense efforts to increase transparency for business and human rights in lead companies (Townsend et al., 2016). Accordingly, several countries around the world have introduced new legislation that pressurises organisations to increase the transparency of their supply chains, which should encourage the dissemination of sustainable practices up the chain (Stevenson and Cole, 2018; Ahmed et al, 2022). Multinational enterprises that engage in international trade can contribute to preventing and mitigating unfortunate human rights impacts by employing due diligence laws and disclosure measures across their supply chains (Lindsay et al, 2017; Shaila and Arun, 2023).

Nevertheless, the introduction of disclosure measures, legislation, and commitments regarding modern slavery in the global supply chain has proven ineffective over the years (Lang, 2018; Trautrims, 2020). While disclosure legislation obliges companies to provide publicly available information on specified dimensions of their operations, Bernards (2017) examined gaps and challenges in existing legislation and the politics governing modern slavery in global supply chains. Similarly, Villiers (2019) argued that disclosure measures introduced internationally and nationally only partially assist the effort to achieve sustainability. Vaughn et al. (2019) also found that the available modern slavery disclosure is yet to attain its regulatory objective of ensuring corporate transparency and the prosecution of unscrupulous actors in supply chains. However, the increase in cases of modern-day slavery has attracted the provision of legislation for the prevention and management of modern-day slavery in corporate supply chains (Irvin, 2016; O'Brian and Martin-Ortega, 2020).

Mandating disclosure of basic Corporate Social Responsibility (CSR) and sustainable labour practices allows the downstream supply chain to know how seriously companies take their obligation of not contributing to the worst forms of modern slavery (New, 2015; LeBaron and Rühmkorf, 2017b; Lang, 2018). However, the problem with the existing transparency mechanism is that in the absence of regulatory requirements on verifiability, organisations only respond when they run into trouble, which limits findings on what counter-trafficking

intervention works best to tackle modern slavery in business supply chains. Hsin et al. (2021) analysed the accountability, monitoring, and effectiveness of Section 54 of the UK's Modern Slavery Act (MSA). Similarly, Gadd and Broad, (2024) examined the challenges of existing legislation and mandatory disclosure to ascertain the level of transparency in business supply chains. Table 2.6 presents modern slavery and due diligence disclosure legislation to provide guidelines for the prevention of modern slavery, including forced labour, child labour, debt bondage, domestic servitude, sex slavery and human trafficking (Odia, 2018; Chris et al., 2020).

Table 2:6Ongoing modern slavery disclosures shaping the global supply chains

Year	Title	Journal Publication	Reference
2010	California transparency in supply chain act	An International Journal	New, S. (2015)
2010	The US Dodd-Frank act	Accounting, Organizations and Society	Islam, M. A., and Van Staden, C. J. (2018).
2015	The UK modern slavery act	Socio-Economic Review	LeBaron, G., and Ruhmkorf, A. (2017b)
2016	Germany's National Action Plan	Journal of Undergraduate Research Creativity	Buck, L, E., (2019)
2017	The French corporate duty of vigilance	Business and Human Rights Journal	Cossart, S., Chaplier, J and Beau de Lomenie, T. (2017)
2018	Australian modern slavery bill	Journal of Modern Slavery	McGaughey., F, (2021)
2019	Dutch child labour due diligence law	Ropes and Gray	Kerstholt, H. (2019)
2021	Supply Chain Due Diligence Act	Journal of Business Ethics	Islam, M, A., and Van Staden, C, J. (2021)

Source: Author's own illustration

2.6: Responding to the Impact of Modern Slavery on the Global Supply Chain.

The United Nations Guiding Principles (UNGPs) expect industry, multi-stakeholders or other collaborative initiatives based on human rights standards to provide a procedure whereby

victims of modern slavery can raise grievances safely and ensure remediation of any harm that a business organisation might have caused or contributed to causing a worker in its supply chain (Curtze and Gibbons, 2017; Benstead et al., 2020; Uddin et al, 2022). In addition, Focus on Labour Exploitation (FLEX, 2020) explored a new model for tracking labour abuse in global supply chains, including a worker-driven social responsibility. Accordingly, scholars and policymakers are trying to strengthen labour standards in supply chains and tackle the rise of unethical work, especially the business practices commonly described as forced labour. Finally, Sherman (2021) emphasised that to achieve its duty to respect human rights under the 2011 UNGP for business and human rights, a corporation must conduct human rights due diligence.

2.6.1: Grievance mechanism for victims

A *grievance mechanism* is an important platform by which a victim or stakeholder can escalate a human rights issue and lodge a complaint with a business enterprise to seek remedy (Crane, 2013). However, providing a grievance mechanism will reduce factors that make people vulnerable to human rights abuses, essentially increasing awareness among vulnerable individuals in society about the indicators of modern slavery, including building and enhancing networks that aim to share best practices, resources, and information on modern slavery.

An effective grievance mechanism can help a business identify its involvement in modern slavery practices, supporting human rights due diligence. Quraisha and Seedat-Khan (2023) suggested the development of an app with accessible information to workers and possibly a function to track hours and wages and report non-compliance anonymously. Where appropriate, using worker reporting technology can effectively monitor the condition of the worksite (Flynn, 2019). For instance, the media has helped expose the conditions in Boohoo's Leicester garment factories, the forced labour of Uyghurs in China's cotton industry, and child labour in Uzbekistan's cotton industry (Bhat, 2013; Taylor and Latonero, 2018; Quraisha and Seedat-Khan 2023).

2.6.2: Remediation to victims

The study by Farbenblum and Berg (2017) examined the role of the national fair work ombudsman in ensuring that migrant workers can access remedies for exploitation. Companies are tasked with the dual obligation of preventing human rights abuses in their supply chains and facilitating access to appropriate remedies for victims (Benstead et al., 2020). Similarly, the International Organization for Migration (IOM, 2018) has established guidelines to provide remediation for individuals affected by exploitation in extensive mineral supply chains. It is

essential for international organizations, especially those sourcing products from developing countries, to adopt effective remedial strategies that reach beyond the primary tier of their supply chains (Assan, 2023). For example, an "Integration Support Programme" has been initiated in northern England, demonstrating a sustained commitment to supporting victims and survivors of modern slavery and human trafficking, extending beyond the National Referral Mechanism (NRM) (Gardner, 2017; Gadd and Broad, 2024). Figure 2.11 depicts the benchmark performance model aimed at tackling modern slavery within the supply chain.

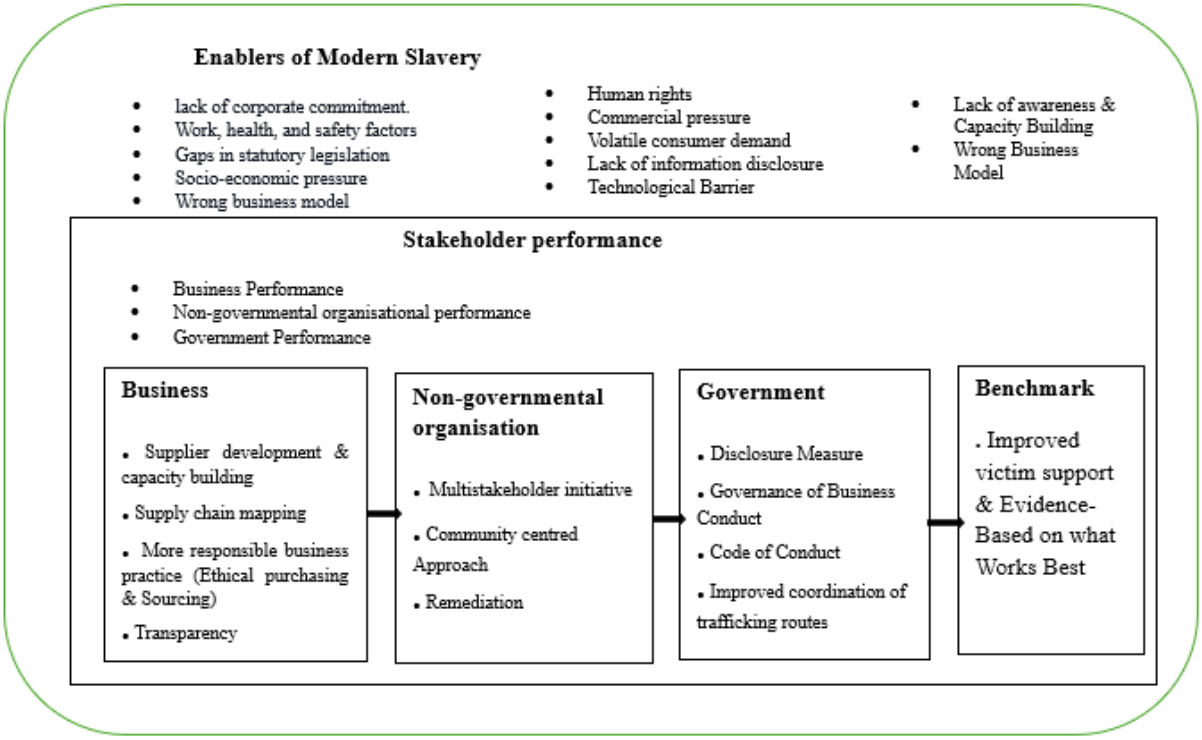


Figure 2:11Benchmark performance model
Source: Author

The identification of human rights concerns in the second and third tiers of supply chains calls for effective remedial actions for the workers impacted (ATMG, 2012; Curtze and Gibbons, 2017). A proactive strategy, which may include the formation of a working committee and a human resource clinic, is essential to prevent these issues from escalating into cases of modern slavery. Hicks (2021) developed an approach to combatting modern slavery in supply chains. It is important for leading companies to adopt a stakeholder-centred approach to remediation for human rights violations, rather than relying solely on traditional contract remedies such as termination (LeBaron et al., 2021). In their investigation Pesterfield and Rogerson (2024) explained the significance of responding to modern slavery risk. According to Ergon Associates (ETI, 2018), it is critical to provide remediation for affected labourers in supply chains and operations that lack visibility. Additionally, the voices of survivors play a crucial

role in understanding and addressing modern slavery issues, as they contribute valuable information for implementing corrective and preventive actions (Taylor and Latonero, 2018).

Scepticism by authorities and lack of awareness about these crimes may also be significant factors that can increase vulnerabilities to modern slavery. Thus, there is a need for capacity building for public authorities or law enforcement to improve the effectiveness of investigations and prosecution, as well as understanding and building trust in law enforcement and government authorities. Carrington et al. (2021) found that it is also essential to address consumer awareness and take action towards modern slavery. Furthermore, the UK has expanded its governance framework and is committed to building up information on the causes and types of trafficking (Sereni and Baker, 2018).

The assessment of key indicators related to modern slavery and human trafficking often utilizes the 'StoptheTraffik' app (stopthetraffic.org). In a systematic mapping effort, Khan et al. (2021) investigated the triple bottom line to understand how Industry 4.0 can support sustainable development. Furthermore, Bodendorf et al. (2022) established a pathway for a social supply chain management framework designed to pinpoint indicators and countermeasures against modern slavery in international supply chains. Haider (2017) remarked on the development of measures to address corporations' and governments' joint and shared responsibility to respect, protect and promote human rights in business contexts. OSCE (2018) provided model guidelines on government measures to prevent trafficking for labour exploitation in the supply chain. Alsamawi et al. (2014) highlighted that failure to encourage respect for human rights in the supply chain not only runs contrary to the UNGP, international labour conventions and labour laws in many countries, including the UK Modern Slavery Act 2015, but also to the very aims and values of public service. Monciardini et al. (2021) investigated how large companies constructed the meaning of compliance with the UK modern slavery legislation. These developments indicate a shift in police responses to modern slavery, as law enforcement has acknowledged the importance of collaborating with various organizations to enhance their effectiveness and improve outcomes in both criminal justice and public welfare.

2.7: Research Gaps.

Much research has been undertaken into responsible supply chains (Hoejmose et al., 2013), business ethics (Yusuf et al., 2014), manufacturing (Dubey et al., 2015) and distribution (Wichaisri and Sopadang, 2014). Research gaps from the literature are listed below.

1. Limited studies have linked benchmarking framework and socially sustainable supply chain management.
2. Limited studies have attempted to develop an awareness model and a comprehensive framework to empirically identify anti-slavery initiatives that will mitigate modern slavery in supply chains.
3. Recent studies provided limited primary research and cross-national comparisons about anti-slavery collaborative governance.
4. The current approaches to tackling slavery remain inconsistent and fragmented.
5. There is a lack of enforcement and adequate regulatory oversight which further enables modern slavery practices.
6. Essentially, there is a gap in the literature on the effectiveness of supply chain monitoring in developed economies to detect modern slavery in upstream supply chains.

2.8: Summary

This study reviews the current literature on modern slavery in the global supply chain with the aim of identifying enablers of a socially sustainable supply chain. The study uses an awareness framework to recognise modern slavery practices in the supply chain. Through an analysis of existing literature, the study identifies various aspect of modern slavery in the supply chain. This helps in understanding the practices and enablers of modern slavery in the global supply chain.

The study suggests a collaborative approach between governments, business, NGOs, academia, and social activists to tackle the challenge of modern slavery in the supply chain. it is essential for private and public sectors to engage deeply to identify and eradicate hidden modern slavery practices in the supply chain. Moreover, policymakers and civil societies can improve the criminal justice system and other regulatory measures, including changing laws to criminalise exploitation and building the capacity of law enforcement bodies. The literature indicates that interventions have generally proven ineffective. Therefore, there is a need to benchmark effectiveness by adopting best practices to mitigate modern slavery issues in supply chains. In addition, the benchmark methodology guides all researchers looking to improve current anti-slavery initiatives, especially interventions aimed at creating decent work.

Chapter 3: Methodology

Over the years, research has proven that modern slavery is challenging. Accordingly, current slavery data shows a lack of methodological rigour and transparency in which assessing the quality of research in this field of study is often complex. However, it is vital to ensure that the methodological approach adopted for this research remains clear and robust. This section presents and discusses the proposed methodology for collecting research data and the methods used to investigate the different factors and barriers affecting the prevention and management of modern slavery in global supply chains. Saunders et al. (2007) state that methodology is significant to any research study. As a procedure for data collection, it supports the type of research question, and the nature of the evidence gathered. Therefore, this chapter will explain the method adopted by this research, mentioning every component involved in conducting this research, including the design, population frame and sampling techniques.

3.1: Introduction to the chapter

The methodology serves as a contextual framework for researchers, providing a coherent and logical structure that aids in understanding the object of inquiry (Kumar, 2011). Pandey and Pandey (2015) emphasized that research acts as a significant instrument for advancing knowledge, with such advancement being attainable only through systematic analysis. MacDonald and Headlam (2020) noted that both quantitative and qualitative research methodologies are predominantly utilized in the fields of social sciences and humanities. To systematically address problems, it is crucial for researchers to embrace a philosophical perspective that outlines the study's work plan, encompassing strategy, process, logic, and methods to achieve the intended results (Mishra and Alok, 2017; Saunders et al., 2019). A research methodology articulates both the procedural aspects and the theoretical foundations of the research. Faryadi (2019) distinguishes between 'procedure,' which pertains to the theoretical analysis of the study, and 'method,' which refers to the systematic organization and measurement of the research. Disman et al. (2017) highlighted that a robust research methodology must include a research design that outlines the research plan, participant selection, ethical considerations, detailed sampling procedures, and the methods for data collection, processing, analysis, and construction. Figure 3.1 provides an overview of the methodological framework for this thesis, which will guide the development of the research methodology.

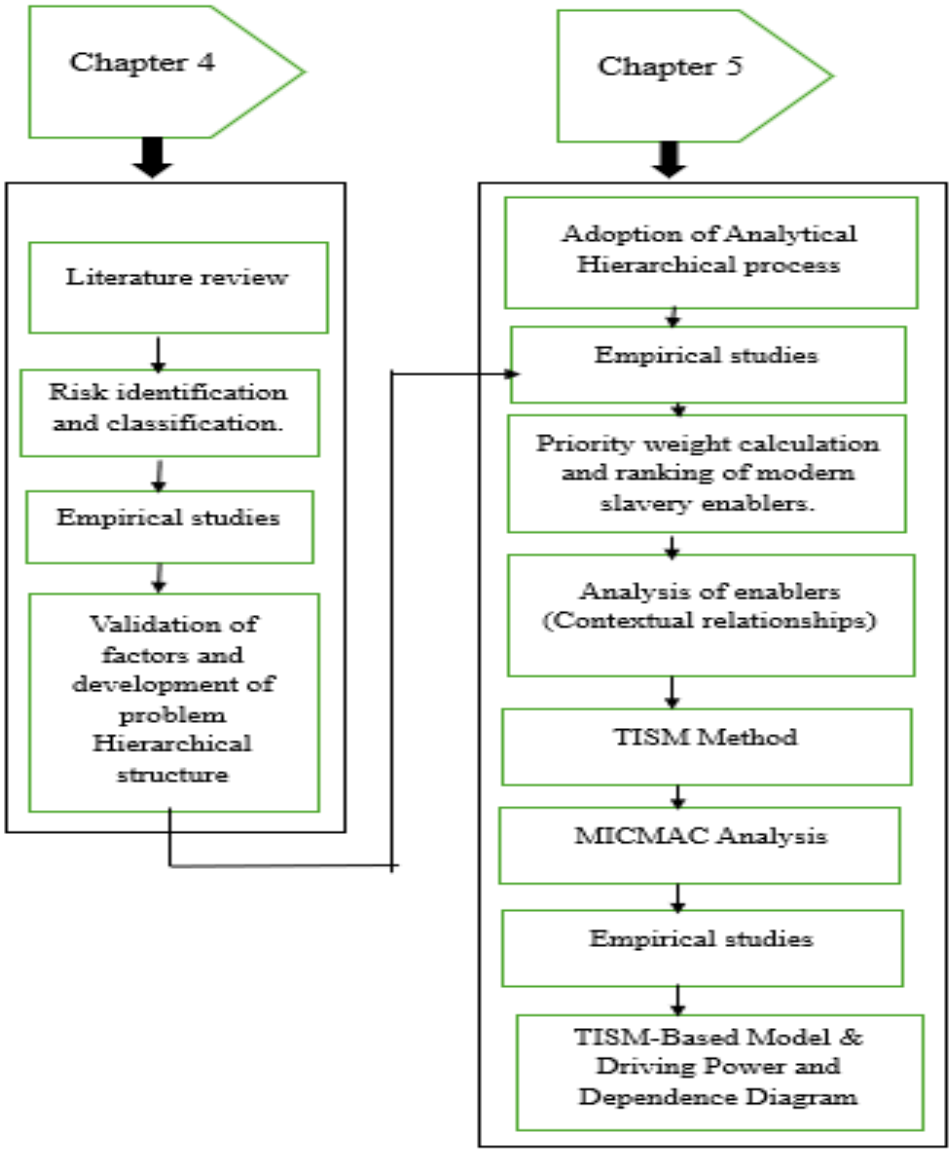


Figure 3:1Research methodology planning and process
Source: Author

3.2: Research Choice

This investigation recommends a robust adoption of a mixed methodology approach, where the researcher will gather and analyse both qualitative and quantitative data in a single-phase study (Sillanpää, 2015; Crawford and Wright, 2016; Giannakis et al., 2020). The decision to employ this mixed method, which integrates qualitative and quantitative techniques, is vital for the research's success. It involves triangulating information from multiple sources, including desk research, expert interviews, rapid assessments, qualitative and quantitative surveys, and interviews. Mixed-method research enables the collection, analysis, and synthesis of both

quantitative and qualitative data within one study to better comprehend a research problem (Osiesi et al., 2021).

This research involves key participants, including individuals from non-governmental organizations (NGOs), as well as experts and professionals within the relevant field. Their contributions are vital for ensuring a comprehensive evaluation of the results, leading to strong findings derived from both qualitative and quantitative research methodologies. The research design, which incorporates a diverse array of qualitative and quantitative techniques, is particularly advantageous as it allows for greater flexibility and adaptability to the evolving realities encountered in the field (Johnson and Onwuegbuzie, 2004; Johnson et al., 2007; Doyle et al., 2009; Harris and Brown, 2010; Onwuegbuzie and Corrigan, 2014). By integrating these two approaches, the study aims to achieve a holistic understanding of the research issue (Hafsa, 2019). Figure 3.2 illustrates a visual model of the mixed-method research sequence, facilitating the triangulation of findings and the synthesis of insights derived from all employed research methods.

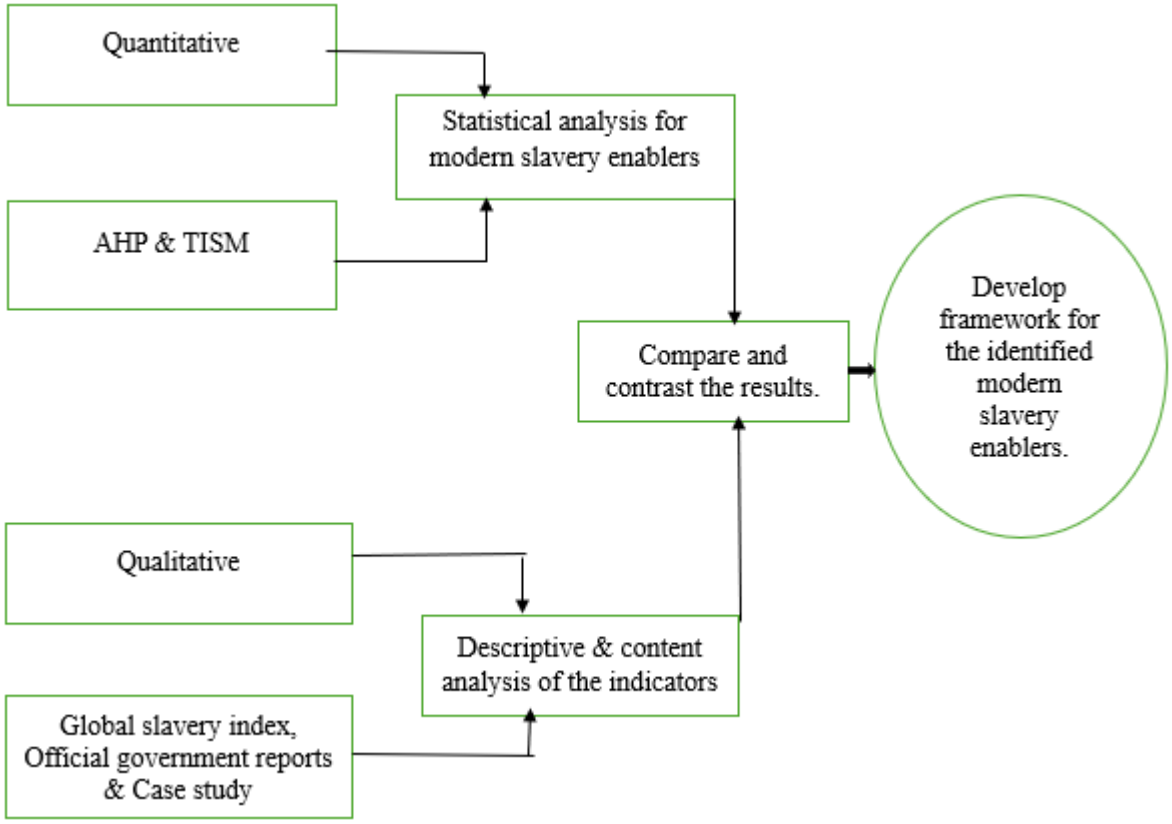


Figure 3:2Model of sequence of mixed method research
Source: Author work

3.2.1: Qualitative method

As noted by Soiferman (2010), qualitative research is characterized by the observation of individuals in their natural environments, focusing on qualitative phenomena. Saunders et al. (2016) further clarify that qualitative research methods are associated with "non-numerical" data, such as that collected through interviews. This research design aims to explore the motivations behind the investigation of the selected topic (MacDonald and Headlam, 2020). Qualitative (inductive) approaches are aligned with a naturalistic perspective and an interpretive understanding of human behaviour (Kothari, 2004), emphasizing the generation of new ideas (Montreuil et al., 2021). This qualitative method conceptualizes social reality as a fluid and emergent property shaped by individuals, acknowledging the complexity of the subject under examination. Therefore, this study will incorporate interviews with anti-slavery campaign organizations and experts on corporate compliance with the UK Modern Slavery Act, along with other narratives concerning current regulations on slavery disclosure.

3.2.2: Quantitative method

Quantitative research, with its focus on numbers and 'numerical' data collection, is a comprehensive approach to studying supply chains and all the actors responsible for production, manufacturing, and distribution in a sustainable way. This approach ensures that all aspects of the supply chain are considered, preventing the issues that arise from only talking to a particular group of supply chain experts. The use of quantitative data at the data collection stage provides baseline information, further enhancing the comprehensiveness of the research (Frels and Onwuegbuzie, 2013; Frels et al., 2014).

3.3: Data Collection Methods

This section provides a detailed overview of the methodologies employed for data collection and analysis in the study. A mixed-method research design is implemented to address the issue of modern slavery within supply chains. Specifically, the research will primarily utilize a survey strategy to gather empirical data. In the initial phase, a questionnaire survey will be conducted to evaluate the comprehensiveness of the modern slavery factors identified in the literature review. Additionally, this survey will serve to validate the classification method of modern slavery that has been applied. The second phase will involve a TISM questionnaire survey aimed at assessing and quantifying the interrelationships among the identified modern slavery factors. The first questionnaire will not only validate the modern slavery mitigation strategies derived from the literature but will also seek to extract additional strategies from

industry and academic experts. This approach will enhance the comprehensiveness and robustness of the research. Moreover, the study includes face-to-face interviews with various key informants, such as employers, labour brokers, buyers, intermediaries, government officials, NGO representatives, and academics. Frels and Onwuegbuzie (2013) illustrated how quantitative tools can enhance the rigor of qualitative research by employing psychometrically sound quantitative methods during qualitative interviews. The following section will introduce various data collection tools related to social sustainability in supply chains. Subsequently, the survey will be utilized to quantify or establish priority ratings for the identified modern slavery mitigation strategies, thereby contributing to the sustainability of the supply chain. A summary of all methods employed in the identification of modern slavery enablers within supply chains is presented in Table 3.1.

3.3.1: Data collection

The present research employs three main methods for data collection, as outlined by Kothari (2004): a literature review that encompasses both online and offline sources (secondary data collection), questionnaire surveys (primary data collection), and interviews (also primary data collection). Primary data collection involves obtaining new information from experts or through direct observation, whereas secondary data pertains to the utilization of pre-existing information (Disman et al., 2017). The investigation of modern slavery within global supply chains is still in its early stages, with limited studies focusing on the management of modern slavery risks in this context. Consequently, it is essential to implement a comprehensive and effective research design, particularly a mixed-methods approach that integrates both qualitative and quantitative methodologies.

This study incorporated insights from experts across a range of fields and geographical areas to ensure a well-rounded and credible representation of views on the topic. To qualify for participation, several criteria were set forth, as outlined in the research by Dinnesen et al. (2020). Firstly, participants were required to be professionals working in organizations relevant to the research focus, including non-governmental organizations (NGOs), anti-trafficking agencies, supply chain enterprises, civil service, maritime professionals, and academics. Those affiliated with academic institutions, particularly universities, were expected to have a varied skill set and to be actively involved in research related to the field. Additionally, a minimum of five years of professional experience was required, resulting in the exclusion of individuals with less experience.

Table 3:1A summary of data collection and analysis research methods

Steps	Approach	Purpose
Identification of influencing factors	Literature review	To uncover contemporary enablers of modern slavery that may significantly affect the performance of the global supply chain.
	Questionnaire survey	To assess the reliability and validation of the identified enablers and categorization methods, as well as to investigate the presence of additional factors not covered in prior research.
	Email and face to face interview	To delve deeper into the suitability of the established hierarchical model.
Assessment of modern slavery indicators	Benchmarking	To analyse a company's strategies regarding modern slavery in comparison to best practices. The Analytic Hierarchy Process (AHP) was utilized to facilitate the benchmarking process.
	Analytic Hierarchy Process survey (questionnaire)	To assess the relative importance of the identified enablers of modern slavery through pair-wise comparisons.
	Empirical studies (Semi-structured Interviews)	To further validate the developed model, ensuring its comprehensiveness.
Performance evaluation	TISM (Total Interpretive Structural Model) (Questionnaire survey)	To construct a theoretical framework and analyse the intricate relationships among the identified enabling factors that impede social sustainability in supply chains, contributing to modern slavery.

3.3.1.1: Research ethical considerations

The ethics department at Liverpool John Moores University granted ethical approval for this study after the submission of a completed ethics approval form. Prior to the collection of any empirical data, it is essential for the researcher to obtain consent, especially before distributing online surveys or conducting interviews. Participants were informed about the study's objectives and guaranteed anonymity (Onwuegbuzie and Corrigan, 2014; Montreuil et al., 2021). The research will implement various measures to safeguard the confidentiality and privacy of all participants, ensuring they are aware of the research's nature and their fundamental human rights. Furthermore, participants will receive comprehensive information regarding the study's aims, methodologies, and their rights to privacy, confidentiality, and withdrawal. This information will be presented on each participant's information page and consent form. The researcher will also ensure that access to the raw data is secured with password protection. Additionally, the researcher's contact information will be provided for any participant who wishes to express concerns or inquiries about the research.

Ethical considerations play a crucial role when engaging with vulnerable populations, including children and adults at risk of modern slavery (Datta, 2014). Moreover, the safety of both researchers and participants is a primary concern, compounded by practical issues such as language barriers and logistical arrangements (Tranfield et al., 2003; Saunders et al, 2016). The sensitive nature of modern slavery necessitates careful examination of the interplay between methodological transparency and ethical obligations, particularly regarding the protection and anonymization of sensitive information. In Chapter 2, a systematic literature review identified various factors linked to modern slavery, which served as a foundation for the initial phase of qualitative data collection and the formulation of a questionnaire survey. Ethical approval was obtained to ensure the questionnaire's content was appropriate and to secure participant consent. The research then advanced to verify the thoroughness of the identified factors related to modern slavery, ensuring that none were omitted, and to develop a valid structural hierarchy process diagram. The finalized questionnaire is included in Appendices II and III.

3.3.1.2: Research sampling

In survey research, a sample plays a vital role, consisting of individuals who effectively mirror the target population relevant to the investigation (Bryman and Bell, 2011). Researchers can

utilize a range of sampling methods, as outlined by Saunders et al. (2019), which include probability sampling techniques such as simple random, systematic, stratified random, and multi-stage cluster sampling, alongside non-probability sampling methods like convenience, purposive, snowball, and quota sampling. This study finds the number of interviews conducted to be sufficient, as the information collected allows for the formulation of meaningful and insightful conclusions. This aligns with the established qualitative research standard of "theoretical saturation." According to Saaty (2001), a limited sample size can be effective for research, especially when it comprises individuals with substantial expertise in the field. These experts typically possess comparable insights and knowledge. Consequently, the quantity of responses obtained was deemed adequate.

This research employs non-probability sampling techniques, specifically purposive and snowball sampling methods. According to Bryman and Bell (2007), non-probability sampling does not utilize random selection of participants, which is particularly beneficial for qualitative studies aiming for in-depth understanding (Saunders et al., 2019). In purposive sampling, researchers use their discretion to choose participants who are relevant to the study's goals. This targeted approach ensures that participants who can provide rich and detailed insights on relevant topics are included, thereby bolstering the research's reliability and validity (Saaty, 2001). In contrast, snowball sampling relies on existing networks of experts to identify and connect with additional specialists in the field (Saunders et al., 2009; Pandey and Pandey, 2015; Naderifar et al., 2017; MacDonald and Headlam, 2020). The research focuses on a target population comprising experts from non-governmental organizations, supply chain management, anti-slavery initiatives, and the retail industry. This sampling strategy aims to pinpoint appropriate settings, individuals, or events based on the significant insights they can contribute (Saunders et al., 2007; Naderifar et al., 2017).

3.3.1.3: Techniques for gathering data in the identification and categorization of factors related to modern slavery.

Investigating modern slavery involves navigating a range of methodological obstacles that are intricate and diverse. These obstacles include the necessity of ensuring the credibility, quality, and representativeness of data, alongside the challenges associated with accessing research participants. The initial phase in fostering a socially sustainable supply chain management process is the identification and categorization of modern slavery. Various techniques can be utilized to uncover instances of modern slavery, including the collection of historical data,

conducting interviews, and examining relevant documentation (Glasow, 2005). A number of studies have utilized literature reviews to identify risk factors present within supply chains (Barry, 2004; Wagner and Bode, 2006; Chari et al., 2020; Rogers et al., 2016). In Chapter 2, this research conducted a systematic literature review aimed at identifying factors that enable modern slavery, which could hinder the effective functioning of sustainable supply chains. As noted by Saunders et al. (2019), a literature review is a cost-effective and efficient research method, as it relies on existing data. A comprehensive literature review often produces valuable insights that can be integrated with data from other qualitative approaches, including expert perspectives.

In the wake of an extensive review, the research engaged a variety of experts from multiple fields to authenticate the identified factors of modern slavery and to examine any additional risk factors that may have been neglected. These experts were instrumental in the formulation and validation of the structural hierarchy process diagram. Their selection was guided by their professional experience, job roles, and qualifications relevant to the research topic. This study emphasizes the challenges of accurately representing policymakers involved in the issue and the potential tensions that may arise with local research partners, funding organizations, or civil society groups.

3.3.2: Empirical studies

Empirical research, which emphasizes direct or indirect observation and experimentation over theoretical assumptions, is a vital aspect of academic research (Jasti and Kodali, 2014). The primary goal of an empirical study is to authenticate information through empirical data. Hoejmose et al. (2013b) investigated the connection between business strategy and the management of supply chains in a socially responsible manner in their empirical study. Dan (2017) expanded on this practical framework, defining it as a methodical process of gathering and analysing data based on observational evidence. This research will perform multiple empirical studies to confirm and enhance the understanding of specific risk factors linked to modern slavery that may influence sustainable supply chains. Additionally, these empirical inquiries will facilitate the identification and evaluation of mitigation strategies that can advance social sustainability within the global supply chain in the face of labour exploitation. Chapters four and five will present the findings from these empirical studies, employing various questionnaire surveys for data collection. This perspective is illustrated through the empirical study of various techniques for identifying and tackling modern slavery within supply chains (Benstead et al., 2020). This research aligns with the viewpoint by providing an

analytical framework that helps to understand the interventions large organizations have implemented against modern slavery (Monciardini et al., 2019). Over time, many authors have pointed out the importance of establishing and validating empirical research methodologies in supply chains, underlining the necessity of a solid theoretical foundation as a key aspect of theory development (Dubey et al, 2017, Sushil et al, 2017; Ruben and Varthanan, 2019; Dubey et al 2021)

3.3.2.1: Questionnaire Survey and Construct Validation

A questionnaire survey is an effective tool for gathering data and conducting statistical analysis, consisting of a set of organized questions (Zhang et al., 2016). The research framework employed a well-defined questionnaire targeting various demographics within the UK, which boasts a diverse and significant participant pool. As noted by Saunders et al. (2019), this method can successfully engage a wide range of respondents through electronic means. Furthermore, it facilitates the rapid and cost-effective collection of both qualitative and quantitative information. Nonetheless, Wong et al. (2022) identified certain drawbacks associated with questionnaire surveys, including (I) the risk of incomplete responses and (ii) the limitation in obtaining more comprehensive data. To address these challenges, the authors suggest using a brief questionnaire with closed-ended questions.

This study opted not to depend on the existing modern slavery framework; instead, it engaged in multiple discussions with specialists in NGOs, academics and business organisation. to formulate a more realistic analysis of the common challenges faced by businesses in the global market. Nineteen expert responses were gathered through a survey questionnaire for this analysis. The research identified twelve main criteria and thirty-nine sub-criteria that are thought to have a significant effect on global supply chains. However, to effectively address various uncertain decision-making issues in real-world contexts, it is essential to manage the vagueness and uncertainty present in the environment (Young, 2016). The uncertainties in decision-making include computational inaccuracies, ambiguity in data representation, and vague expressions such as “neither agree nor disagree” and “nearly equal importance,” which are frequently used in everyday discussions. The structured questionnaire was designed to address modern slavery issues in global supply chains and utilized closed-ended questions. This approach guarantees that respondents can easily and consistently interpret the questions, and the questionnaire's design allows for efficient tabulation of the findings.

To assess the identified factors contributing to modern slavery within supply chains, a questionnaire was created for pilot testing aimed at construct validation, utilizing the Cronbach alpha coefficient, as detailed in Chapter 4. The reliability of this research hinges on the effective implementation of the survey instrument. It is essential that the questionnaire undergoes pilot testing with experts to guarantee that respondents interpret it consistently. The methodology applied in this study evaluates the internal consistency and reliability of the survey items via the Cronbach's alpha coefficient, while the validity of the identified criteria is corroborated through expert evaluations.

3.4: Analysis process

Data analysis is essential to evaluate interdependent relationships through a visual structural model (Trigueros et al, 2017). Respondents were approached through email or phone to determine their interest in participating in the survey. A link to the online questionnaire was subsequently provided via the (JISC online survey) or through email. Before the final questionnaire was disseminated for data collection, the study undertook a content validity evaluation to ensure that the questionnaire was relevant, straightforward, and clear. The initial draft was sent to the supervisory team for their review and feedback. Revisions were made based on their suggestions, leading to the questionnaire's final approval. A pilot study was then conducted to assess the questionnaire's robustness. Additionally, ethical approval was secured to validate the questionnaire's content and to obtain the necessary expert consent. As a result, the final pairwise comparison questionnaire (see Appendix II and III) was developed and distributed to the appropriate sample.

The analysis of the results was performed using the AHP software from (OnlineOutput.com) on November 5, 2023. This approach has been employed in several studies (Saaty and Vargas, 2012; Young, 2016; Thomas et al., 2017; Taherdoost, 2017). A total of 275 questionnaires were distributed, resulting in 19 valid responses collected over a span of three months. While the research obtained 25 responses overall, 6 were discarded due to being incomplete or not fulfilling the study's inclusivity standards. According to Saaty (2001), a small sample size can still be effective for research, provided it includes knowledgeable experts in the relevant field. These experts often share aligned beliefs and insights, making the number of valid responses adequate.

In alignment with the research conducted by Kwak et al. (2018) and Shibin et al. (2018), this study utilized face-to-face interviews to identify and confirm twelve factors that contribute to

modern slavery within global supply chains. Experts with substantial knowledge of modern slavery in these contexts were engaged to deepen the understanding of the interrelated factors that enable modern slavery. The inclusion of specialists from various disciplines aimed to mitigate individual researcher bias, as noted by Oppermann (2000). These experts received guidance on the effective application of the TISM technique in their responses. This methodology has been previously utilized in multiple studies (Dubey et al., 2015; Shibin et al., 2017; Rajan et al., 2020; Singh et al., 2022). The research was conducted in three distinct phases: (1) administering the questionnaire survey, (2) implementing the TISM technique, and (3) analysing the results. Each of these phases will be elaborated upon in the following sections. Table 3.2 summarizes the distribution of the experts who participated in the opinion survey, highlighting their backgrounds, geographical locations, and areas of expertise.

Table 3:2Expert profile for TISM questionnaire

Experts	**Method**	**Expert profile/ designation**	**Years of experience**	**Category of organisation**
Expert 3	Interview	Assistant manager marine operations	11-15 Years	Maritime Port
Expert 4	Interview	Local maritime port service operator	6-10 Years	Maritime Port
Expert 6	Interview	Crewing Officer	6-10 Years	Shipping Transport
Expert 13	Interview	Director	11-15 Years	Retail Business
Expert 14	Interview	Chief Executive officer	16-20 Years	Retail Business

Source: Author

The insights gathered from the five experts who were interviewed have been integrated into the TISM analysis. To further validate the findings of the TISM, a statistical analysis based on collective opinion is proposed as a continuation of this research.

3.4.1: Method of Total Interpretive Structural Model

This research has established a theoretical framework for social sustainability, supporting its findings using TISM, an advanced qualitative modelling technique that represents a modern evolution of the traditional ISM, as highlighted by Pfohl et al. (2011) and Dubey et al. (2017). Sushil (2012) examined the intricate relationships among various enabling factors that obstruct social sustainability within supply chains, which can lead to issues such as modern slavery. The necessity for a methodology that reconciles deductive (quantitative) and inductive (qualitative) approaches has prompted the adoption of TISM. This technique is fundamentally employed to create a structural model and to formulate theoretical insights. Dubey et al. (2015)

investigated the advantages of developing a theory of green supply chain management utilizing the TISM framework. The essential phases of TISM can be enumerated in this order: collecting literature related to the topic; reviewing the collected works to identify the relevant variables; elucidating the VAXO matrix assignment rules to the experts; creating the SSIM with the active involvement and cooperation of domain experts; converting the SSIM into a binary matrix, and then into a final reachability matrix, taking into account the transitivity property (Sushil, 2017; Ruben and Varthanan, 2019). This is further elaborated in section 3.4.1.1.

There are several established methods for constructing theories, such as active research, grounded theory, systems theory, ethnographic studies, and case study approaches (Gorzeń-Mitka, 2019). However, these traditional methods often fail to deliver the high-quality theory development necessary for mixed-method research in the realm of social sustainability. Consequently, there is an increasing recommendation for the implementation of TISM as an alternative (Sharma et al., 2016). TISM is an enhancement of the ISM framework (Warfield, 1974; Malone 1975). As noted by Sushil (2009), ISM is a methodology that converts vague and poorly articulated rational models of various systems into clear and precise models. Both ISM and TISM employ mathematical techniques based on pair-comparison to create a hierarchical interrelationship among elements. ISM elucidates the contextual relationships of nodes in relation to the problem, whereas TISM offers a more accurate representation of both the nodes (which signify 'what') and the links (which signify 'how' and 'why') (Foli, 2022).

Other notable applications of TISM include the structural assessment of potential risks in supply chains (Pfohl et al., 2011). This highlights the role of TISM in assisting risk managers to identify and understand the interdependencies among supply chain risks at various levels, including third-party logistics (3PL), first-tier suppliers, and subcontractors. The interdependencies of these risks will be extracted and organized into a hierarchical format to illustrate subsystems of interrelated variables, each characterized by specific driving power and dependency (Dubey et al., 2015). Sharma et al. (2021) applied a fuzzy ISM to model obstacles in the cold supply chain. Additionally, Shibin et al. (2017) discussed sustainable supply chain performance through a TISM framework. The TISM model has also been utilized as a risk-based integrated decision-making tool for the sustainable selection of suppliers in the supply chain (Wu et al., 2021).

Numerous practical issues are already leveraging the TISM technique. For instance, Ruben and Varthanan (2019) applied TISM to uncover various barriers that obstruct the implementation

of circular supply chains in manufacturing sectors. Furthermore, the TISM technique is adept at selecting the most suitable suppliers by evaluating social, environmental, and economic dimensions of sustainable development alongside safety regulations. Jain et al. (2018) formulated a conceptual framework and interpretive structural model to evaluate innovation in universities, higher education institutions, and technical schools using an integrated systems perspective. Figure 3.3 illustrates the multiple steps involved in the TISM modelling process.

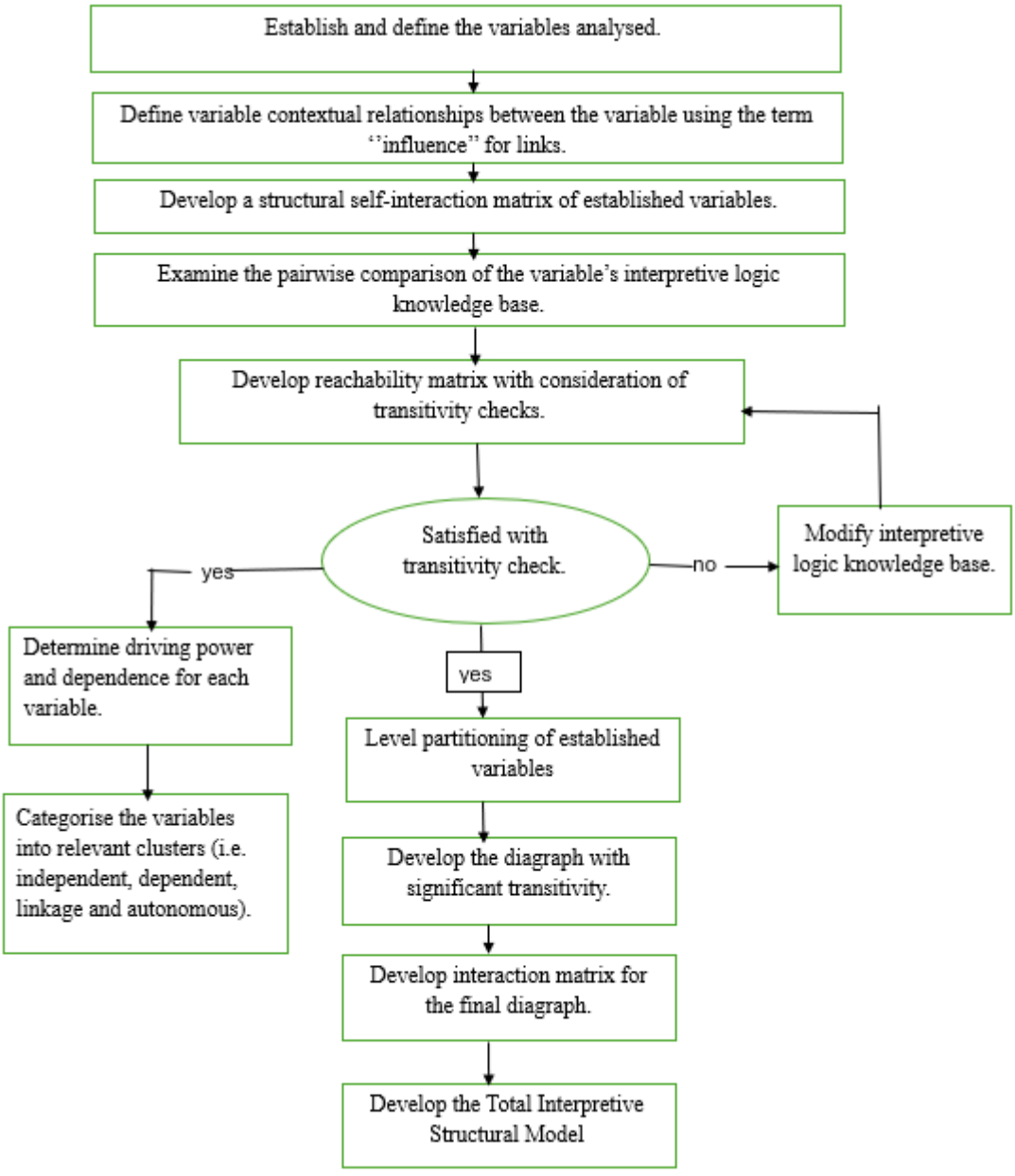


Figure 3:3TISM Analysis Process

Source: Author's work as highlighted in Mathivathanan et al. (2021)

Sushil (2012) highlighted the inherent limitations of the ISM model, particularly regarding its ambiguity, and proposed TISM as a viable alternative for theoretical development, which has garnered considerable interest among researchers (e.g., Prasad and Suri, 2011; Sandbhor and

Botre, 2014; Yadav and Sushil, 2014; Dubey et al., 2015; Foli, 2022). Nevertheless, TISM has yet to be utilized within the realm of social sciences. To fill this gap in existing literature, this study recognizes the TISM methodology as a promising scientific approach. Jena et al. (2017) characterized TISM as a technique for constructing a hierarchical model through the synthesis of various pairwise comparisons. The objective of this study is to assist decision-makers in identifying the factors that contribute to modern slavery within the global supply chain.

3.4.1.1: Steps in Applying TISM

1). Identification and definition of elements: The initial phase of TISM involves the identification and definition of the elements that will be modelled in terms of their interrelationships. This identification process is carried out by examining existing literature and consulting with experts through a structured questionnaire. This questionnaire systematically pairs each element with all other elements. To pinpoint the elements pertinent to the issue at hand, a focus group or survey-based problem-solving method may be employed (Sushil, 2005a). The process begins with recognizing the relevant elements associated with the problem, which can be achieved through primary research methods such as surveys and interviews, or through secondary research techniques like desk research, as illustrated by Mathivathanan et al. (2021).

2). Establishing Contextual Relationships: The determination of contextual relationships is largely contingent upon the framework selected for the study, which encompasses aspects such as priority, intent, process, and enhancement of attributes. A paired comparison method is employed to ascertain the contextual relationships among the factors. The research delineates the interconnections between elements based on intent, priority, dependence, and attribute enhancement (e.g., A impacts/enhances/changes B), underpinned by logical reasoning that elucidates the influence of one element on another. This process fosters a suitable relationship among the identified elements by defining the contingent relationships between the variables. Dubey and Ali (2014) underscored the importance of explicitly illustrating these contextual relationships among the elements at this juncture. The relationships may vary in type, including comparative, influential, neutral, or temporal.

3). Interpretation of relationships: The interpretation of relationships is articulated through a matrix, as noted by Warfield (1974), which establishes the pair-wise connections among the elements of a system. At this juncture, experts must determine which element exerts

influence over another. In the context of TISM, clarity regarding these relationships is achieved by specifying how one element can affect or enhance another. This interpretation facilitates a deeper understanding of the relationships involved. A Structural Self-Interaction Matrix (SSIM) is constructed for all elements, allowing for the establishment of pair-wise relationships within the system. Experts are tasked with identifying which elements induce changes in others. By examining the contextual relationships of each variable, the presence and direction of influence between any two sub-elements (i and j) are scrutinized. Here, a contextual relationship characterized by 'influence' is selected for analysis. To enhance the contextual relationships among variables, expert insights derived from management strategies, such as brainstorming, are utilized to articulate the interconnections between various factors, thereby promoting coordination and responsiveness within the supply chain. Four symbols are employed to represent the influence of the relationship between elements i and j.

V – for the influence from $i\ to\ j$ but not in both directions.

A – for the influence from $j\ to\ i$ but not in both directions.

X – for both directions: influence from $i\ to\ j$ and $j\ to\ i$; and

O – if the influence between the elements does not appear valid.

4). Reachability matrix and transitivity test: The final reachability matrix is updated by integrating the transitive relationships among the variables. The driving power of a specific factor is defined as the total number of factors it can influence, including itself, while dependence refers to the total number of factors that can influence it. Factors are categorized into four types: autonomous, dependent, linkage, and independent (driver) factors. The reachability matrix is constructed using an interpretive logic knowledge base, where a "Y" entry code corresponds to a binary 1, and a "N" entry code corresponds to a binary 0. Regarding the reachability matrix and transitivity verification, after responses are provided as either YES or NO, with justifications for each answer, 'Yes' responses are represented by the binary digit 1, while 'No' responses are represented by 0. The resulting matrix is then assessed for transitivity. The entries marked as 0 in the initial reachability matrix are evaluated for potential transitivity between the compared pairs. A reachability matrix will be developed based on the established SSIM and will undergo transitivity checks. Jain et al. (2018) noted that the SSIM is converted into a

binary matrix, referred to as the initial reachability matrix, by replacing the original symbols V, A, X, and O with 1 or 0.

Interpretive logic of pair-wise comparison: Each element is assessed in relation to all other elements. Sushil (2017) indicated that if element A is linked to B, and B is linked to C, it can be inferred that A is linked to C. The SSIM that is created will formulate a reachability matrix to verify transitivity. This SSIM is then restructured into a binary matrix, known as the initial reachability matrix, by replacing the main symbols V, A, X, and O with either 1 or 0. The criteria for these substitutions are as follows:

(I) If the (i, j) entry in the SSIM is V, subsequently, the (i, j) entry in the reachability matrix becomes 1, and the (j, i) entry becomes O.

(II) If the (i, j) entry in the SSIM is A, subsequently, the (i, j) entry in the reachability matrix becomes O and the (j, i) entry becomes 1.

(III) If the (i, j) entry in the SSIM is X, subsequently both the (i, j) and (j, i) entries of the reachability matrix become 1.

(IV) If the (i, j) entry in the SSIM is O, subsequently, both the (i,j) and (j, i) entries of the reachability matrix become O.

5). Level determination by partitioning reachability matrix: The process of determining levels through the partitioning of the reachability matrix aims to aid in the development of the directed graph based on the reachability matrix (Prasad and Suri, 2011). The reachability set R (Si) includes the element itself along with other elements that can be accessed from Si. Level partitioning is conducted to analyse the arrangement of elements according to their levels. At this stage, the variables are divided into various iteration levels. The partition matrix is composed of reachability, antecedent, and intersection sets. For each factor, the rows and columns from the final reachability matrix are examined. Elements in the rows marked with the number 1 are included in the reachability set, while columns marked with the number 1 are included in the antecedent set. The standard numbers that appear in both sets are included in the intersection set. Factors that share the same elements in both the reachability and intersection sets are designated to the first level and are excluded from consideration in subsequent levels. This procedure continues until all factors are allocated to their respective levels.

Conversely, the antecedent set A (Si) includes the element in question along with other elements that may exert influence on it. Subsequently, an intersection is formed between the reachability set and the antecedent set (R(Si) ∩ A(Si)). The element for which the reachability set, and the intersection set coincide is positioned at the highest level within the TISM hierarchy. This top-level element does not affect any elements situated above it in the hierarchy. Once the top-level elements are determined, they are excluded from consideration among the remaining elements. This procedure is repeated until the hierarchical levels for all elements are established.

6). Develop digraph: The illustration of a digraph with transitivity links is presented. According to Hasan et al. (2019), the foundational digraph that incorporates transitivity links can be derived from the conical representation of the reachability matrix. To construct a digraph for the elements, all components are organized at their designated levels, and direct connections are established based on the relationships indicated in the reachability matrix. This graphical representation displays the elements as nodes and their interconnections as links. The nodes symbolize the elements, while the links, depicted as arrows (either unidirectional or bidirectional), convey the nature of the relationships. At this stage, only the essential transitive links are preserved. The digraph is structured with factors positioned at the top level, followed by subsequent levels. For clarity, the final digraph should be sketched in accordance with the affiliations identified in the reachability matrix, ensuring that transitive links are excluded. If a relationship exists between risk and j, it is illustrated by an arrow directed from i to j.

7). Total interpretive structural model (TISM): The construction of the Total Interpretive Structural Model (TISM) involves the use of a digraph and an interpretive matrix to represent the identified elements. The TISM model is developed by interpreting the elements and their interconnections, with interpretations noted alongside the respective links in the structural model. Sushil (2018a) investigated methods for assessing the correctness of total interpretive structural models. This process results in a comprehensive interpretation of the structural model, as it considers both nodes and links. The digraph is then transformed into a TISM, which allows for the evaluation of conceptual inconsistencies. This transformation includes substituting statements for the element nodes. Finally, a review of the TISM model is performed to check for any conceptual inconsistencies.

1. MICMAC analysis. MICMAC stands for Matriced'Impacts Croisés-Multiplication Appliquée a'un Classement, which means "cross-impact matrix multiplication applied to classification". The object of the MICMAC analysis is to assess the driving power and dependence of each element (Mandal and Deshmukh, 1994; Saxena and Sushil, 1990). All elements have been classified into four categories based on their dependence and driving power:

(1) Autonomous elements, which have weak driver power and weak dependence.

(2) Dependent elements, which have weak driver power and strong dependence.

(3) Linkage elements, which have both strong driving and dependence power.

(4) Independent elements, which have strong driving power but poor dependence power.

3.4.1.2: Characteristics of TISM, as explained by Ruben and Varthanan (2019).

1. TISM is interpretive, as the expert group's opinion determines how the different elements are connected and why they should connect in that way.
2. TISM is a modelling technique, as a digraph model depicts the contextual relationships, entire structure, and interpretation.
3. TISM assists in portraying a complicated system more simply.
4. TISM is exploited to transform imprecise and feebly articulated rational models of different systems into unambiguous models, facilitating the answering of what, why, and how in theory building.
5. TISM provides interpretation for both the links and nodes in the structural model.

3.4.2: Method of Analytical Hierarchical process

The Analytic Hierarchy Process (AHP) is considered dependable in contemporary contexts as it offers optimal solutions for a variety of intricate multi-criteria decision-making challenges (Saaty, 2008). Introduced by Saaty in 1980, AHP has found applications across numerous fields, as it evaluates intangible factors through expert judgments facilitated by pairwise comparisons. Furthermore, AHP proves advantageous when multiple criteria are involved (Saaty, 1987). This research employed empirical techniques to gather primary data regarding indicator weighting and their interconnections. The data obtained through AHP serves as a foundational resource for industries, central governments, or regional authorities to effectively

identify the factors contributing to modern slavery within global supply chains. Figure 3.4 illustrates the AHP methodology utilized in this study to assess the importance of the identified risks associated with modern slavery. The research was conducted in four distinct phases: (1) organizing a questionnaire survey, pilot study, and expert selection; (2) data collection, description, and analysis; (3) evaluating the robustness of the proposed methodology; and (4) interpreting the findings.

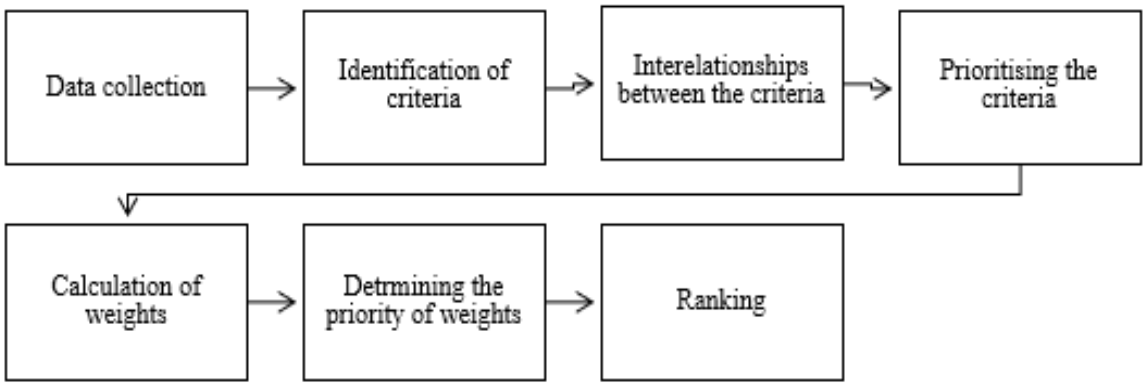


Figure 3:4Process of AHP Technique
Source: Author's own illustration as seen in Siekelova et al. (2021)

The AHP method serves as an essential instrument in academic research, evaluating a defined array of qualitative and quantitative criteria. It achieves this by breaking down complex issues into a hierarchical model that includes goals, criteria, sub-criteria, and alternatives (Thomas and Vargas, 2012; Siekelova et al., 2021). The central purpose of AHP is to rank various alternatives in relation to a specified goal, facilitating the identification of the optimal choice among available options, especially in contexts where decision-making involves numerous experts and criteria (Taherdoost, 2017). AHP focuses on identifying inconsistencies and measuring their extent, as well as analysing dependencies within and between the groups of elements in its framework. The comparisons can be derived from actual data or a primary scale that represents the relative strength of preferences and emotions. In this study, the AHP method, as described by Saaty (2008), serves as a measurement theory that facilitates pairwise comparisons and relies on expert judgments to establish a priority scale. Through the AHP approach, the significance of various attributes is derived from a process of paired comparisons (Kunz, 2010). As illustrated in Table 3.3. traditional AHP methodologies utilize a crisp numerical range (e.g., 1-9) as determined by multiple experts to assess the importance of different criteria.

Table 3:3Scale of preference between two parameters in AHP

Intensity of importance	**Definition**	**Explanation**
1	Equally	Two factors contribute equally to the objective
3	Moderately	Experience and judgment slightly favour one factor over the other
5	Strongly	Experience and judgment strongly favour one activity over the other
7	Very Strongly	Experience and judgment very strongly favour one over the other
9	Extremely	The evidence favouring one over another is of the highest possible order of affirmation
2,4,6,8	Intermediately	Used to represent compromises between the preferences in weights 1, 3, 5, 7 and 9
Reciprocals($1/\boldsymbol{x}$)	Opposites	Used for inverse comparison. If the numeric value of the 1st item compared to the 2nd item is x, then for the 2nd item in comparison to the 1st item, the opposite value to x will be attributed.

Source: Saaty (2008).

As noted by Zuraidi et al. (2018), the AHP approach identifies the most relevant indicators, synthesizes the insights of multiple experts based on various criteria, and establishes a measurement scale to prioritize these indicators, while also considering the inconsistency values of each respondent's input. However, to fill out a pairwise comparison questionnaire, an expert must apply their expertise to evaluate which of two criteria is more significant and to what degree (Maleki and Zadeh, 2012; Young, 2016; Oyamaguchi et al., 2019).

The study's questionnaire comprised 39 statements, with experts instructed to evaluate each statement on a 9-point Likert scale, ranging from very unimportant to very important. This method was selected for its accessibility and efficiency in gathering comprehensive and detailed insights from participants who possess relevant knowledge, expertise, and experience in the field. Participants were chosen based on four criteria as posited in Brunnelli (2015): (1) significant experience in human rights, shipping, procurement, transportation, contract, and supply chain management within their organizations; (2) understanding of modern slavery legislative requirements and their implications; (3) their organizational roles; and (4) their geographical locations, as detailed in Table 3.4. Field (2013) notes that the nine-point Likert scale is a widely respected measurement tool frequently used in survey research to quantify responses. This scale enables participants to express their views clearly and thoroughly on specific issues, facilitating a robust consensus (Ishizaka and Labib, 2009; Saunders et al., 2019).

Table 3:4Expert profile for AHP questionnaire

Experts	**Method**	**Expert profile/ designation**	**Years of experience**	**Category of organisation**
Expert 1	Email	Project Manager	11-15 Years	Non-governmental organisation
Expert 2	Email	Network Development manager	11-15 Years	Non-governmental organisation
Expert 3	Email/ Interview	Assistant manager marine operations	11-15 Years	Port
Expert 4	Email/ Interview	Local port service operator	6-10 Years	Port
Expert 5	Email	Chief Officer	6-10 Years	Shipping Transport
Expert 6	Email/ Interview	Crewing Officer	6-10 Years	Shipping Transport
Expert 7	Email	Captain	11-15 Years	Shipping Transport
Expert 8	Email	Lecturer	6-10 Years	Education
Expert 9	Email	Professor	>20 Years	Education
Expert 10	Email	Development Associate	6-10 Years	Non-governmental organisation
Expert 11	Email	Executive Officer	11-15 Years	Non-governmental organisation
Expert 12	Email	Cyber security engineer	11-15 Years	Tech
Expert 13	Email/ Interview	Director	11-15 Years	Retail Business
Expert 14	Email/ Interview	Chief Executive officer	16-20 Years	Retail Business
Expert 15	Email	Recruitment Officer	16-20Years	Warehouse
Expert 16	Email	Sales Director	11-15 Years	Retail Business
Expert 17	Email	Senior Lecturer	11-15 Years	Education
Expert 18	Email	Professor	>20 Years	Supply chain
Expert 19	Email	Office manager & Operations	11-15 Years	Non-governmental organisation

Source: Author

In total, 275 questionnaires were distributed on 5th November 2023, with 19 valid replies in three months, as shown in Table 3.5. The research garnered 25 responses, of which 6 were excluded as they were either incomplete or did not fulfil the study's inclusivity criteria. Saaty (2001) posits that a small sample size can be effective for research purposes, provided it consists of knowledgeable experts in the field. Such experts often have aligned beliefs and insights, thus rendering the number of acceptable responses satisfactory.

Table 3:5Questionnaire return details

Method of distribution	No of distributed questionnaires	Questionnaires returned	Invalid replies	Valid replies
email	180	25	6	19
LinkedIn	80			
Face to face	15			
Total	275			

Source: Author

3.4.2.1: Steps in analysing AHP

In the first step, a complex problem is partitioned into a hierarchy with a goal as an objective, criteria at layers and sub-criteria at sub-levels like a family tree (Saaty, 1980, 2008; Kunz, 2010). In more complex problems, more layers can be added. The second step begins with a prioritisation procedure to establish the relative importance of criteria within each level. The hierarchy evaluation is based on a pairwise comparison to assess the decision-making preferences of the second level to the lowest one. In the last step, the relative weights for each matrix are found and normalised (Taherdoost, 2017). In the application of AHP, (Kunz, 2010) quantified judgments are made on pairs of attributes (and) in the form of an n-by-n matrix (B). In this, the entries are defined by the following entry rules:

Rule 1 If a_{ij} = α, then $a_{ji} = {}^{1}/_{a}$ 1/α, α ≠ 0

Rule 2 If Ai is judged to be of equal relative importance as A_j, then $a_{ji} = a_{ji} = 1$

Equation 3.1 shows the constitution of comparison matrix B using a_{ij}

$$\mathbf{B} = a_{ij} = \begin{bmatrix} \mathbf{1} & \boldsymbol{a_{12}} & \dots & \boldsymbol{a_{1n}} \\ {}^{\mathbf{1}}/_{\boldsymbol{a_{12}}} & \mathbf{1} & \dots & \boldsymbol{a_{2n}} \\ \vdots & \vdots & \dots & \vdots \\ {}^{\mathbf{1}}/_{\boldsymbol{a_{1n}}} & {}^{\mathbf{1}}/_{\boldsymbol{a_{2n}}} & \dots & \mathbf{1} \end{bmatrix}$$

$$\text{i,j= 1,2,3, …, n} \qquad (3.1)$$

Each a_{ij} represents the relative importance of attribute A_I to attributeA_j.

The research analysis displays the quantified judgments of comparison on pair (A_I, A_j) as the numerical entry a_{ij} in the matrix B. The next step is to assign the *n* contingencies $A_{1,}A_2$, …,

and a set of numerical weights (W_1, W_2, …, W_n) that reflect the recorded judgements (Wang and Raz, 1991; Kunz, 2010). The analysis weights can be calculated by applying equation 3.2 where a_{ij} represents listing of row *i* and column *j* in a comparison matrix of order *n* (Saaty, 1977; Zahir, 1999):

$$\boldsymbol{w_k = \frac{1}{n} \sum_{j=1}^{n} \frac{a_{kj}}{\sum_{i=1}^{n} a_{ij}} (k = 1, 2, 3, \ldots, n)} \quad 3.2$$

The weight vector of the comparison matrix prepares the priority order and determines the consistency of the pairwise judgement. The AHP measures the consistency of the pairwise comparisons by computing a Consistency Ratio (CR) (Saaty, 2008; Kunz, 2010; Saaty and Vargas, 2012). If the CR has a value less than 0.10, the pairwise judgement is considered consistent. A decision maker should cross-examine pairwise judgements if the resultant value exceeds 0.10 (Saaty, 1980). Hence, the judgement process should be revised if the result proves inconsistent. An attribute of the AHP is the ability to provide a consistency measure and reduce the integral inconsistency in the judgement process. Equation 3.5 shows the equation that can be used to calculate the CR.

The CR value is calculated by the following equations (Anderson et al., 2008):

$$\boldsymbol{\lambda_{max} = \frac{\sum_{j=1}^{n} [(\sum_{k=1}^{n} W_{ka} a_{jk})/W_j]}{n}} \quad (3.3)$$

$$\mathbf{CI} = \frac{\boldsymbol{\lambda_{max} - n}}{\boldsymbol{n-1}} \quad (3.4)$$

$$\mathbf{CR} = \frac{\boldsymbol{CI}}{\boldsymbol{RI}} \quad (3.5)$$

In formulae 3.3, and 3.4 *CI* is the Consistency Index, *RI* is the average random index (Table 3.6), *n* is the matrix order and λ_{max} is the maximum weight value of the *n-by-n* comparison matrix B.

Table 3:6Value of RI versus matrix order

n	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.54

Source: Saaty (1990)

3.4.2.2: Characteristics of AHP, as highlighted in Saaty (1987), Siekelova et al. (2021) and Liu et al. (2023)

1. AHP decomposes an unstructured problem into a reliable hierarchical structure.
2. The hierarchy structure can be adjusted to fit many different sizes of problems.
3. The process of collecting judgements is not data comprehensive. Judgements can be obtained from a select group of qualified and experienced decision-makers rather than a larger group of less suitable individuals.
4. Multiple inputs from various individuals can be combined to generate a consolidated outcome.
5. It represents an accurate approach for quantifying the weights of decision criteria. Individual experts' experiences are utilised to estimate the relative magnitude of factors through pairwise comparisons.
6. AHP has applications in group decision-making and is used worldwide in a wide variation of decision situations in fields such as government, business, transport, and manufacturing.
7. AHP reduces composite decisions to a series of pairwise comparisons

3.5: Summary

In the top tier, organisations see research as the first step in any venture and this research is valid when the conclusion is accurate or true. As a source of sustainable advantage, the research methodology explores how organisations tackle modern slavery by incorporating social initiatives in their decision-making in critical supply chain management and operations, including design, operations, sourcing, and logistics. A socially sustainable supply chain can prevail by empowering employees with information at all levels of an organisation and partnering with small groups of outside research informants with the expertise to use analytic and innovative technological combinations of research methods to address modern slavery through socially sustainable decision-making. In addition, analysis of the results will foster societal actions that can improve businesses' sustainability performance. Accordingly, the results of the AHP technique will help industry managers, decision-makers and practitioners to decide where to base their attention during the implementation stage to mitigate modern slavery in a corporate supply chain to move towards sustainable development. To achieve this, the study utilises TISM to establish relationships between modern slavery enablers identified through a model developed for an extensive literature review and interviews.

Chapter 4: The Identification of modern slavery enablers in global supply chain

4.1: Introduction to the chapter

The objective of this chapter is to identify and categorize the enablers and factors associated with modern slavery in global supply chains. Recognizing these enablers is a crucial step toward implementing effective anti-slavery management strategies in the global supply chain context. Additionally, numerous classification methods for modern slavery enablers are documented in the existing literature, as discussed in chapter two. Researchers commonly pinpoint sources of modern slavery factors that stem from unpredictable environments, organizational practices, and supply chain networks, all of which can significantly influence supply chain outcomes. This phase is essential for initiating any anti-slavery management process, irrespective of the specific context. While various identification and classification methods for modern slavery are available in the literature, the factors associated with modern slavery in supply chains remain inadequately structured. This study proposes a questionnaire survey designed to capture, validate, and organize these enabling factors. The results yield a distinctive categorization and classification framework for supply chain slavery risk factors, enhancing the understanding and knowledge base of anti-slavery management in global supply chains. This chapter outlines the identification of enabling factors for modern slavery, detailing the indicators and sub-indicators derived from an expert opinion questionnaire survey. It also introduces a revised comprehensive taxonomy and classification method to dissect the unstructured risks of slavery, thereby enriching the knowledge base within global supply chains. In subsequent modern slavery assessment research, the classified enablers can be analysed using various slavery risk assessment methodologies to identify those that are deemed unacceptable. Figure 4.1 illustrates the proposed methodology for identifying the indicators and sub-indicators relevant to this study.

4.2: The identification and classification of modern slavery enablers

The aim is to create a solid strategy that thoroughly identifies and categorizes the key factors contributing to modern slavery, which significantly influence social sustainability in global supply chains. Regardless of the specific context, addressing modern slavery in supply chains involves three essential steps: the identification and classification of modern slavery, the assessment of its prevalence, and the implementation of mitigation strategies (Flynn and Walker 2021). The initial phase of identifying and classifying slavery-related factors is crucial,

as it offers stakeholders insight into potential sources of unethical practices within their operations (Strand et al., 2024). Suppliers are better equipped with knowledge regarding possible events and conditions that may lead to modern slavery risks in their activities. Datta et al. (2013) highlighted those factors such as economic decline, corruption, conflicts, poverty, discrimination, and negative environmental changes (Wang and Lofti, 2024), are significant contributors to modern slavery in supply chains. An extensive literature review in Chapter 2 discusses findings from previous studies in supply chain management (SCM), which shed light on the various types, sources, and categories of modern slavery found across different industries. Nevertheless, a standardized approach to classifying indicators of modern slavery remains elusive, regardless of the context (Heerden, 2015; Avis 2020). The complexity of identifying and classifying modern slavery is increasing due to the lack of agreement among scholars and practitioners (Szablewska and Kubacki 2023; Montgomery 2025). Therefore, a distinct methodology for identifying, assessing, and mitigating modern slavery within global supply chains is imperative.

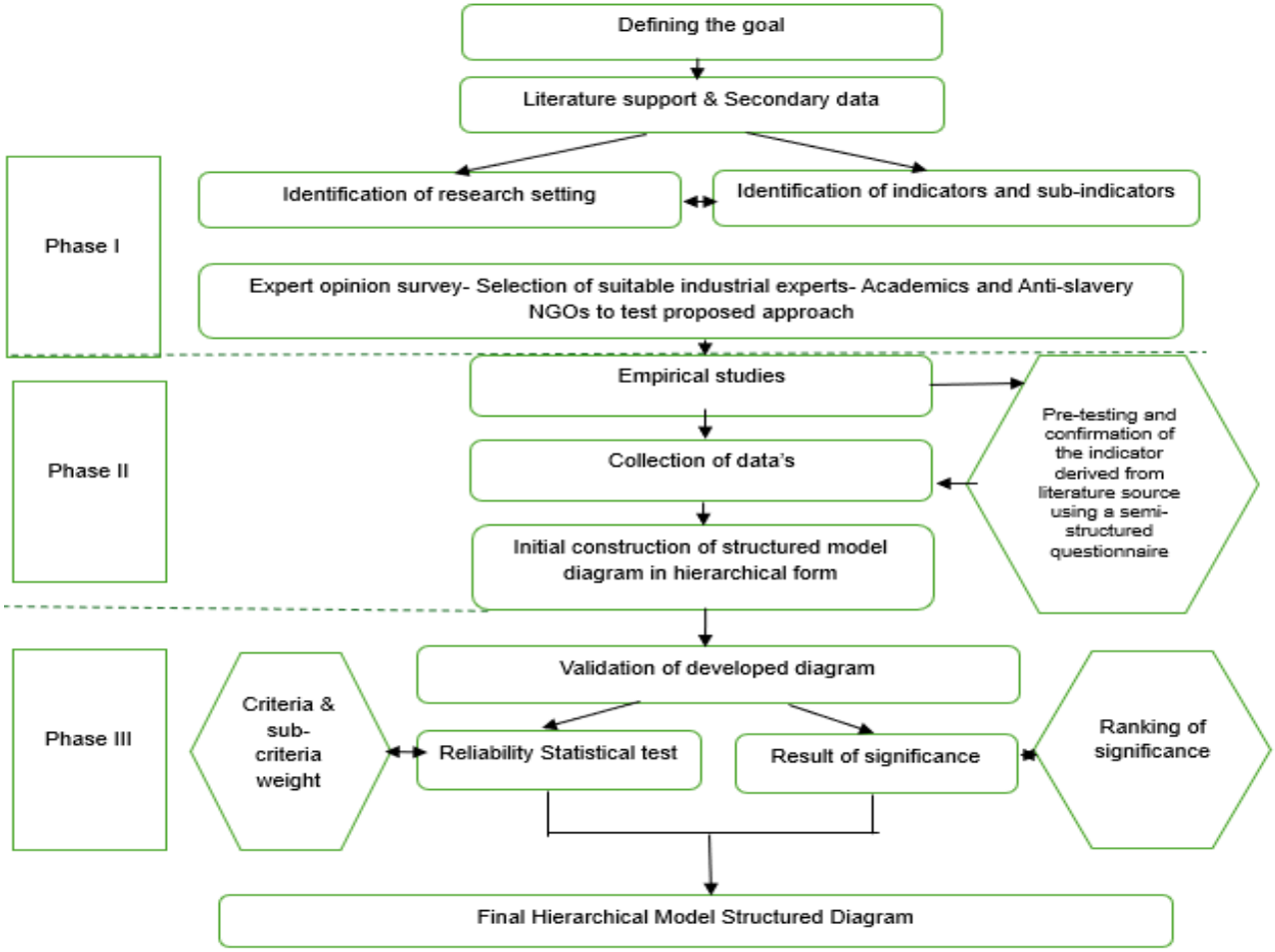


Figure 4:1Proposed methodology showing identified indicators and sub-indicators for this study
Source: Author.

The first phase of this methodology investigates a comprehensive array of indicators and sub-indicators designed to evaluate global ethical supply chains. A review of literature and industry reports has led to the identification of various performance indicators and alternatives relevant to supply chains. To assess the proposed methodology, a survey targeting industrial experts and academics from Europe and the UK was conducted, utilizing a semi-structured questionnaire for pre-testing. The second phase focuses on confirming the performance indicators and sub-indicators for global ethical supply chains. In the third phase, the validation of the initially created diagram takes place. During this phase, the significance of each item is assessed using a five-point Likert scale questionnaire, where 1 represents "*Highly unimportant*," 2 denotes "*Slightly unimportant*," 3 indicates "*Neutral*," 4 signifies "*Important*," and 5 stands for "*Highly important*." This process is followed by an evaluation to establish the final ranking through the statistical test reliability method outlined in Table 4.4.

In their respective studies, Crane (2013), Hoejmose et al. (2013), the Walk Free Foundation (2018), Avis (2020), and Bodendorf et al. (2022) have presented findings on the essential drivers of modern slavery and have introduced frameworks for classifying the external factors that contribute to its prevalence. Their work seeks to provide a deeper understanding of the fundamental causes of modern slavery in supply chains. This research revises these existing frameworks to develop a classification system aimed at benchmarking global supply chains, which consists of twelve main indicators and thirty-nine subcategories. The indicator for ***Lack of Corporate Commitment*** is further divided into *Lack of Compliance, Weak Leadership, and Poor Work Ethics*. ***Gaps in Statutory Legislation*** are categorized into *Weak Law Enforcement, Inadequate Code of Conduct, Disclosure Measures, and Governance Issues*. ***Socio-Economic Pressures*** include *Poverty, Unemployment, and Illiteracy*. ***Work, Health, and Safety*** Factors are broken down into *Lack of Protective Equipment, Staff Safety Training, and Fatigue*. ***Commercial Pressures*** are classified into *Lean Supply Chain, Responsible Sourcing, Environmental Social Governance,* and ***Wrong Business Models and Ethics***, which include *Corruption, Unethical Procurement, and Lack of Framework*. ***Volatile Consumer Demand*** is divided into *Short Product Life Cycle, Overproduction, and Global Competition*. ***Lack of Awareness and Capacity Building*** encompasses *Stakeholder Engagement, Training and Information Sharing, and Awareness Reporting*. ***Lack of Information Disclosure Measures*** includes *Conflict of Interest, Data Protection and Privacy, and Supply Chain Data Reporting*. ***Employment and Business Practices*** are categorized into *Debt Bondage, Wage Deductions, and Absence of Social Protection*. ***Human Rights Violations*** are further *divided into Living*

Conditions, Threats to Personal Freedom, Discrimination, Gender and Pay Equality, and Diversity and Inclusion. Lastly, ***Technological Barriers*** include *Supply Chain Mapping, Enterprise Resource Planning, and Logistic Information Systems.* Chapter two's initial literature review culminates in Table 4.1, which summarizes the key findings of the research, highlighting the identified and classified factors of modern slavery in supply chains. The subsequent sections provide a detailed discussion of the thirty-nine subcategories of modern slavery.

Table 4:1List of indicators/sub-indicators selected for the present study

Indicator Group	**Key Performance Indicator**	**Target Area**
Lack of corporate commitment	**(LC1)** Lack of compliance **(LC2)** Unfair competition **(LC3)** Poor work ethics	Multinational corporations, Business
Gaps in statutory legislation	**(GL4) Inadequate** code of conduct **(GL5)** Disclosure measures **(GL6)** Governance issues (conflict)	Law enforcement
Socio-economic Pressure	**(SP7)** Poverty **(SP8)** Unemployment **(SP9)** Illiteracy	Social aspects and environment
Work Health and Safety	**(WS10)** Lack of Personal Protective equipment **(WS11)** Inadequate Staff Safety Training **(WS12)** Fatigue	Work environment
Commercial Pressure	**(CP13)** Upstream supplier management **(CP14)** Responsible sourcing **(CP15)** Environmental & Social Governance	Commercial aspects, and procurement
Wrong Business Model	**(WM16)** Corruption **(WM17)** Unethical procurement **(WM18)** Unethical supplier selection	Business Organisations

Indicator Group	Key Performance Indicator	Target Area
Volatile Consumer Demand	**(VD19)** Excessive Overtime **(VD20)** Changing customer choices (Inventory optimization) **(VD21)** Global competition	Manufacturing and production sites
Lack of Awareness and Capacity Building	**(AC22)** Inadequate stakeholder engagement **(AC23)** Lack of Information sharing **(AC24)** Neglect of human development	Production sites Emerging economies
Lack of Information Disclosure	**(ID25)** Conflict of interest **(ID26)** Lack of data protection and privacy **(ID27)** Supply chain data reporting	Technology at work environment
Poor Employment and Business Practices	**(EB28)** Debt bondage **(EB29)** Wages deduction **(EB30)** Denial of social protection	Business organisations Recruitment agents Emerging economies
Human Rights Violations	**(HR31)** Poor living conditions **(HR32)** Threat to personal freedom **(HR33)** Abuse of illegal status **(HR34)** Gender and pay inequality **(HR35)** Neglect of diversity and inclusion	Working environment
Technological Barriers	**(TB36)** Supply chain mapping **(TB37)** Grievance mechanism **(TB38)** Monitoring (verification)	Multinational corporations Production site Both Developed and Developing countries.

Source: Author

The themes and sub-themes outlined below originate from the systematic literature review conducted in Chapter 2, as well as from face-to-face interviews with experts during the pilot study. The study further corroborated these findings by referencing existing literature published in international peer-reviewed journals and reports. In the pilot study, an expert panel was consulted regarding the significance they believe should be assigned to each indicator and sub-indicator, as well as any additional indicators or sub-indicators they deemed relevant. This research primarily focuses on providing stakeholders with accessible measures to comprehend the indicators. The pilot testing conducted in this study serves as an initial framework for benchmarking global supply chains to mitigate modern slavery. A summary of the identified modern slavery indicators is presented above in Table 4.1.

4.2.1: Lack of Corporate Commitment (LC)

Commitment in a business environment ensures teamwork works (Know the Chain, 2020). Essentially, strong commitment among supply chain partners increases customer trust. In this context, strategic commitment refers to pricing, costing, and sharing information and resources with supply network partners to attain supply chain effectiveness and competitive advantage (Phillips, 2016). For example, suppose a supplier commits to the price of materials. In response, the downstream partner (manufacturer) may make more effort to reduce costs or increase the demand for end products based on this pre-committed price. According to Leksono et al. (2020), implementing supply chain commitment and practice is a policy set by the company's top management by integrating the system. Essentially, top management actions express strategic supply chain orientation to achieve success, so that supply chain members exhibit commitment and collaborate to develop relational capabilities. Several researchers have investigated aspects of the lack of corporate commitment concerning compliance, fair competition, and work ethics (OSCE, 2021).

Employees are crucial to the commitment implementation process (OECD, 2017); each staff member is responsible and accountable for a firm's corporate commitment. When the partners fully commit to participating in the partnership project, they are willing to collaborate and facilitate effective SCM. Unfortunately, a lack of corporate commitment, top talent and efficient leadership will prevent the creation of values that will achieve a firm's success. See Figure 4.2. for indicators and sub-indicators of commitment.

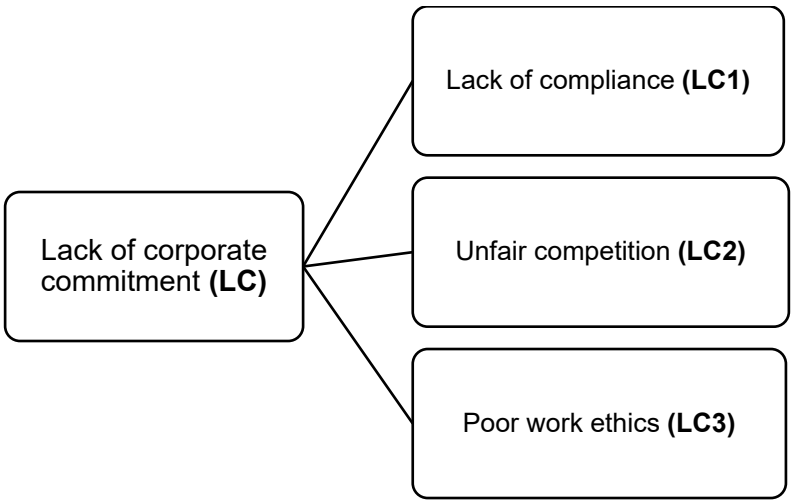


Figure 4:2Lack of Corporate Commitment Indicator and sub-Indicators
Source: Author

Lack of compliance ***(LC1)*** is an essential criterion influencing the eradication of modern slavery in supply chains (Townsend et al., 2016). In practice, lack of compliance with the regulations will imply the organisation has not created a statement, published it on its website, or has yet to set out the procedures for the relevant financial year.

The second sub-indicator under the dimension is *Unfair competition* ***(LC2)***: fairness is a significant goal pursued in social interactions and economic outcomes. Supply chain fairness indicates practices wherein supply chain members showcase their positions to each other (QI et al., 2022). Due to imperfections of a competitive market, some members could exploit their positions or circumstances that enable them to gain an unfair advantage over others. Prior research focuses on fairness in the vertical competition between an upstream supplier and a downstream retailer. Our analysis identifies circumstances where fair competition may influence the economic outcomes of the fair-minded, the rational retailers, and the suppliers for either better or worse.

Another important sub-indicator identified under this dimension is *Work ethics* **(LC3).** The supply chain is where an organisation's ethical stances become relevant to the real world. Servitude, forced labour, and human trafficking are three main risks to supply chain ethics. However, protecting against unethical conduct in the supply chain boils down to transparency. At each point in the supply chain, ethical issues can arise, including labour practices, working hours, worker representation, disciplinary procedures, and discrimination.

Nevertheless, most business owners value ethics, integrity, and a good reputation because they want to positively impact the community, while retaining loyal clients and stakeholders over

the long term. Management ethics are essential for top management and staff to be proud of the company's image and reputation. The organisation feels better about using its finished goods or services to benefit the community, especially when the raw material source is sustainable.

4.2.2: Gaps in Statutory Legislation (GL)

Gaps in statutory legislation, law enforcement and access to justice create space for noncompliance with international labour standards in global supply chains (Alliance 8.7, 2019; ILO, 2017). Legislation is one of the most powerful tools to combat modern slavery because it defines crime, sets sanctions, and has common objectives of prosecuting criminals and protecting the victims. *Modern slavery* is a global problem that requires a national and local response. OSCE (2018) explained in detail the model guidelines on government policies to prevent trafficking for labour exploitation in the supply chain. Ensuring that the policy 'problem' of contemporary slavery connects with political support and workable solutions at the local and national levels can help mitigate potential implementation gaps. According to Idris (2017), effective interventions to combat modern slavery must include prevention, protection, and prosecution.

Notwithstanding, persistent levels of modern slavery means there is an urgent need to develop a government and law enforcement counter-trafficking database to combat modern slavery and human trafficking due to the global politics of forced labour, as emphasised by the UNODC (2018). For instance, there are limits to what business organisations can do on their own when there is weak regulation or inadequate enforcement. Therefore, to ensure the impactful implementation of national anti-slavery policy and legislation, governments should build local-level political support, resource institutional engagement from frontline services, and work alongside local 'policy entrepreneurs. The leading indicator is shown in Figure 4.3. together with sub-indicators.

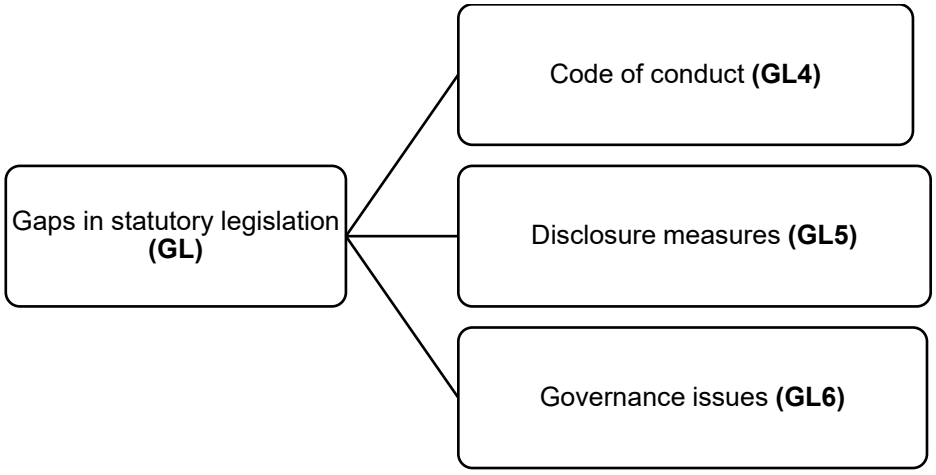


Figure 4:3Gaps in statutory legislation indicator and sub-indicators
Source: Author

The sub-indicator *Inadequate code of conduct **(GL4)*** Indicates one of the most significant factors in supply chain decision-making. A code of conduct is a set of values, rules, standards, and principles outlining what employers expect from organisational staff (ILO, 2018). This indicator examines the social impacts of labour-related CSR guidelines or corporate codes of conduct on sustaining labour standards through global supply chain benchmarking (OSCE, 2018). Codes of conduct regarding labour standards usually specify norms and rules by which to examine labour practices in the workplace (ILO, 2015). Most labour-related codes of conduct concentrate on labour-intensive Industries. An OECD report found that measuring regulatory performance will assist corporations with identifying labour standards and interpreting salient data (OECD, 2017).

Another sub-indicator *is Disclosure Measures **(GL5)***. The introduction of disclosure measures, legislation, and commitments regarding modern slavery in the global supply chain has proven ineffective over the years (Trautrims, 2020). However, the growth of human rights disclosure and due diligence law around the globe is a welcome development in business and human rights. The call for this due diligence law is in response to intense civil society pressure and increased public awareness of dreadful human rights impacts in business, including working conditions amounting to modern slavery. Vaughn et al. (2019) found that the available modern slavery disclosure legislation has yet to attain its regulatory objective of ensuring corporate transparency and the prosecution of unscrupulous actors in supply chains. However, the increase in cases of modern-day slavery in supply chains has prompted legislation for the prevention and management of modern-day slavery in corporate supply chains.

Sub-indicator *Governance issue (GL6)* relates to specific problems and data availability of concern to policymakers, as aspects of the ultimate problem of supply chain governance (ILO, 2018). Essentially, governments have a significant role to play in ensuring that companies act to address the risks of labour rights violations across their operations and supply chains (Alliance 8.7, 2019). Supply chain governance aims to govern supply chains to operate ethically, especially in conflict (OECD, 2013). Therefore, better governance is crucial in conflict resolution, growth, and poverty reduction. Governance indicators for evaluation should focus on specific problems. In addition to selecting appropriate indicators, evaluators must select careful research designs to attribute any indicator changes to the governance regulatory policy under evaluation.

4.2.3: Socio-economic Pressure (SP)

The socio-economic pressures that render individuals and workers vulnerable to child labour, forced labour and human trafficking are multiple and mutually reinforcing (Alliance 8.7, 2019). Poverty, informality, absence of social services and infrastructure, presence of violence, certain social norms, gender, and other forms of discrimination all limit options for survival and sustainable livelihoods. In addition, educational deprivation is another unfortunate way families experience poverty because it is associated with exploitation. Inevitably, the socio-economic vulnerability of individuals and workers within the global supply chain can lead to modern slavery (OSCE, 2014). This exposure is such that people from developing countries where job creation is low and the means to sustain livelihood is poor can form a vulnerable population looking for alternatives to survive through informal economies (ILO, 2015).

The main drivers of migration are also economic, with poor standards of living, poor business development opportunities, and financial problems and debts as the top three factors driving migration (Alliance 8.7, 2019; Alsamawi et al., 2019). Accordingly, as perceived by respondents, the primary pull factors towards Europe are the availability of jobs and investment and business opportunities. Figure 4.4. shows the leading indicator in this dimension.

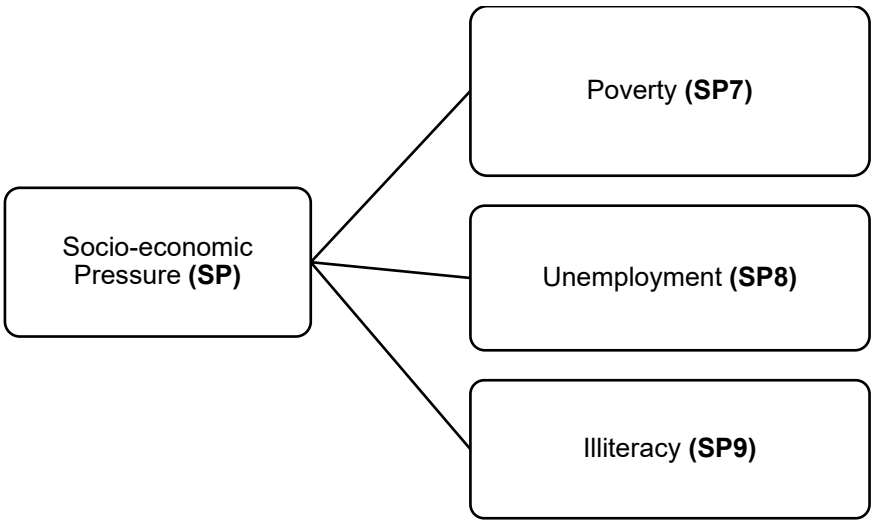


Figure 4:4Socio-economic Pressure Indicator and Sub-indicators
Source: Author

The Sub-indicator *Poverty **(SP7)*** is central to understanding the vulnerability of child labour, forced labour, and human trafficking (Alliance 8.7, 2019). There is substantial evidence linking child labour, forced labour and human trafficking to income poverty and non-income dimensions of poverty, including food insecurity and poor health. According to the US Department of Labour (2018), the role of poverty in driving these human rights violations is straightforward. In terms of child labour, poverty makes households more likely to resort to child labour at the expense of their children's education to meet basic needs and deal with uncertainty and shocks. However, better investment in the social welfare of the workforce and social protection at the ground level will support increased protection. Changing information and social norms will enhance resilience to the root causes of forced labour (ILO, 2018).

Another sub-indicator in this dimension is *Unemployment **(SP8)***, which relates to competitive and cost pressures, which could harm employment conditions and, in extreme cases, lead to forced labour. Failures at all levels within global supply chains have contributed to deficits in decent work and undermined labour rights.

The sub-indicator *Illiteracy **(SP9)*** highlights the impact of educational deprivation on labour market prospects later in the life cycle. Plant (2007) remarked that people with low levels of educational attainment usually lack the skills and bargaining power needed to secure decent work in the formal economy, leaving them less resilient to violations of their rights in the labour market, including forced labour and human trafficking. Research by Buck (2019) found that low education levels among girls reduced their future job prospects and trapped them in cycles of poverty, increasing the risk of them falling into forced labour. In another development, the

US Department of Labour (2018) found that the educational status of mothers is another critical predictor of whether their children engage in child labour, highlighting the importance of equivalent access to education for girls and boys.

4.2.4: Work, Health, and Safety (WS)

Workplace health and safety involves managing risks to keep all stakeholders in a business safe. Health and safety have a significant role in most companies and industries. However, they are of particular importance in the different stages of SCM, from sourcing to production to delivery, especially after the collapse of the Rana Plaza Complex in Dhaka, Bangladesh. Therefore, injuries, fatigue, poor physical health, and a lack of adequate personal protective equipment can indicate modern slavery. Moreover, if unchecked, they can lead to further risk of harm in the workplace. Mezzadri (2015) conducted a study on the informalisation of social responsibility over health and safety provisions. Modern slavery can occur in many business areas, so organisations must ensure a clear policy against modern slavery. See Figure 4.5. to understand the leading indicator in this dimension.

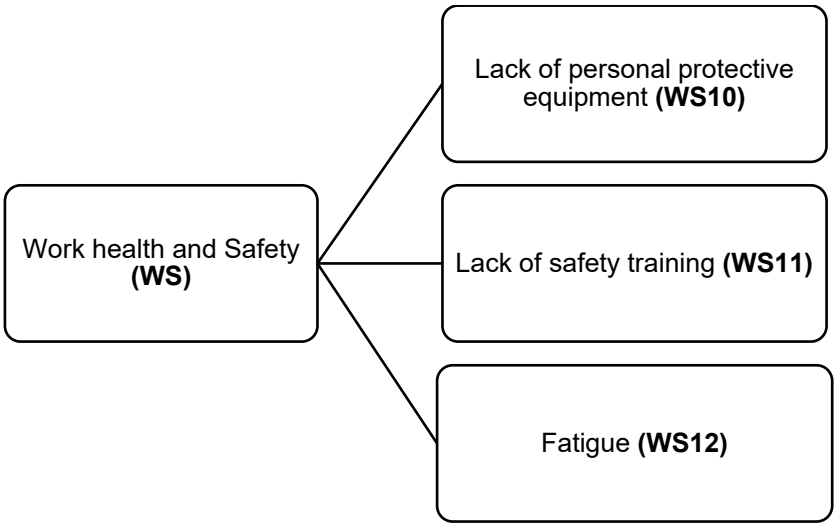


Figure 4:5Work, health and safety indicator and sub-indicators
Source: Author

The first sub-indicator under this dimension is the *lack of personal protective equipment **(WS10)***. Employers should protect workers from health and safety risks. Accordingly, employers should make personal protective equipment available for free if a risk assessment shows that it is needed (Gardner, 2017). Workers may wear PPE such as safety helmets, gloves, eye or hearing protection, high-visibility clothing, safety footwear and harnesses (Anti-slavery International, 2018). PPE also includes respiratory protective equipment to prevent workers

from breathing in dust, mist, gas, or fumes. Employers must ensure workers have sufficient information, instruction, assessment, and training on PPE.

The Sub-indicator *Lack of safety training* ***(WS11)*** for creating a safe workplace is different for every business and industry, as the hazards change depending on what the company does. Storing products in a large workplace can make certain risks more likely than others, and health and safety must reflect this. Underhill and Quinlan (2011) explained how precarious employment affects health and safety at work. Warehouse health and safety training can assist staff in handling environmental hazards, allowing the business to operate more efficiently. In addition, through innovative training solutions, supply chains can ensure their employees are safe while on their job to meet customers' expectations.

Another sub-indicator in this dimension is *Fatigue* ***(WS12).*** Fatigue can arise because of excessive working time or poorly designed shift patterns (ILO, 2015). It is also associated with workload since workers are more easily fatigued if their work is machine-paced. Research shows that some working practices result in less fatigue than others. Consequently, by taking advantage of more favourable patterns and allowing sufficient recovery time, it is possible to balance the needs of both workers and the workplace. In addition, work-related factors may include long hours of physical or mental activity, insufficient break time between shifts, inadequate rest, or a combination of these factors.

4.2.5: Commercial Pressure (CP)

The economic and commercial pressures facing suppliers within global supply chains can, in combination, lead to modern slavery (Verite, 2014). For example, short deadlines for large amounts of a product may force a trusted supplier to look outside its operations and engage unvetted third parties for additional capacity. Accordingly, LeBaron (2021) analysed the role of supply chains in the business of forced labour, stating that commercial pressure is fundamental to whether decent work flourishes in any business supply chain. Multinational organisations often source goods from suppliers in large quantities and are expected to do so ethically. However, in doing so, the suppliers should be given enough prior notice and on-time payment to enable efficient production with adequate welfare for their workforce. For example, when buyers place orders from their suppliers at short notice, there is usually a tendency for the supplier’s workforce to work excessively to meet the demand. Essentially, late changes to order specifications and payment delays increase the risk of labour exploitation in global production networks. See Figure 4.6 for the indicators.

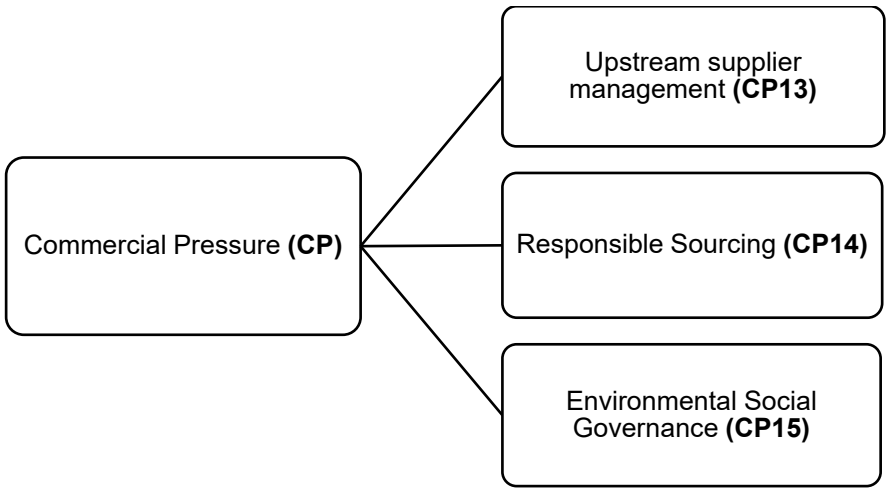


Figure 4:6Commercial Pressure indicator and sub-indicators
Source: Author

The sub-indicator *Upstream Supplier Management* **(CP13)** is concerned with sourcing raw materials before distributors sell finished goods to final customers. The upstream supply chain depends on the downstream firm's buy-side processes: raw materials are essential to the global supply chain, and a shortage can result in low inventory levels and wide market fluctuations. However, finding affordable raw materials can give providers a competitive advantage. As such, companies that focus on the upstream supply chain can ensure the quality of finished products, track inventory levels, minimise shortages of raw materials, and improve end-customer satisfaction.

Another sub-indicator, *Responsible sourcing* ***(CP14)***, involves global production, expanding through outsourcing to emerging countries through networks of producers and agents, coordinated by prominent international and regional buyers. However, offshoring, outsourcing, and subcontracting can affect the distribution of responsibility along the value chain, particularly regarding social and environmental standards. Consequently, buyers must collect, monitor, and verify data from their sourcing portfolio to inform decision-making towards full compliance. The buying power of the European Union and its member states gives them substantial power over companies and the ability to influence businesses' commitment to human rights by cascading labour standards throughout their supply chains (BIICL, 2018).

The sub-indicator *Environmental Social Governance* ***(CP15)*** Environmental, Social and Governance (ESG) has become a vital part of the sustainable supply chain amid growing scrutiny of corporate performance; businesses should tackle society's many challenges, from poor working conditions to corruption. An ethical supply chain should be free of poor working

practices, unfair wages and unacceptable working conditions. However, it can be challenging to ensure that the whole operation from start to finish follows good labour practices. Consequently, governments and regulators worldwide are increasingly focusing on ESG practices to protect consumers and foster more sustainable behaviour by companies and investors (Engle et al., 2019).

4.2.6: Wrong Business Model (WM)

Due to increased pressure from NGO stakeholders and regulatory bodies, it has become essential for multinationals to incorporate social aspects in their supply chain to ensure a long-term sustainability impact (ETI, 2018). Vulnerability only translates into actual human rights violations without efficient protection from states and in the presence of unscrupulous business actors that use exploitative forms of labour. It is, therefore, essential to understand the risk factors associated with business conduct and the business environment that give rise to the use of child labour and forced labour (Alliance 8.7, 2019).

To avoid unethical practices, companies should assess their progress towards compliance by ensuring the implementation of commitments. Islam and Van Staden (2021) argued that business organisations should consider developing a framework to monitor and verify performance and outcomes related to company commitment. For example, the independent Anti-Slavery Commissioner's office, in conjunction with the Rights Lab at the University of Nottingham, has developed online guidance to assist local organisations and agencies in working efficiently together to tackle modern slavery (Trautrims, 2020). Figure 4.7. shows Wrong Business Model Indicators and sub-indicators.

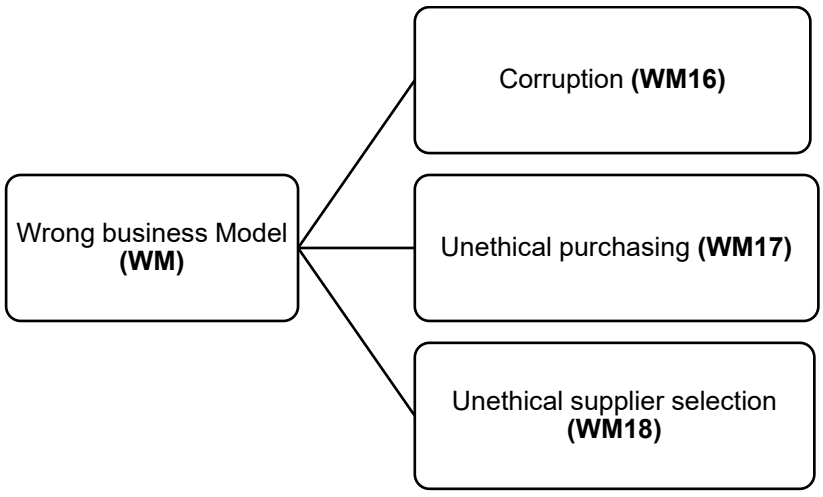


Figure 4:7Wrong Business model Indicator and sub-indicators
Source: Author

The sub-indicator *Corruption* ***(WM16)*** involves diverting resources from essential public services, affecting the ability of states to provide for fundamental human rights. One of the most apparent areas of industry where corruption facilitates slavery is the identification, transportation, control, and delivery of individuals for labour. According to Liberty Asia (2015), the recruitment business is an industry, and the bribery of local law enforcement, immigration officers and business owners/managers is often required to move people and maintain the conditions for exploitation. Unfortunately, corruption in a country is a significantly more robust predictor of human trafficking than other poverty-related causes (Verité, 2014).

Slavery and other forms of exploitation are facilitated and thrive when there is corruption. The UN Global Compact, recognising the power of companies, urged participant companies to commit and ensure that they are not encouraging human rights abuses and to respect and support the protection of internationally proclaimed human rights through adequate internal controls and comprehensive staff training. The global compact highlights the crucial role of companies in combating corruption and its associated human rights abuses.

The second sub-indicator in this dimension is *Unethical procurement* ***(WM17)***. Ethical procurement refers to organisations meeting their needs by considering their value chain's environmental, social, and economic impacts. Multinational enterprises aim to buy and supply products more sustainably, which is known as ethical procurement (Lambrecht, 2020). Accordingly, companies are accountable for their internal practices and supplier behaviour during procurement.

Another sub-indicator is *Unethical supplier selection* ***(WM18)***. Business organisations should be aware of products or services from suppliers whose production process is associated with forced labour or human trafficking. Therefore, business organisations are beginning to incorporate social aspects during supplier selection, slightly different from the usual economic considerations when procuring products and services from suppliers. According to the study by Winter and Lasch (2016), sustainability criteria are crucial for supplier evaluation. Training procurement professionals will help identify modern slavery risks during supplier selection. In so doing, companies can improve the working conditions of those employed by unethical suppliers whilst rewarding those who treat workers with dignity and respect.

4.2.7: Volatile Consumer Demand (VD)

Despite the complexity of global supply chains, consumers have the right to know if they are purchasing a product that may violate fundamental norms of ethical behaviour and a vested interest in seeing material improvements to worker outcomes within the system (Lang, 2018). However, consumers of products and services primarily consider cost, quality and availability when purchasing. Recently, much attention has been paid to consumers' purchasing decisions as consumers are increasingly concerned with the conditions of the workers producing their products—an awareness known as ethical consumption. Brandenburg et al. (2014) demonstrated that ethical consumption is the behaviour of sustainable and ethically minded consumers who feel responsible and accountable for the environment and society. However, consumers have a growing demand for socially responsible products and services. This emphasises the significant impact of consumer demand on social sustainability in supply chains. See Figure 4.8.

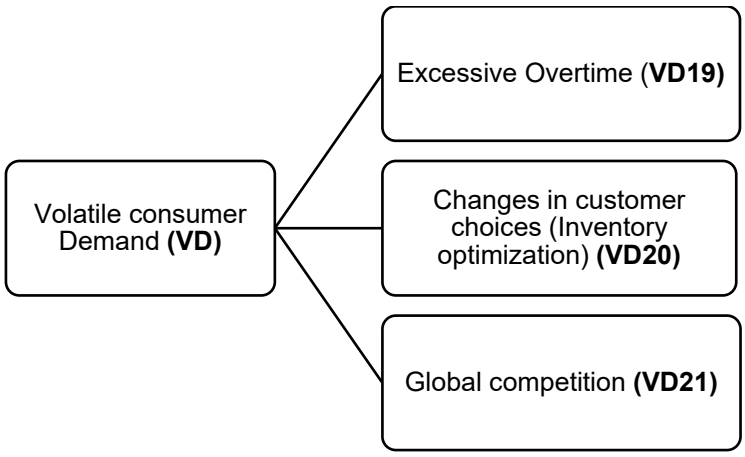


Figure 4:8Volatile consumer Demand Indicator and sub-indicators
Source: Author

The sub-indicator *Excessive Overtime **(VD19)*** refers to when an employee is required to work more overtime than is allowed under national law, under some form of threat (e.g., dismissal, or to earn the minimum wage (ILO, 2018). Suppliers in developing economies may force workers to work immoderate overtime, resulting in difficult mental and physical situations for the workers and likely significant effects on the brand of multinational enterprises (MNEs) with increasing attention from consumers, NGOs, and government agencies. The Fair Labour Association Code requires that all overtime be consensual and voluntary, with no punitive consequences for workers who refuse overtime, "including for overtime mandated to meet

exceptional circumstances" (FLA, 2019). In addition, brands should be aware that mandatory overtime must be paid adequately.

The sub-indicator *Changes in Customer choices* ***(VD20)*** reflects a critical factor in the context of ethical consumption. It highlights how consumers can influence the market by refusing to spend money on goods and services produced with the input of persons trapped in exploitation. Ethical consumption is the behaviour of ethically minded consumers who feel accountable to the environment and towards society (Smith and Johns, 2020). With customers becoming more knowledgeable and demanding transparency, organisations must provide data such as price, source, authenticity, and social obligations (Kehoe et al*.,* 2017). However, it is crucial to note that consumer choices, such as price, convenience, and identity projection, can inadvertently create demand for products and services produced through modern slavery and labour exploitation. As consumer preferences for environmentally sustainable and socially responsible goods continue to increase, the focus on risks in the supply chain has shifted to new and challenging areas, such as combating human rights abuses. Technological advances, which enable greater transparency and access to information, have also contributed to increased consumer awareness.

The sub-indicator *Global competition* ***(VD21)*** significantly contributes to labour exploitation issues in global supply chains, particularly with increased international trade between developed and emerging economies. The labour market is a primary channel through which globalisation can affect developing countries (OECD, 2017). Therefore, increased import inflow, export sales, service competition, foreign direct investment, and exchange rate fluctuations inspired by international capital movements could all potentially impact employment and labour earnings. Globalisation plays a role in increasing the incorporation of labour markets and minimising the wage gap between workers in advanced and developing economies, which can have positive and negative consequences for labour conditions.

4.2.8: Lack of Awareness and Capacity building (AC)

Awareness and capacity building should be ongoing activities in a company supply chain as there is a need for an information campaign to target specific groups and advocate actions. For example, Trautrims et al. (2020) recommended capacity building across stakeholders in the supply chain to help mitigate modern slavery. However, it is essential to abide by international standards, frameworks, and best practices to identify and eradicate labour exploitation in supply chains. Comprehensive capacity building for workers in supply chains and raising

awareness among businesses about human rights abuse indicators on the worksite are important. For example, in Kent and Essex, new publicity materials have been created for Essex Police and Kent Police to raise awareness. Figure 4.9. shows a Lack of Awareness and Capacity-building Indicators and sub-indicators.

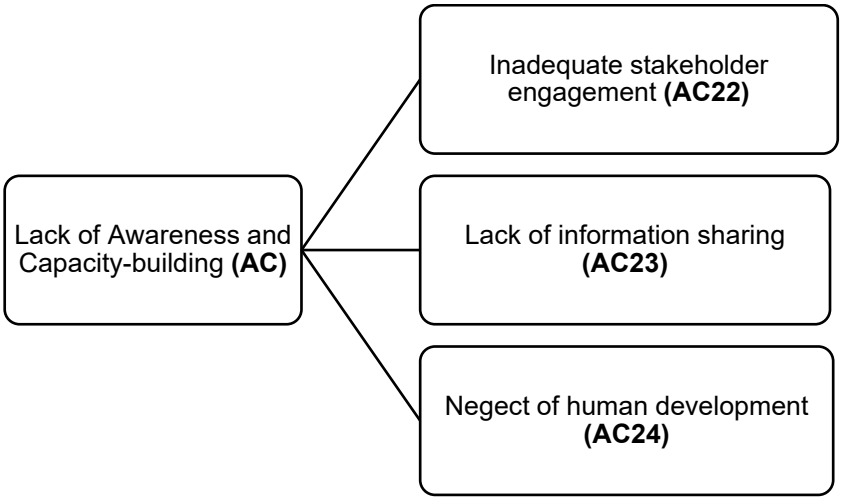


Figure 4:9Lack of Awareness and Capacity-building Indicator and sub-indicators
Source: Author

The sub-indicator *Inadequate stakeholder engagement* **(AC22)** refers to the failure of government, social partners, and civil society to help ensure that company actions relate to existing localised efforts by the government and other groups seeking to combat these human rights violations (Alliance 8.7, 2019). Stakeholder engagement with workers is valuable for identifying modern slavery and human rights abuse, while collaborations between businesses, civil society and other stakeholders seek to address issues of mutual concern, including human rights and sustainability. Meaningful social dialogue and engagement with relevant stakeholders are critical to informing and guiding firms' human rights due diligence efforts. The agreements reflect commitments to respect, promote and realise a variety of international labour standards, including the Fundamental Principles and Rights at Work.

Another sub-indicator is *Lack of information sharing* **(AC23)**. The intricacy of global supply chains poses challenges for gathering information on supply chain actors and their human rights performance (OSCE, 2020). To gain information on business partners and their compliance related to child labour, forced labour and human trafficking, recent trends include businesses' use of traceability or chain of custody tools, either individually or through industry or multi-stakeholder initiatives. Victims or individuals who suspect modern slavery activities can use various technologically innovative means to share information with appropriate authorities. For

example, the UK's National Referral Mechanism (NRM) provides a framework to identify, refer and record potential victims of modern slavery.

The third sub-indicator in this dimension, *Neglect of Human Development* ***(AC24)*****,** underscores the importance of staff understanding what modern slavery and human rights abuses are, how they may impact their business and supply chains, and what steps they should take within their daily roles, not just for understanding, but also for taking action. Any indications of modern slavery should be reported to the appropriate authorities. For example, Social Research and Information (2016) demonstrated the effectiveness of anti-slavery training and survivor care pathways. Employees should be aware of applicable laws, standards, and best practices, and feel confident in their ability to uphold them.

4.2.9: Lack of Information Disclosure (ID)

The complexity of global supply chains is not just a challenge, it is a hurdle we need to overcome. It poses challenges for gathering information on supply chain actors and their human rights performance (Alliance 8.7, 2019). To gain information on business partners and their compliance related to child labour, forced labour and human trafficking, recent trends include businesses' use of traceability or chain-of-custody tools, either individually or through industry or multi-stakeholder initiatives. Information disclosure has become a popular policy tool for European policymakers in ensuring that slavery and human trafficking are not taking place. However, we need to acknowledge that information disclosure measures have a limited impact on decision-making and migration behaviour, even if the standard is based on well-defined objectives and goals. We need to find more effective solutions, and this is where expertise and engagement come in. Figure 4.10 illustrates indicator and sub-indicator for lack of information disclosure.

The sub-indicator *Conflict of Interest* ***(ID25)*** relates to purchasing goods or services from a business where an employee has a financial interest or may directly benefit from such investment (OSCE, 2020). Not only do conflicts of interest compromise an organisation's integrity when left unchecked, they breed a demoralising culture of corruption. More so, productivity declines, staff turnover increases, and otherwise ethical employees become persuaded by bribery or leave the company. As such, companies must adopt a preventive approach to the challenge of conflict of interest. While rigorous investigations should remain a cornerstone of any anti-corruption program, companies must adopt a holistic approach to keep good employees out of trouble.

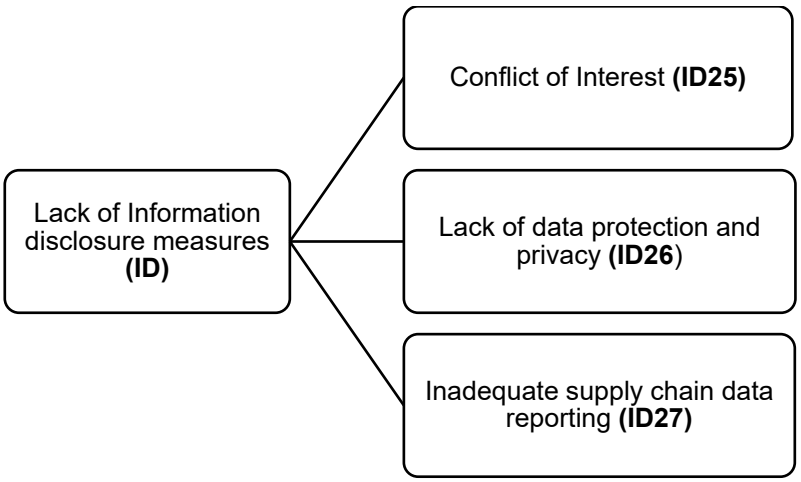


Figure 4:10Lack of information disclosure indicator and sub-indicators
Source: Author work

Another sub-indicator, *Data Protection and Privacy **(ID26)***, indicates that data privacy ensures that personal data is collected, used, and disclosed in a manner that affirms the individual's projection and does not breach their privacy rights. In a nutshell, data privacy is all about protecting people's information. Data privacy establishes who has access to data, while data protection restricts access to the data. The supply chain is particularly susceptible to data breaches due to the number of companies and individuals involved. A data violation in the supply chain can have a ripple effect, causing severe damage to businesses and consumers alike. Compliance regulations help ensure that companies carry out user privacy requests and companies are accountable for taking measures to protect private user data. In relation to the sub-indicator *Supply chain data reporting **(ID27),*** Section 54 of the UK's Modern Slavery Act 2015 (MSA) requires companies to publish an annual modern slavery statement. Annual reports are the foundational source of information for shareholders and broader stakeholders. To meet this responsibility, companies must have an honest and transparent view of their supply chains and recognise that commitment, relationships, and open communication with all actors are essential. For some organisations, the reporting requirement will be a challenge, but obscuring the practice of slavery will do nothing to change the existing condition. We believe that where modern slavery risks exist, consumers would prefer businesses to be open about what they have found and set out what action is being initiated to end those risks. For this reason, transparency provisions are designed to improve access to information about what companies are doing to recognise and manage the risks of human rights violations that arise from their business operations (Lindsay et al., 2017; LeBaron et al., 2018).

4.2.10: Employment and Business Practice (EB)

One of the most significant risks businesses faces is the potential to employ exploited workers in constructing, maintaining, and servicing their facilities, especially when these functions are outsourced to third-party suppliers. The vulnerability of workers induced by recruiters is a complex issue that can result from various pressures and vulnerability factors. Unscrupulous recruitment practices, such as contract substitution or the imposition of debt or recruitment fees, significantly increase workers' vulnerability. Recruitment abuses are a major gateway for modern slavery in global supply chains. Employers' commitment to promoting fair recruitment is, therefore, a crucial element in addressing these violations and abuses. Companies that are committed to compliance aim to promote better accountability regarding their direct or indirect implications in human rights abuses and to improve their efforts to tackle these issues. This is not just a legal requirement, but a moral imperative that companies must uphold to maintain their ethical standing in the business community. See Figure 4.11 for the indicators and sub-indicators that relate to Employment Business Practices.

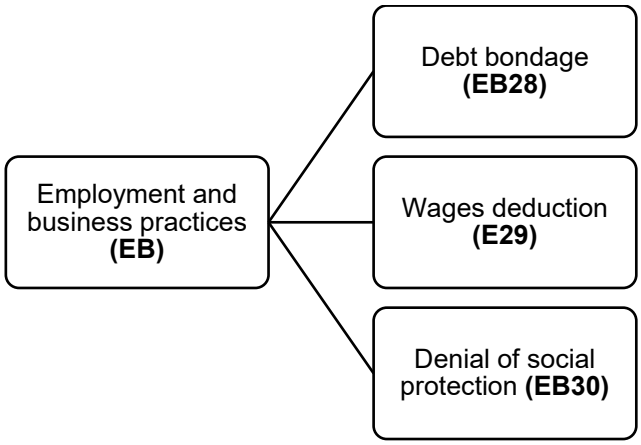


Figure 4:11Employment and business practices indicator and sub-indicators
Source: Author work

The sub-indicator *Debt Bondage* ***(EB28)*** can be present in many forms of exploitation and take various forms. Debts may arise from exploitation, for example, concerning accommodation or travel fees, with victims having little or no control over their debt and little or no way to pay it back (FLA, 2019). A person may be enslaved by trying to pay off an endless cycle of debt (Verité, 2014).

The sub-indicator *Wages Deduction* ***(EB29)*** refers to deception concerning the right to keep wages and the amount the individual is paid. It also includes excessive deductions of wages for food or lodgings or monetary penalties for fraudulent reasons (Verité, 2018). According to

FLEX (2017), low pay and excessive deductions for services, living costs, or transport can mean workers are paid well below the national living wage. Furthermore, the employment status of individuals can also contribute to a reduced salary and limited ability to foresee income and plan living costs.

Another sub-indicator, *No social protection* ***(EB30)****,* reveals the nature of exploitation by denying the right to access social protection in terms of social insurance and contracts, such as being denied sick leave (i.e., being forced to work whilst sick) and, in the case of females, being forced to work whilst pregnant or while menstruating.

4.2.11: Human Rights (HR)

The fundamental human rights topics covered under the Supplier Code of Conduct include Employment Standards, Children and Young Workers, Forced Labour and Recruitment Fees, Equality and Non-Discrimination, Non-Harassment, and Freedom of Association and Collective Bargaining (Verité, 2014). The people most affected by exploitation in a company's supply chain often belong to groups with no realistic opportunities to call attention to these problems themselves or secure a solution, such as women workers, migrant workers, child labourers, or residents of rural or poor urban areas. Governments are primarily responsible for protecting human rights, including for those working in global supply chains. However, they have often failed to oversee or regulate the human rights practices of companies operating on their soil (ILO, 2017). International norms of human rights due diligence aim to ensure business operations do not contribute to human rights abuses. Figure 4.12 specifies human rights indicators and sub-indicators.

The *Poor living conditions* ***(HR31)*** refers to deception about housing and living conditions. It includes deception of an individual regarding his/her freedom to choose the location and quality of accommodation. It also includes deception regarding the right to access health care. Another sub-indicator is *Threat to personal freedom* ***(HR32)***, a sub-indicator of coercive means to control the individual at the destination, such as partial or restricted freedom to communicate with others (for example, through restricted or denied access to telephones), separation from one's family or friends, or being forced to work or reside in a location with limited public access. The threat to personal freedom leaves victims more vulnerable to other fundamental labour rights violations, including forced labour and human trafficking (Alliance 8.7, 2019).

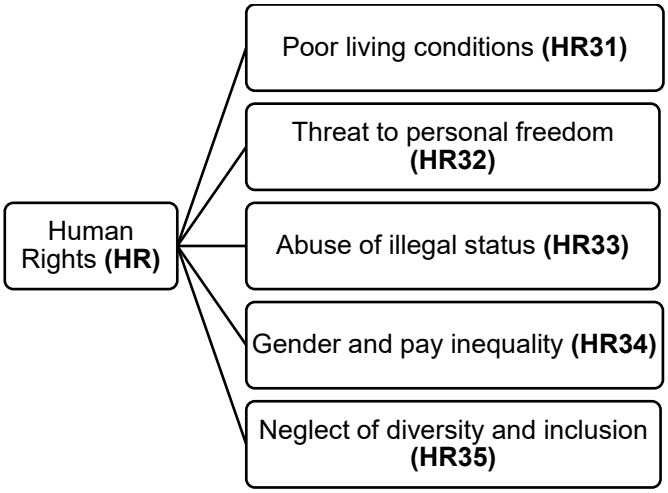


Figure 4:12Human rights indicator and sub-indicators
Source: Author

Abuse of illegal status ***(HR33)*** relates to recruitment by abuse of vulnerability because of an individual's illegal status. Being in an irregular/ illegal situation immediately renders a person vulnerable. Another sub-indicator is *Gender and pay inequality* ***(HR34)***. The power imbalance between supervisors, who are often male, and a predominantly female workforce, intensified by what society accepts as 'appropriate' work for women, means they end up working in the lowest-paid and most insecure jobs (Boote and Lotfi, 2023). Making progress towards fair working conditions, particularly for women workers, means adopting a comprehensive, integrated approach that changes the behaviour and attitudes of both men and women in the workplace. A key part of this, the gender pay gap measures the difference between the median hourly earnings of men and women, usually shown by the percentage of men earning more than women.

Another sub-indicator for this dimension is *Neglect of diversity and inclusion* ***(HR35).*** This sub-indicator notes the absence of an inclusive workplace culture in which everyone feels that they belong, feel safe in being themselves, that their contribution matters, that policies and practices are fair, and that a range of people are supported to work together effectively.

4.2.12: Technological Barriers (TB)

The misuse of technology to facilitate modern slavery remains a barrier to social sustainability. Farbenblum et al. (2018) argued that technology could provide traffickers and unethical employers with efficient means to track individuals to monitor and control them. Hence, internet service providers and related companies can be part of the solution to support anti-

trafficking efforts by identifying and removing online material associated with labour exploitation and abuse of trafficked victims (OSCE, 2020).

The development of technology has had an essential influence on the crime of modern slavery, presenting both challenges and opportunities. Perpetrators constantly use modern technology to groom victims for labour exploitation and human trafficking. However, Kersten et al. (2017) noted that new technologies such as Enterprise Resource Planning (ERP) could benefit anti-slavery efforts. ERP enables business to make contracts with third parties to provide goods and services to fulfil their own compliance obligations and its responsibilities to its members and customers, but in doing so it identifies suppliers' location, which can help an organisation focus on targeted actions such as following goods and services to ensure sustainability. Figure 4.13 specifies the technological barriers indicator and sub-indicators.

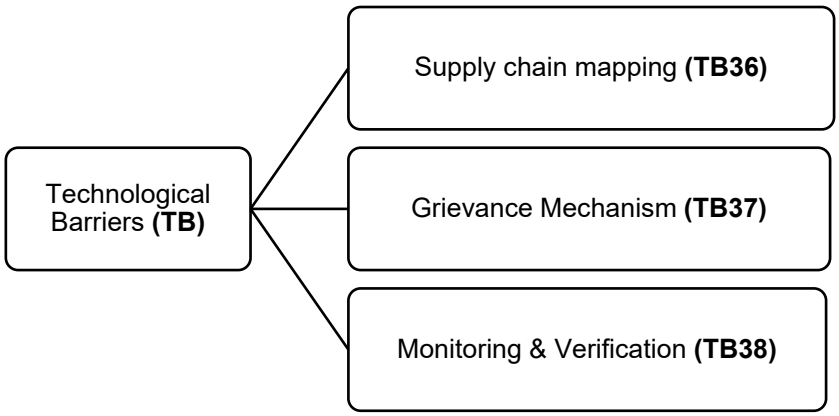


Figure 4:13Technological Barriers indicator and sub-indicators
Source: Author

The sub-indicator *Supply chain mapping* ***(TB36)*** is the verification process across companies and suppliers to document the source of every material, process, and shipment connected to bringing goods to market. However, long and complex global supply chains make it harder for businesses to see the people, places and operations that make up their value chain. The unavailability of supply chain mapping and purposeful due diligence can obstruct the identification of critical actors in a business supply chain.

The sub-indicator *Grievance mechanism* ***(TB37)*** constitutes an essential means by which a modern slavery victim can escalate a human rights issue and lodge a complaint with a business enterprise to seek remedy. However, providing a grievance mechanism will reduce factors that make people vulnerable to human rights abuse, increasing awareness among vulnerable individuals in society about the indicators of modern slavery, including building and enhancing

networks that aim to share best practices, resources, and information on modern slavery (ILO, 2018).

4.3: Hierarchical Structured Model for Prioritising Key Performance Indicators

The ranking of risk is based on an evaluation of 38 quantitative indicators that reflect 12 key dimensions that might create or support a country's anti-slavery policies and respect for human rights. These indicators also assess a country's level of human and economic development, the stability of the government and the level of discrimination against women. All these indicators are acknowledged by respected sources connected to the Global Slavery Index and were selected carefully based on statistical testing of their relationship to the prevalence of modern slavery in global supply chains.

In today's competitive world, managers of global supply chains involving the production of goods for human consumption must be capable of evaluating their objective and subjective performance in terms of ethics, social sustainability, and customer satisfaction in setting up suitable strategies to reach their final goals. The idea of performance assessment measurements, particularly in a dynamic and complex environment, demands the selection and ranking of critical performance indicators. For this purpose, the proposed research methodology argues for using total interpretive structural modelling (TISM) in building a theory of sustainable supply chain management (SSCM). The analytical hierarchy process (AHP) supports the entire risk assessment and benchmarking framework process proposed in this thesis.

4.3.1: Selection of participants in the expert panel

The expert opinion study was conducted to ensure the indicators were sufficiently accurate and to measure content validity. Experts were meticulously handpicked, each with a wealth of experience and knowledge, to validate the identified indicators and sub-indicators. The questionnaire survey was conducted with ten experts from the UK, US, Nigeria, Ghana, and India in relevant academic fields and the supply chain industry to address modern slavery risk-related events. These experts, as recommended by Elangovan and Sundaravel (2021), were industry practitioners, academicians and professionals working in multinational enterprises, law firms, and NGOs, all with a deep understanding of procurement and modern slavery in supply chains. The group included a diverse range of professionals with expertise from different operational areas, such as supply chain, procurement, civil service organisation and retail business.

The collaboration between researchers and practitioners was a key aspect of this study, effectively bridging the gap between research and practice. This collaboration led to the creation of materials and approaches that are practical, feasible, and relevant. The selection of experts was based on their working experience and academic qualifications, ensuring a balanced view from different professional areas. The invited experts included two heads of procurement, four senior academics, a professor with a background in both manufacturing and supply chain management, a senior lecturer with rich experience in multimodal transport and logistics, a senior lecturer with industrial experience in maritime transport and logistics, another lecturer with both industrial and academic experience in procurement, a consultant with rich experience and knowledge in human trafficking, and a law enforcement officer with experience in immigration and modern slavery. The modified hierarchy model was confirmed in the email and face-to-face interviews, further emphasising the collaborative nature of this research. Content validity was actualised after acquiring the data to facilitate the development of the questionnaire's clarity.

4.3.1.1: Expert Panel Demographics

This study targeted experts from different backgrounds within global supply chains. Interview respondents were recruited through a purposive sampling of priority stakeholders and expanded through additional purposive and snowball sampling. Two main sets of inclusion criteria were applied for experts to participate in the opinion survey, targeting individuals with interest, knowledgeable backgrounds, and a wealth of experience in sustainable supply chains. The text by Pulkkinen and Simola (2000) advised that, in making such decisions, various kinds of expertise, together with subjective assessments, should be utilised to evaluate the decision alternatives against many, possibly conflicting criteria. To select people with these attributes, first, the applied experience of individuals participating in the opinion survey must range from five to forty years. The researchers also required participants from companies likely to operate procurement services through ethical supplier selection.

An expert panel enhances the capability to share views, ideas, knowledge, and concepts. To seek the second category of participating individuals, the researcher required participants from an academic background, such as professors or academicians whose professional careers put them directly in contact with various industry experts.

The second stage of the study involved semi-structured interviews with NGOs. In addition, it included retailer brands, civil society organisations, factories, workers, and various

stakeholders. Companies should be engaged in procuring and sourcing goods locally and internationally.

Individuals who met the above inclusion criteria were selected for the expert opinion survey. Table 4.2 presents the distribution of participating experts, including their background, years of experience, geographical location, and expertise. All these areas of expertise were represented to ensure that, in the early phase of the survey questionnaire development, the industry practitioners' wealth of experience and researcher knowledge was fed back to model development.

Initially, 15 prospective industry and academic participants were contacted to participate in the feedback process by gauging their interest in participating in the expert opinion survey. Five were from the educational setting, and ten were from industry, with proven experience in various fields. Ten of the identified experts were able to complete the survey and ten completed survey questionnaires were received.

Table 4:2Expert respondents' weighing criteria

Weight Value	**Relevance level**	**Explanation**
20%-30%	Highly Relevant	Expert respondents have many years of experience on modern slavery in supply chains and have held a top management position in procurement and international trade or industry practitioners with years of experience of project delivery with initiatives to tackle forced labour in global supply chains. In academia, the respondents have a wealth of knowledge and in-depth studies that contribute to international transport trade and logistics.
10%-19%	Fairly Relevant	Expert respondents have at least 20 years of work experience in procurement, supply chain management, or similar work in transport and logistics. In academia, the respondents have sound knowledge of international trade and supply chain management or modern slavery or project delivery promoting ethical production and fair labour in the workplace. They have a good understanding of the practical implications of forced labour in supply chains, including associated policy standards.
1%-9%	Relevant	Expert respondents have essential work experience in law enforcement, or project delivery promoting the use of sustainable products. In academia, they have a general understanding of the status of modern slavery in supply chains and maritime law.
0%	Irrelevant	No experience or knowledge in relation to the research topic.

Source: Author

In addition to questionnaires, semi-structured interviews assist in collecting data to measure research variables and answering the research question (Trigueros et al., 2017). In addition, a focus group discussion will help the project understand the existing knowledge and support to verify that people's stated preferences represent their true opinions. Selecting appropriate experts helps heighten the reliability of the study and the accuracy of group judgments.

Experts have dissimilar impacts on the final decisions and results; thus, each expert's evaluation weighting criteria have been developed and allocated based on their job position, qualification, and work experience. Expert weighting criteria relate to the relevance of data that is regarded as a function of assigned professional (position held in the organization) and work experience in terms of time in years. Since experts' judgment quality is based upon their experience, knowledge and capability, this study carefully selected experts for the evaluation weighting criteria based on their wealth of experience and knowledge in interest. Table 4.3 below demonstrates the expert opinion survey participant profile.

Table 4:3Profiles of participants in the expert opinion survey

Participant Expert	**Field of Expertise**	**Expert Weight**	**Job Tittle and Position**	**Experience (In Yrs.)**	**Country(ies) of Operation**
Expert 1	Seafarer	15%	Chief mate	12 Years	UK,
Expert 2	Offshore marine service	15%	Senior cargo operator	15 Years	Nigeria
Expert 3	Academic and Practitioner	20%	Professor	23 Years	USA
Expert 4	Seafarer/ Academic	5%	Deck Cadet/ Researcher	8 Years	UK
Expert 5	NGO	10%	Consultant	12 Years	UK/ Nigeria/ Ghana
Expert 6	Academic and practitioner	15%	Senior Lecturer	27 Years	UK
Expert 7	Academic	5%	Lecturer/ Researcher	13 Years	Ethiopia/ UK
Expert 8	Academic	5%	Lecturer/ Researcher	10 Years	UK/ Ethiopia
Expert 9	International Trade/ Business	10%	Procurement Manager/ Line manager	15 Years	UK/ Africa
Expert 10	Law enforcement	10%	Consultant/ Lawyer	7 Years	UK

Source: Author

4.4: Data Analysis and Description

Data analysis is essential to evaluate interdependent relationships through a visual structural model. The expert opinions survey further established the degree to which the identified indicators and sub-indicators are comprehensive to the study. Reliability and validity tests were

conducted to affirm the quality of the research. According to Bonett and Wright (2014), Cronbach's Alpha is among the most commonly used reliability measures in the social and organisational sciences. Cronbach's Alpha was used to evaluate the content and validate the measures. It indicates the degree to which individual experts consider a respective attribute "essential" (Cortina, 1993; Cho and Kim, 2015). Cronbach's Alpha was adopted for the reliability of this survey since it reveals whether received feedback is consistent between items. The idea is that there should be considerable covariance among the comparable items if the instrument is reliable (Gliem and Gliem, 2003). However, extrapolating from reliable results obtained under a particular set of circumstances to other situations must be done carefully (Brown, 2002). The reliability of an individual response reliability is examined by using the following equations and functions.

$$a = \frac{K}{K-1}\left(1 - \frac{\sum_{i=0}^{K} \sigma_{Y_i}^2}{\sigma_X^2}\right) \tag{4.1}$$

$$a_{standardised} = \frac{K\bar{Y}}{1+(K-1)\bar{Y}} \tag{4.2}$$

Where k refers to the number of questions in the survey, $\sigma 2Yi$ refers to the variance associated with the current question, and σ2x refers to the variance associated with the observed total scores. Equation 4.2 examines the Alpha based on standardised items, where K is defined as the number of questions in the survey and $\bar{\gamma}$ refers to the meaning of the non-redundant correlation coefficients.

4.4.1: Cronbach methodology

This study uses Cronbach's alpha coefficient to validate the adapted questionnaire. The pilot testing phase must measure the strength of consistency as it is a conventional and consistent technique to measure the reliability of items in the instrument (Nawi et al., 2020). The overall assessment of a measure's reliability of Cronbach's Alpha ranges from 0 to 1, with higher values denote higher accordance between items (Brown, 2002). Taber (2016) indicated that Cronbach's Alpha is a statistic commonly quoted by authors to demonstrate that tests and scales constructed or adopted for research projects are fit for purpose. Higher Cronbach's alpha values showing greater scale reliability, whilst lower values imply that the measured items do not reliably measure the same construct (Taber, 2017). More significant values nearest to 1.0 indicate a more considerable consistency in measurement. Typically, in Cronbach's Alpha, a

value of 1.0 means that all the test score variability is due to actual score differences without any mistake in measurement. Conversely, no reliable variance is associated with a value score of 0.0, which indicates many measurement mistakes, with no consistency (Bonett and Wright, 2014). A value of 0.8 shows that the collected data is reliable. The data is also acceptable if the value falls between 0.7 and 0.8. However, in principle, a value less than 0.7 shows poor internal consistency of the data. However, a more detailed interpretation of the range of Cronbach's coefficient alpha was put forward by Sekaran and Bougie (2010), as shown in Table 4.4 below.

Table 4:4Rule of thumb for Cronbach's Alpha Coefficient

Cronbach's Coefficient Alpha (α)	**Reliability**
0.80 to 0.95	Excellent
0.70 to 0.80	Good
0.60 to 0.70	Fair
< 0.60	Poor

Source: Sekaran and Bougie (2010)

Cronbach's alpha measures internal consistency and reliability (Nawi et al., 2020), but a "high" value for alpha does not imply that the standard is unidimensional. As shown in Table 4.5, based on the experts' judgements, the study further calculated the total Sum, Mean, Weighted Average, and Standard Deviation. Table 4.6 then shows the ranked indicators. Ursachi et al. (2015) found that validity can translate to the accuracy of a measurement.

For this pilot study, 38 survey questions were tested. As shown in Table 4.5, the survey questionnaire has a high-reliability level. The summed Cronbach's alpha was 0.88078. Based on the rule of thumb for Cronbach's coefficient alpha (α), as presented by Sekaran and Bougie (2010) in Table 4.4 above, the alpha coefficient of the 38 questions (0.88078) indicates that the questions have "excellent" internal consistency.

Table 4:5Survey Questionnaire reliability statistical test

	Reliability Statistics	
	Cronbach's Alpha	Total Number of Questions
Whole Survey	0.88078	38

Source: Author

4.4.2: Discussion and representation of results

Table 4.6 and Table 4.7 display the Sum, Mean, Weighted Average, and Standard Deviation (S.D.) ranking of the identified risk factors based on expert judgements. Standard deviation measures the extent to which a given data set is widely distributed or close to the mean.

Table 4:6Expert judgement calculated total Sum, Mean, Weighted Average, and Standard Deviation

Identified indicators		**How important are the identified indicators to global supply chains, Manufacturing, and international trade?**			
		Sum	**Mean**	**Weighted Average**	**S.D**
Lack of corporate commitment	**(LC1)** Lack of compliance	47	4.7	4.69	0.48
	(LC2) Unfair competition	36	3.6	3.66	0.97
	(LC3) Poor work ethics	46	4.6	4.55	0.70
Gaps in statutory legislation	**(GL4**) Inadequate code of conduct	47	4.7	4.76	0.48
	(GL5) Inadequate Disclosure measures	44	4.4	4.42	0.97
	(GL6) Governance issues (conflict)	42	4.2	4.23	1.03
Socio-economic Pressure	**(SP7)** Poverty	47	4.7	4.69	0.67
	(SP8) Unemployment	43	4.3	4.41	0.82
	(SP9) Illiteracy	39	3.9	4.00	1.20
Work Health and Safety	**(WS10)** Lack of Personal Protective equipment	43	4.3	4.43	0.95
	(WS11) Staff Safety Training	46	4.6	4.55	0.97
	(WS12) Fatigue	41	4.1	4.12	1.10
Commercial Pressure	**(CP13)** Upstream supplier management	36	3.6	3.63	0.84
	(CP14) Responsible sourcing	41	4.1	4.20	0.74
	(CP15) Environmental & Social Governance	44	4.4	4.39	0.52
Wrong Business Model	**(WM16)** Corruption	43	4.3	4.36	0.95
	(WM17) Unethical purchasing	43	4.3	4.36	0.67
	(WM18) Unethical supplier selection	38	3.8	4.84	1.03
Volatile Consumer Demand	**(VD19)** Excessive Overtime	36	3.6	3.60	0.97
	(VD20) Changing Customer choices	38	3.8	3.82	0.79
	(VD21) Global competition	41	4.1	4.06	0.88
Lack of Awareness and Capacity building	**(AC22)** Inadequate stakeholder engagement	44	4.4	4.38	0.52
	(AC23) Lack of information sharing	47	4.7	4.73	0.48

Identified indicators		How important are the identified indicators to global supply chains, Manufacturing, and international trade?			
		Sum	**Mean**	**Weighted Average**	**S.D**
	(AC24) Neglect of human development	42	4.2	4.19	1.23
Lack of Information Disclosure	**(ID25)** Conflict of interest	41	4.1	4.09	0.88
	(ID26) Lack of data protection and privacy	46	4.6	4.59	0.70
	(ID27) Supply chain data reporting	42	4.2	4.22	0.79
Poor Employment and Business Practices	**(EB28)** Debt Bondage	42	4.2	4.17	0.79
	(EB29) Wages Deduction	45	4.5	4.52	0.53
	(EB30) Denial of social protection	41	4.1	4.12	1.29
Human Rights Violations	**(HR31)** Poor living conditions	48	4.8	4.79	0.42
	(HR32) Threat to personal freedom	47	4.7	4.76	0.48
	(HR33) Abuse of illegal status	49	4.9	4.88	0.32
	(HR34) Gender and pay inequality	42	4.2	4.25	1.03
	(HR35) Neglect of diversity and inclusion	43	4.3	4.38	1.06
Technological Barriers	**(TB36)** Supply Chain mapping	39	3.9	4.00	0.99
	(TB37) Grievance mechanism	36	3.6	3.3	1.35
	(TB38) Monitoring (Auditing)	35	3.5	3.2	1.35

Source: Author

The analysis shows that the standard deviation ranges from 0 to 1.35. When the standard deviation is high, it implies that the experts attribute a particular measurement value factor to many other matters. Furthermore, the study considers a data set based on the experts' weighted average. How significant are the identified indicators to the overall performance of businesses and policymakers in tackling modern slavery in global supply chains? Figure 4.14 presents the radar chart for the mean and weighted average of the questionnaire results.

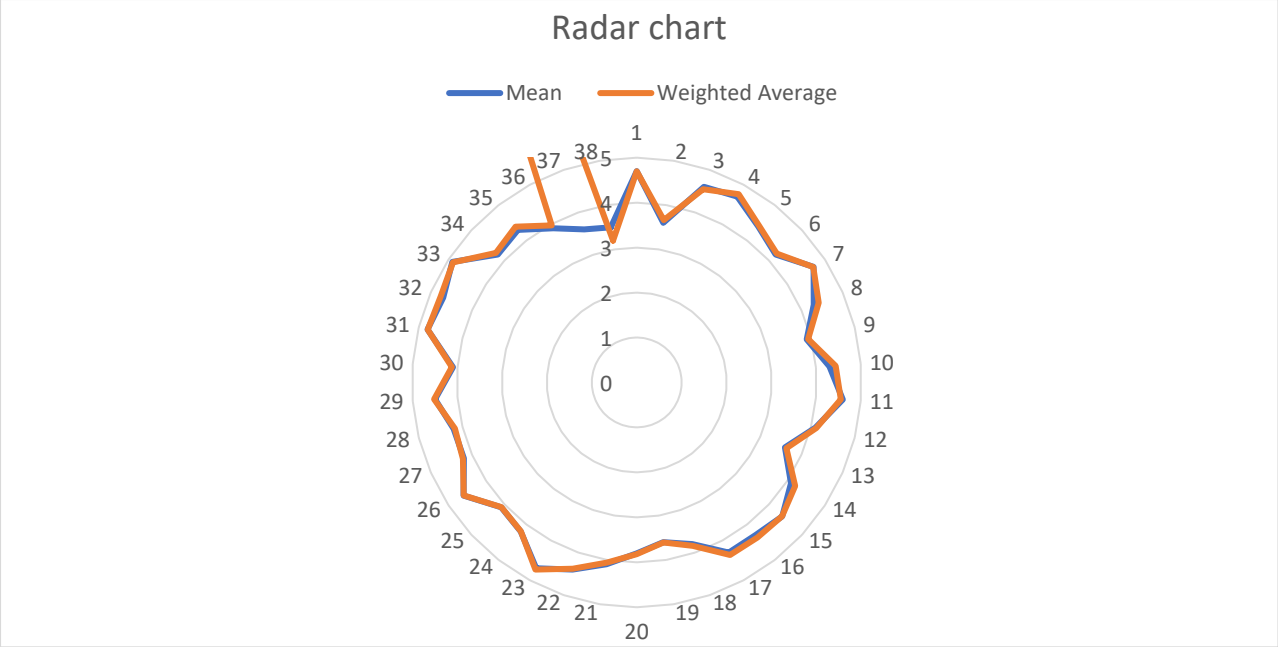


Figure 4:14Radar chart based on the mean and weighted average of the questionnaire results
Source: Author

Table 4.7 presents a range of standard deviation values from 0.32 to 1.35. These values are crucial as they reflect the diverse perspectives of the experts, with higher values indicating that they attribute a specific element to extend to a range of multiple values. Figure 4.14, a radar chart based on the mean and weighted average of the questionnaire results, further supports this. The chart compares the data based on the Mean and Weighted Average for each modern slavery factor. Notably, the mean and weighted average lines are closely aligned, underscoring the reliability of the experts' weighting scores.

Conversely, low weighted average values revealed that the experts shared similar concerns about certain indicators. In this study, experts were asked to show their scale of agreement or disagreement using a Five-point Likert scale in the questionnaire as highlighted in (Croasmun and Ostrom, 2011; Joshi et al., 2015). *(i.e.,1= Highly Unimportant; 2= slightly Unimportant; 3=Neutral; 4=Important; 5=Highly Important).* Given the five-point Likert scale used in this survey, some indicators that scored below 4 “Important” of the ranked mean and weighted average were excluded from the final questionnaire at the end of the analysis as they were less critical or only moderate. These items are marked with an asterisk (*) in the appropriate tables and figures. This focusing on key items further indicates the reliability and validity of the research findings on modern slavery identification and prevention in global supply chains.

Table 4:7Questionnaire survey ranking

Indicators	Sum	Rank (Sum)	Mean	Rank (Mean)	Weighted Average	Rank (W.A)	S. D	Rank (S.D)
(LC1)	47	49	4.7	4.9	4.69	4.88	0.48	1.35
(LC2)	36	49	3.6	4.9	3.66	4.84	0.97	1.35
(LC3)	46	48	4.6	4.8	4.55	4.79	0.70	1.29
(GL4)	47	47	4.7	4.7	4.76	4.76	0.48	1.23
(GL5)	44	47	4.4	4.7	4.42	4.76	0.97	1.20
(GL6)	42	47	4.2	4.7	4.23	4.73	1.03	1.10
(SP7)	47	47	4.7	4.7	4.69	4.69	0.67	1.06
(SP8)	43	47	4.3	4.7	4.41	4.59	0.82	1.03
(SP9)	39	46	3.9	4.6	4.00	4.55	1.20	1.03
(WS10)	43	46	4.3	4.6	4.43	4.55	0.95	1.03
(WS11)	46	46	4.6	4.6	4.55	4.52	0.97	0.99
(WS12)	41	45	4.1	4.5	4.12	4.43	1.10	0.97
(CP13)	36	44	3.6	4.4	3.63	4.42	0.84	0.97
(CP14)	41	44	4.1	4.4	4.20	4.41	0.74	0.97
(CP15)	44	44	4.4	4.4	4.39	4.39	0.52	0.97
(WM16)	43	43	4.3	4.3	4.36	4.38	0.95	0.95
(WM17)	43	43	4.3	4.3	4.36	4.38	0.67	0.95
(WM18)	38	43	3.8	4.3	4.84	4.36	1.03	0.88
(VD19	36	43	3.6	4.3	3.60	4.36	0.97	0.88
(VD20)	38	42	3.8	4.2	3.82	4.25	0.79	0.84
(VD21)	41	42	4.1	4.2	4.06	4.23	0.88	0.82
(AC 22)	44	42	4.4	4.2	4.38	4.22	0.52	0.79
(AC23)	47	42	4.7	4.2	4.73	4.20	0.48	0.79
(AC24)	42	42	4.2	4.2	4.19	4.19	1.23	0.79
(ID25)	41	41	4.1	4.1	4.09	4.17	0.88	0.74
(ID26)	46	41	4.6	4.1	4.59	4.12	0.70	0.70
(ID27)	42	41	4.2	4.1	4.22	4.12	0.79	0.70
(EB28)	42	41	4.2	4.1	4.17	4.09	0.79	0.67
(EB29)	45	41	4.5	4.1	4.52	4.06	0.53	0.67
(EB30)	41	39	4.1	3.9	4.12	4.00	1.29	0.53
(HR31)	48	39	4.8	3.9	4.79	4.00	0.42	0.52
(HR32)	47	38	4.7	**3.8***	4.76	**3.66***	0.48	0.52
(HR33)	49	38	4.9	**3.8***	4.88	**3.63***	0.32	0.48
(HR34)	42	36	4.2	**3.6***	4.25	**3.60***	1.03	0.48
(HR35)	43	36	4.3	**3.6***	4.38	**3.36***	1.06	0.48
(TB36)	39	36	3.9	**3.6***	3.97	**3.36***	0.99	0.48
(TB37)	36	36	3.6	**3.6***	3.3	**3.3***	1.35	0.42
(TB38)	35	35	3.5	**3.5***	3.2	**3.2***	1.35	0.32

Source: Author

*Deleted items, as explained below.

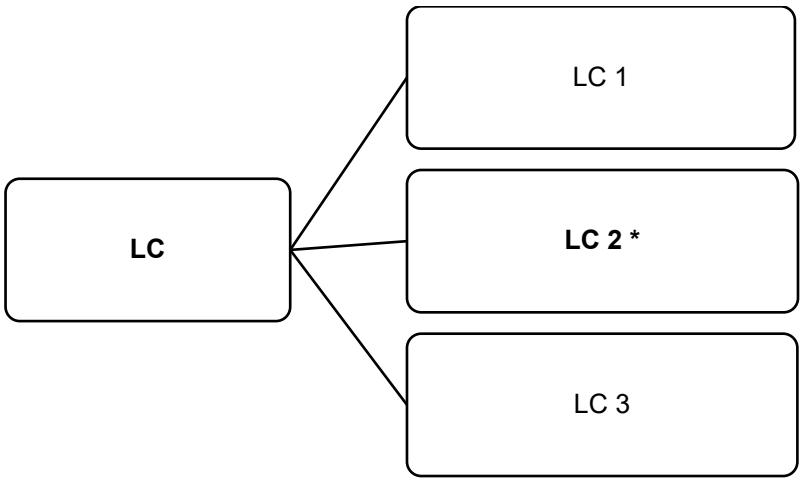


Figure 4:15The modified hierarchical structure for Lack of corporate commitment (LC)
Source: Author

*Includes deleted items, as explained below.

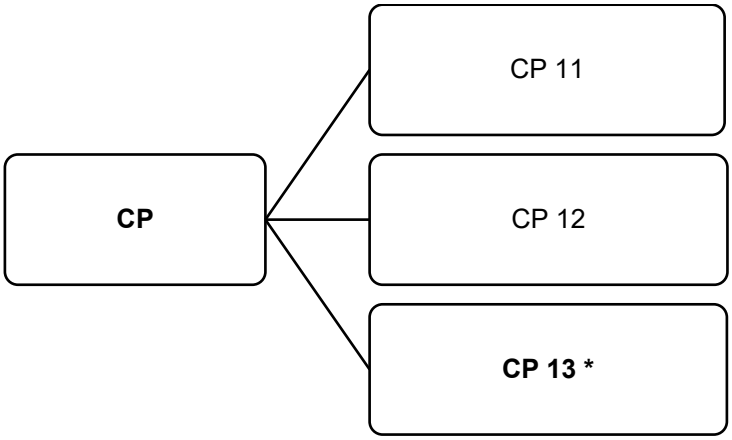


Figure 4:16The modified hierarchical structure for Commercial Pressure (CP)
Source: Author work

*Includes deleted items, as explained below.

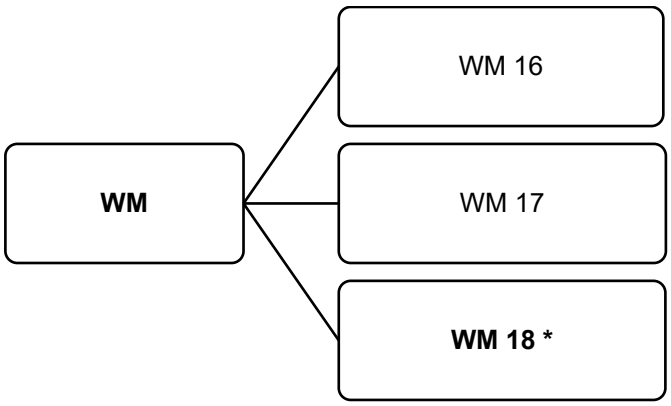


Figure 4:17The modified hierarchical structure for Wrong Business Model (WM)
Source: Author

*Includes deleted items, as explained below.

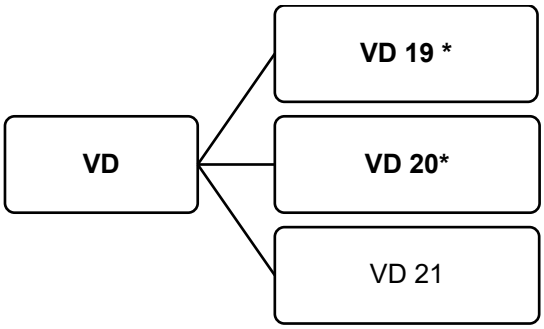


Figure 4:18The modified hierarchical structure for Volatile Consumer Demand (VD)
Source: Author

*Includes deleted items, as explained below.

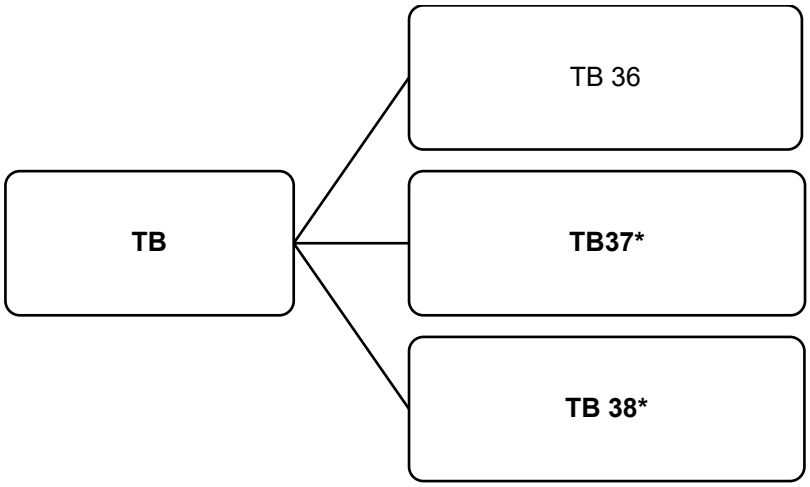
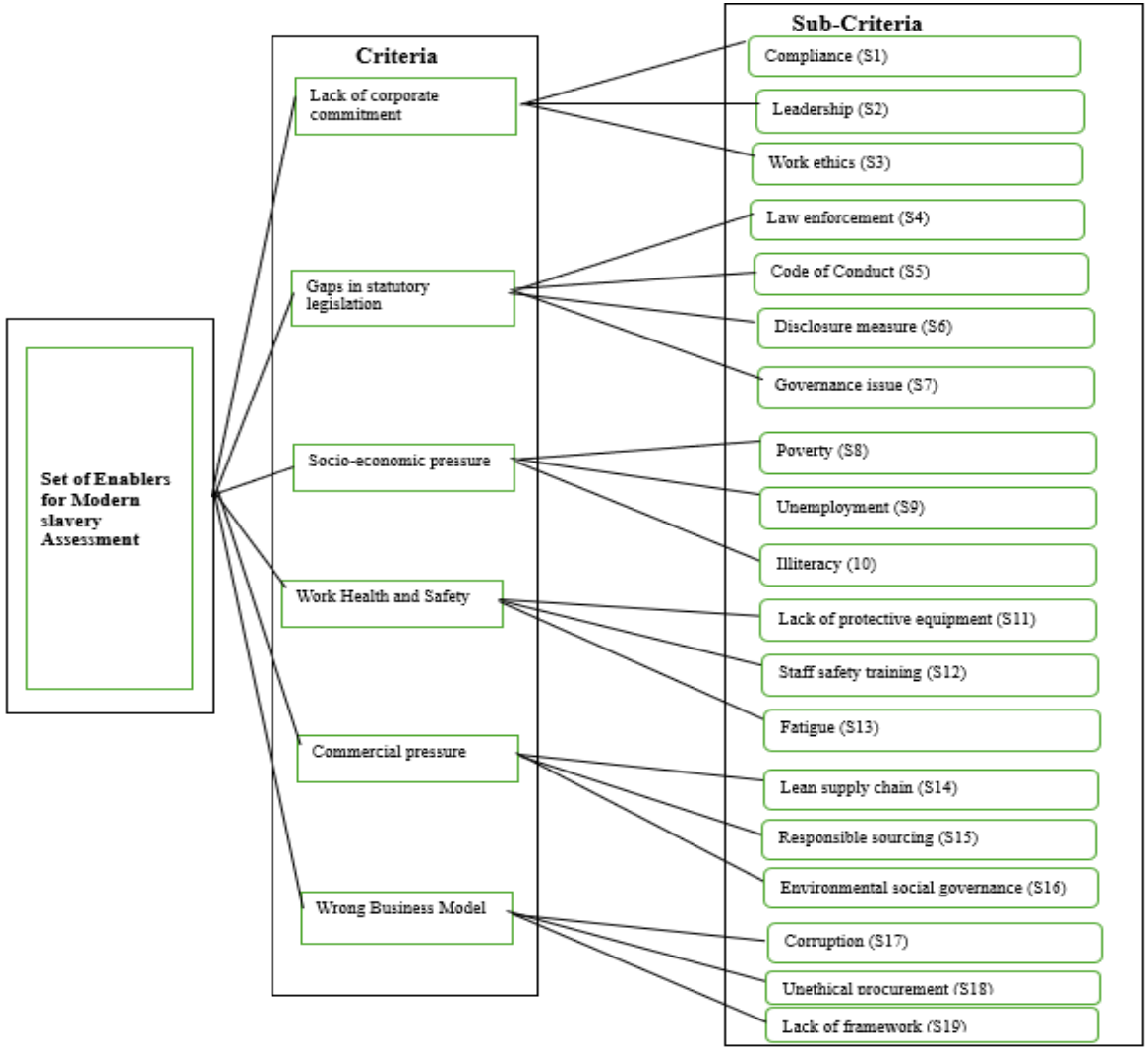


Figure 4:19The modified hierarchical structure for Technological Barriers (TB)
Source: Author
*Includes deleted items, as explained below.

A total of 38 questions were tested in this study. The study calculated the total Sum, Mean, Weighted Average, and Standard Deviation based on the experts' judgements. From the indicators and sub-indicators identified for this study, the survey result analysis is presented through the statistical measures reported in Tables 5.5, 5.6 and 5.7. Also, comparing the results based on the Mean and the Weighted Average, as displayed on the radar chart above (Figure 5.15), shows that the two lines are almost identical, demonstrating the reliability of the experts' weighting criteria. To focus on the identified indicators and sub-indicators considered most relevant, those with Mean and Weighted Average below "4" were excluded from this study. Figure 4.15 (*Fair competition*), Figure 4.16 (*Upstream supplier management), Figure 4.17*

(*Upstream supplier selection*), Figure 4.18 (*Excessive overtime and customer choice*), and Figure 4.19 (*Grievance Mechanism* and *Monitoring*) show the modified hierarchical structure, and the excluded indicators and sub-indicators marked with an asterisk in various statistics, respectively. Figure 4.20 below presents the final hierarchical structure diagram.

However, to further confirm the reliability and validity of the final hierarchical structured diagram, eight sub-indicators were introduced as advised by experts: namely, 1) law enforcement, 2) awareness reporting, 3) overproduction, 4) short life cycle of products, 5) lean supply chain, 6) enterprise resource planning 7), and 8), logistics information systems. The identified indicators/sub-indicators for assessing the performance of business supply chains were ranked and categorised in a modified hierarchical structured diagram. The modified hierarchical structure diagram was again circulated to experts through emails and face-to-face interviews.


Set of Enablers for Modern slavery Assessment
Criteria
Lack of corporate commitment
Gaps in statutory legislation
Socio-economic pressure
Work Health and Safety
Commercial pressure
Wrong Business Model
Sub-Criteria
Compliance (S1)
Leadership (S2)
Work ethics (S3)
Law enforcement (S4)
Code of Conduct (S5)
Disclosure measure (S6)
Governance issue (S7)
Poverty (S8)
Unemployment (S9)
Illiteracy (10)
Lack of protective equipment (S11)
Staff safety training (S12)
Fatigue (S13)
Lean supply chain (S14)
Responsible sourcing (S15)
Environmental social governance (S16)
Corruption (S17)
Unethical procurement (S18)
Lack of framework (S19)

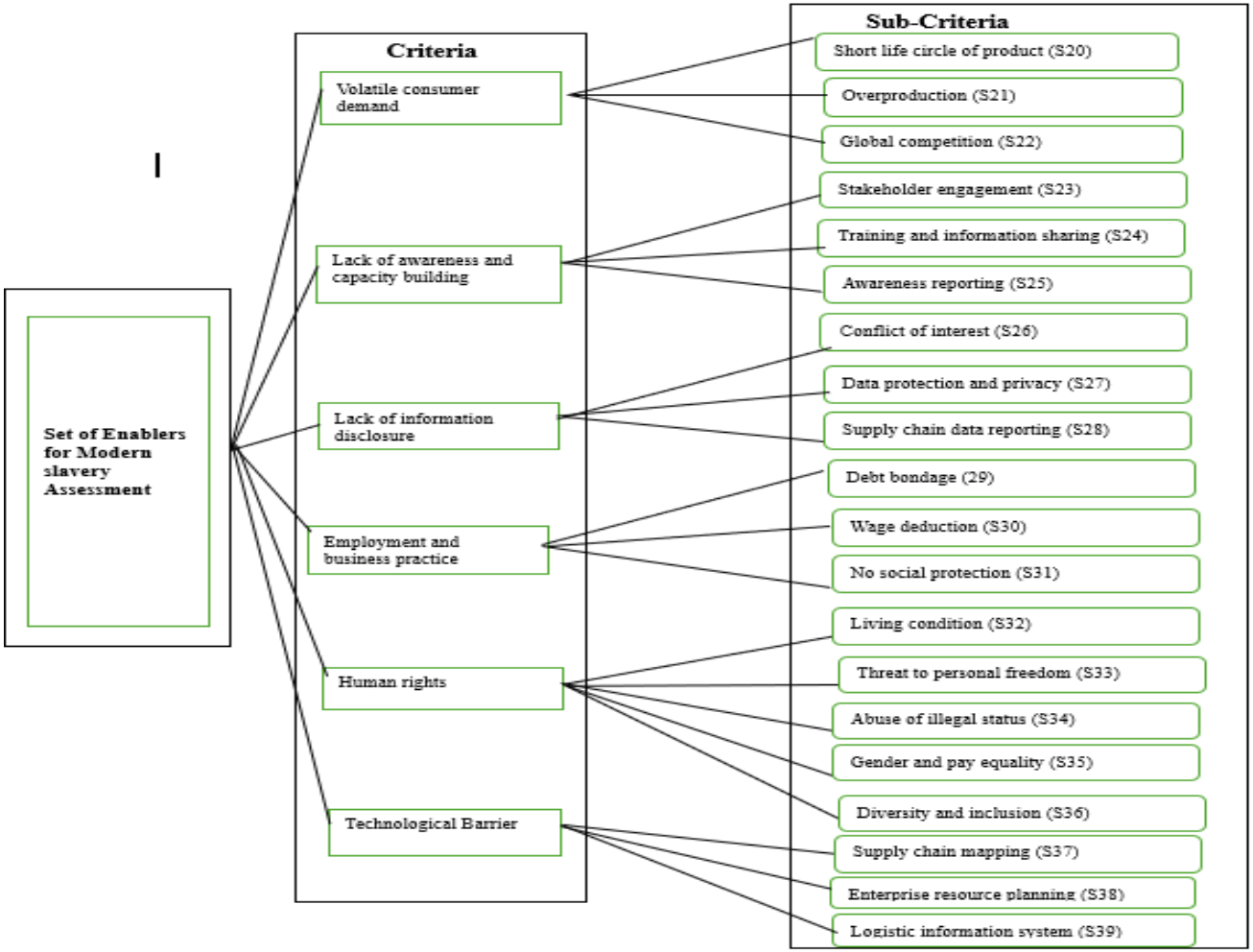


Figure 4:20 Hierarchical structure for modern slavery enablers

Source: Author

4.5: Summary

This chapter is dedicated to findings on the identification and categorization of modern slavery enablers within the research framework. The study literature review and survey questionnaire serve as a guide to bridge the knowledge gap by identifying performance indicators for global supply chains. The study reviewed extant work carefully to determine performance indicators for evidence. A decomposition method was then applied to categorise the unstructured criteria into sub-indicator groups. A questionnaire was designed, and an expert opinion survey was conducted to establish the weights of the identified indicators and sub-indicator groups and to explore any other remaining indicators/sub-indicators yet to be examined by the study.

Experts were carefully selected to validate the identified performance indicators and sub-indicators so as to help managers identify sensitive variables. A hierarchical structure was developed after reviewing existing global practices, regional/local policies, and general guidelines, especially in the research setting. The study presents hierarchical performance assessment indicator groups comprising twelve modern slavery indicators, with 39 sub-indicators. The perception of the significance and weights of the indicator groups and experts varies from person to person, but the quality of the expert judgment in this study was based on their proficiency, capability, experience, and knowledge. Essentially, a consensus of their opinion was reflected in their findings, indicating a high level of agreement.

The next chapter of this thesis assesses the identified performance indicators and employs TISM to analyse the complex relationships among identified drivers, providing practical insights for supply chain management. This in-depth analysis equips the audience with a deeper understanding of the complex dynamics of modern slavery issues. The study also employs AHP models to find priorities and context relations among the indicator groups, offering a practical tool for decision-making in supply chain management. These models provide a tailored approach to decision-making, enhancing the audience's ability to make informed choices.

Chapter 5: Modern Slavery Assessment in Global Supply Chain

5.1: Introduction to the chapter

This chapter delves into the risk assessment of modern slavery through the application of the AHP, which is designed to identify and prioritize critical enabling factors that may result in labour exploitation across global supply chains. The research will explore these vital enablers of modern slavery by employing a TISM approach, which will provide a holistic view of their interconnections. This model establishes a comprehensive framework for understanding the factors that influence ethical supplier selection, including their interactions and prioritization, thereby enabling an empirical assessment of which elements facilitate modern slavery within the global supply chain. Furthermore, the AHP technique is utilized to allocate weights to each enabler of modern slavery, allowing for an evaluation of their relative importance and the ranking of criteria to detect unethical practices in supply chains. The methodology for assessing a cohesive set of indicators is aimed at identifying the enablers of modern slavery in global supply chains. The evaluation of these indicators' significance is an established method that supports decision-making by elucidating the causes and effects that directly and indirectly impact the achievement of goals and outcomes. This study facilitates a comparison of the driving forces, and the weights derived from the TISM and AHP techniques, capturing and modelling all pertinent enablers and attributes that affect modern slavery in European and UK supply chains.

5.1.1: Integrated methodology combining the AHP method and the TISM technique

From the description of the AHP and TISM methods, it is observed that neither technique requires any training stage, and no relevant data exists for them (Thomas et al., 2017). Figure 5.1 presents a flowchart of the integrated methodology combining the AHP method and the TISM process adopted here. First, a literature review and preliminary survey generate a list of all possible factors. Then, the expert induction process is employed to collect the data for this study. The result is obtained after reviewing and checking the intermediate outputs from the expert contribution.

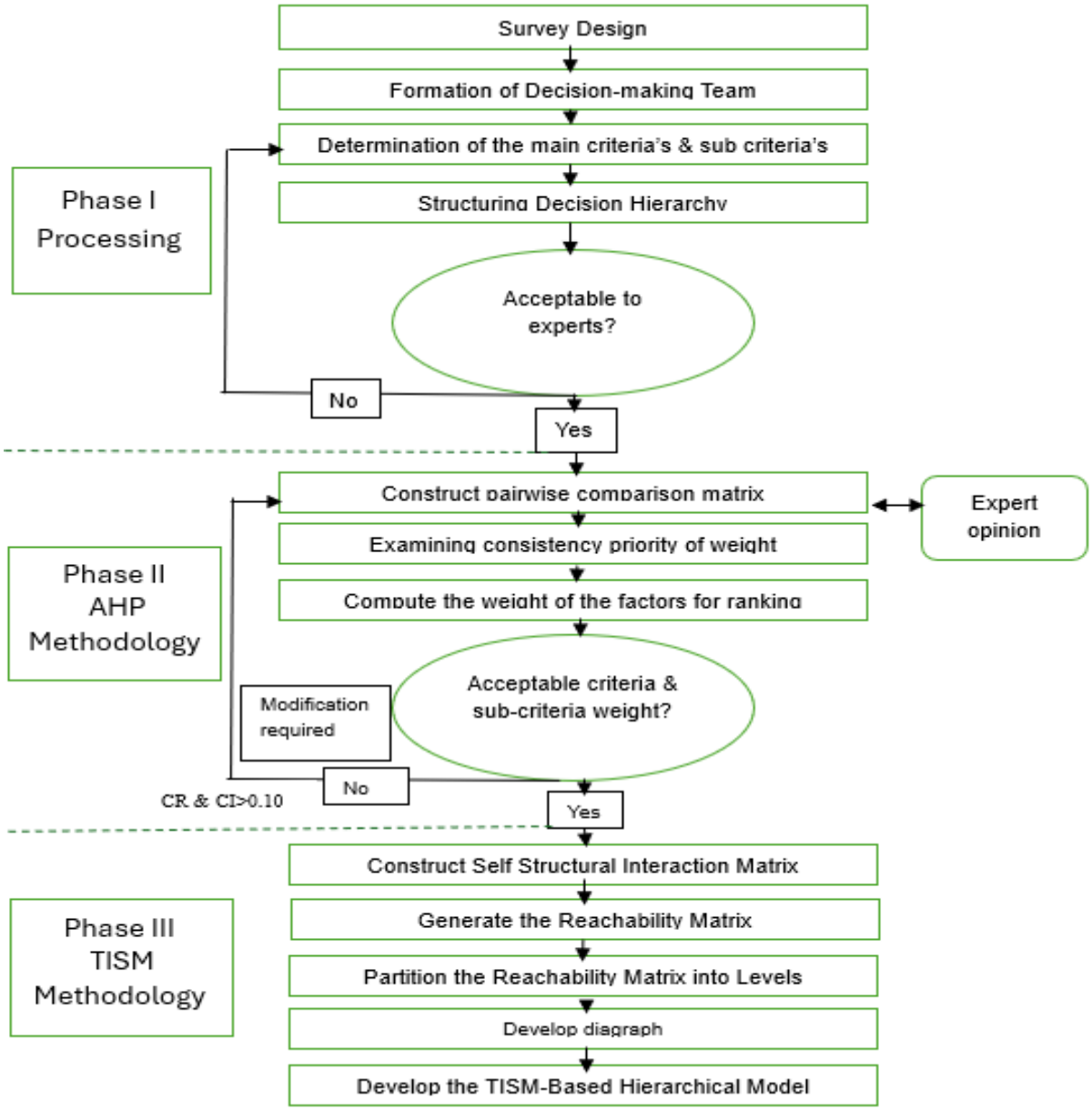


Figure 5:1Integrated model for performance evaluation
Source: Author.

5.2: Results from the AHP technique through the collected data to establish criteria weights

The results provided by the pairwise comparison method, a precise and reliable tool, are then meticulously analysed to reveal the consistency of expert responses. The scores devised show when there is an unacceptable level of inconsistency within the responses and pinpoint where the inconsistency may originate. This ensures that the indicators are consistent and allows decision-makers to have a sound understanding of them.

Comprises four stages:

a) Developing a single pairwise comparison matrices for the leading indicators.

b) Multiplying the merits of the indicators' pairs in each matrix row to estimate the *nth root*.

c) Normalising the root of the pairwise comparison outputs to get the weights of the indicators.

d) Calculating and validating the Consistency Ratio (CR).

These four stages were performed using the pairwise comparison data provided through the completed questionnaires, which recorded the expert opinions of representatives of the supply chain industry. Pairwise comparison is a tool that greatly assists policy and decision makers can helps them equate the different pairs of indicators and judge which needs urgent action for improvement. This pairwise comparison activity is among the analytical hierarchical processes shown in Table 6.7.

5.2.1: Developing pair-wise comparison matrices for the main criteria (Stage A)

The computation process relies on the responses in the "Pairwise comparison of criteria" segment of the survey questionnaire (Appendix II). Within this context, the eigenvalue method of AHP was employed, and this is shown in the 4x4 matrix of Table 5.1 to facilitate the calculation process.

Table 5:1Pairwise comparison with respect to Gaps in Statutory legislation

	L	C	D	G
L	1	0.664	0.723	0.675
C	1.506	1	0.941	0.879
D	1.384	1.063	1	0.869
G	1.481	1.137	1.151	1
SUM	5.371	3.864	3.815	3.423

Source: Author

The initials L, C, D, and G represent the Sub indicators for Gaps in statutory legislation: **L**ack of enforcement, Inadequate **c**ode of conduct, Inadequate **d**isclosure measures, and **G**overnance issues. Moreover, pair-wise comparisons can greatly assist policy and decision-makers in comparing the different indicators in pairs and judging which entity needs urgent upgrades. In

this study, the use of pair-wise comparisons gives added value to the assessment of supply chain visibility, since the selected indicator identifies which enabler is more critical in tackling modern slavery in supply chains. Figure 5.2 highlights the priorities concerning Gaps in statutory legislation.

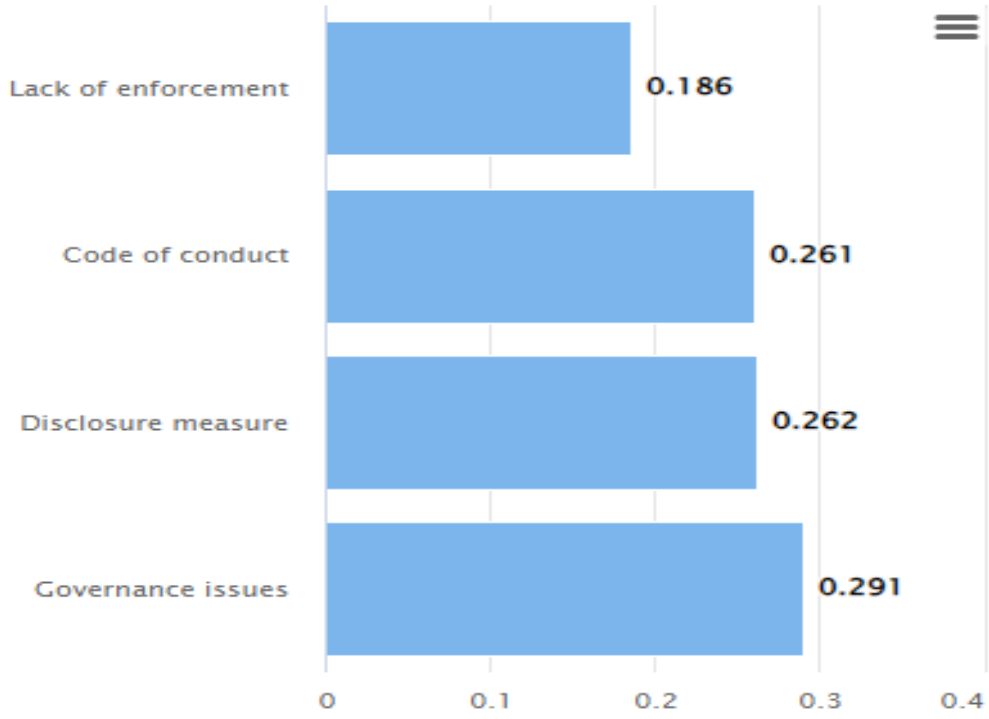


Figure 5:2Priorities with respect to Gaps in statutory legislation
Source: Author

5.2.2: Multiply the value of each row and calculate the nth root of the main indicators (Stage B)

For such a weight to be obtained, it is important first to compute the fourth root of the pair-wise comparison output in a row of the matrix, which results from repeated squaring and normalization.

An example is given below.

$$\mathbf{L}=\left(\left(\mathbf{1} \times \mathbf{0.664} \times \mathbf{0.723} \times \mathbf{0.675} \right) \frac{\mathbf{1}}{\mathbf{4}} \right) = \mathbf{0.754}$$

The fourth roots of every indicator individually can be calculated similarly, as represented in Table 5.2 below. The aggregated result of the fourth root has a given value of 4.052.

Table 5:2The nth root of each criterion and the aggregated result of the 4th roots

	L	C	D	G	$\boldsymbol{nth}$ root of indicators
L	1	0.664	0.723	0.675	0.754
C	1.506	1	0.941	0.879	1.056
D	1.384	1.063	1	0.869	1.063
G	1.481	1.137	1.151	1	1.179
SUM	5.371	3.864	3.815	3.423	4.052

Source: Author

5.2.3: Normalise the 4th roots of the obtained weights of the indicators (Stage C)

To normalise the weight of each criterion, their nth root should be divided by the aggregated total of nth roots. The normalised weight for Lack of enforcement (L) is calculated as follows: $\frac{0.754}{4.052} = 0.186$. The normalised weight for criterion L is 0.186 and the weights of the other indicators, calculated similarly, are presented in Table 5.3.

Table 5:3Priority Weight (PW) of each criterion and aggregated result of the 4th roots

	L	C	D	G	$\boldsymbol{nth}$ root of indicators	Priority Weight (PW)
L	1	0.664	0.723	0.675	0.754	0.186
C	1.506	1	0.941	0.879	1.056	0.261
D	1.384	1.063	1	0.869	1.063	0.262
G	1.481	1.137	1.151	1	1.179	0.291
SUM	5.371	3.864	3.815	3.423	4.052	1.000

Source: Author

5.2.4: Calculate and validate the consistency ratio (Stage D)

Each value in the row (SUM×PW) in Table 5.4 is the result of multiplying the individual SUM by the respective weight for that criterion shown in the column PW.

To determine the CR for this data set, the first step is to find the total for each column in the 4x4 matrix. For criterion L, this is done as follows: SUM= (1+ 1.506+1.384+1.481) =5.371.

λmax is the sum of the overall (SUM × PW) 5.371 x 0.186 = 0.999

This process is repeated for each of the criteria and the result is shown in Table 5.7

Table 5:4The calculation of the consistency ratios (SUM x PW value for each indicator

	L	C	D	G	$\boldsymbol{nth}$ root of indicators	Priority Weight (PW)
L	1	0.664	0.723	0.675	0.754	0.186
C	1.506	1	0.941	0.879	1.056	0.261
D	1.384	1.063	1	0.869	1.063	0.262
G	1.481	1.137	1.151	1	1.179	0.291
SUM	5.371	3.864	3.815	3.423	4.052	1.000
SUM × PW	0.999	1.009	0.999	0.996		

Source: Author

Another critical aspect of the AHP process is the consistency check of the judgments or comparisons devised by Saaty and Vargas (2012). The participants may need clarification or make poor judgments during the procedure, since the evaluation process can be exhausting. These redundant checks involve the calculation of CR. An example of verifying consistency is as follows:

> If criteria 1 and 2 are evenly critical, they should maintain identical ratios with other criteria.
>
> When this check does not happen, inconsistencies in the judgments are apparent. Saaty (1980) remarked that these inconsistencies are acceptable if they are of a lesser magnitude (10%) than the actual measurements. However, an essential advantage of AHP is that it can accommodate this inconsistency while keeping a check on it to realise coherence by using the CR for each comparison matrix.
>
> Deviation from consistency can be calculated by adopting the formula CI = (λmax-n) / (n-1), where λmax is the largest principal eigenvalue, n is the number of elements being compared, and CI is the Consistency Index.

Having established the SUM x PW values, the next step is to determine the λmax value. λmax is the sum of the overall (SUM × PW) as is demonstrated below.

λmax = (0.999 + 1.009 + 0.999 + 0.996) = 4.003

$\lambda max = 4.003$

$CI = (\lambda max - n)/ (n - 1)$, where n is the number of indicators compared.

$$CI = \frac{4.003-4}{4-1} = 0.003$$

$$\text{CI} = 0.003$$

Having found the CI, the next step is to calculate the CR. The CR is found by dividing the CI by the RI:

$$\text{CR} = \frac{CI}{RI}$$

The CI of a randomly initiated reciprocal matrix from a scale of 1 to 9 is called RI. Saaty (1994) devised an average RI for matrices up to an order of 15 with a sample size of 500. Table 6.11 gives the number of variables in a matrix and the average RI for those matrices. The correspondence of CI to RI yields the CR: CR = CI/RI. A CR of 0.10 or less is deemed acceptable. The RI is determined from a lookup table (Table 5.5) and is a direct function of the number of criteria being rated (Saaty, 1990). The method of pairwise comparisons is methodical and comprehensive, but one might want to repeat a set of pairwise comparisons if the consistency ratio is alarmingly high. The decision maker can redo the comparison matrix if desired to improve consistency.

Table 5:5Saaty's Standard RI Scale

n	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
RI	0	0	0.58	0.90	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.54

Source: Saaty (1994)

The CR emphasizes to the decision maker how consistent the responses have been throughout the pair-wise comparisons. CR is calculated through dividing the CI by a RI. With the current matrix being composed of four criteria the RI value of interest is 0.9. Using this, the CR is calculated as follows:

$$\text{CR} = \frac{CI}{RI} \quad \frac{0.003}{0.90} = 0.003$$

CR= 0.003

Thus, the CR value of 0.003 is well within the usually acceptable level of between 0 and 0.1 (Kauko, 2002). This means that the pair-wise comparisons performed by the experts provided a valid set of consistent responses.

5.2.5: Converting Local Weights to Global Weights

When finding the weights of each sub-criterion within the hierarchical model, it is first necessary to calculate the local weight of each within its own criteria group. Once this has been established, it is possible to calculate the global weight of each sub-criterion within the overall model. The calculation is done by multiplying the local weight of the sub-criterion by the weight of its parent criteria group. The resulting local weights describe the relative priorities concerning their parent criterion. Thereby, global weights for criteria show each criterion's importance in the hierarchy's overall context. The priorities for the choices of the AHP are calculated by the sum of the local and global weights for each alternative. The priorities are represented in Table 5.6.

Let's take a practical example to illustrate the calculation of the global weight of the gaps in statutory legislation sub-criteria. For instance, if we have a local weight within its criteria group (Lack of enforcement) of 0.186 and weight for the Gaps in statutory legislation of 0.076, we can calculate the global weight for the identified main and sub-criteria. The real-world application of the calculation process helps solidify the understanding of the concept.

0.186 x 0.076 = 0.014

Table 5:6Values of pairwise comparisons of main criteria

rank	Criterion name	Criterion weight
12	Lack of corporate commitment	0.046
8	Gaps in statutory legislation	0.076
9	Socio-economic pressure	0.071
2	Work health and safety	0.106
5	Commercial pressure	0.086
7	Wrong business model	0.084
10	Volatile consumer demand	0.065
4	Lack of awareness and capacity building	0.098
6	Lack of information disclosure	0.085
3	Employment and business practice	0.102
1	Human rights	0.12
11	Technological barrier	0.061

Source: Author

As shown in Table 5.6 above, according to the set of enablers for modern slavery assessment, *Human rights* are the first priority. According to the obtained weights, the remaining criteria are ranked as follows: *Work health and safety, Employment and business practices, Lack of awareness and capacity building, Commercial pressure, Lack of information disclosure,*

Wrong business model, Gaps in statutory legislation, Socio-economic pressure, Volatile consumer demand, Technological barriers, and *Lack of corporate commitment.*

Table 5:7Global weights and ranking of enablers of modern slavery in supply chains (sub-criterion)

Main Criterion	**Main criterion weight**	**Sub-criterion**	**Sub-criterion weight**	**Global weight**	**Rank**
		Lack of compliance	0.226	0.010396	39
Lack of corporate commitment	0.046	Weak leadership	0.365	0.01679	36
		Poor work ethics	0.409	0.018814	31
		Lack of enforcement	0.186	0.014136	38
		Inadequate code of conduct	0.261	0.019836	28
Gaps in statutory legislation	0.076	Inadequate disclosure measures	0.262	0.019912	26
		Governance issues	0.291	0.022116	24
		Poverty	0.259	0.018389	32
Socio-economic pressure	0.071	Unemployment	0.415	0.029465	12
		Illiteracy	0.326	0.023146	23
		Lack of protective equipment	0.274	0.029044	15
Work health and safety	0.106	Lack of staff safety training	0.346	0.036676	5
		Fatigue	0.38	0.04028	2
		Lean supply chain	0.19	0.01634	37
Commercial pressure	0.086	Responsible sourcing	0.403	0.034658	8
		Environmental social governance	0.406	0.034916	7
		Corruption	0.237	0.019908	27
Wrong business model	0.084	Unethical procurement	0.454	0.038136	4
		Lack of framework	0.31	0.02604	19
		Short life circle of product	0.315	0.020475	25
Volatile consumer demand	0.065	Over-production	0.27	0.01755	34
		Global competition	0.415	0.026975	16

		Stakeholder engagement	0.274	0.026852	17
Lack of awareness and capacity building	0.098	Training and information sharing	0.404	0.039592	3
		Lack of awareness reporting	0.321	0.031458	10
		Conflict of interest	0.225	0.019125	30
Lack of information disclosure	0.085	Data protection and privacy	0.362	0.03077	11
		Supply chain data reporting	0.413	0.035105	6
		Debt bondage	0.288	0.029376	13
Poor employment and business practices	0.102	Wage deduction	0.396	0.040392	1
		Denial of social protection	0.316	0.032232	9
		Poor living conditions	0.143	0.01716	35
Human rights violations	0.12	Threat to personal freedom	0.243	0.02916	14
		Abuse of illegal status	0.198	0.02376	22
		Gender and pay inequality	0.199	0.02388	20
		Diversity and inclusion	0.218	0.02616	18
		Supply chain mapping	0.295	0.017995	33
Technological barriers	0.061	Enterprise resource planning	0.314	0.019154	29
		Logistics information systems	0.391	0.023851	21

Source: Author

As shown in Table 5.7 above, according to the set of indicators for modern slavery assessment and sustainable supply chain performance, *Wage deduction* is the most important link to modern slavery. The subsequent rankings, according to the weights obtained, are *Fatigue*, *Lack of training and information sharing*, *Unethical procurement*, *Lack of staff safety training*, *Inadequate supply chain data reporting*, *Environmental & social governance*, *Lack of responsible sourcing*, *Denial of social protection*, *Lack of awareness reporting*, *Lack of data protection and privacy*, *Unemployment*, *Debt bondage*, *Threat to personal freedom*, *Lack of protective equipment*, *Global competition*, *Inadequate stakeholder engagement*, *Neglect of diversity and inclusion*, *Lack of framework*, *Gender and pay inequality*, *Logistics information*

systems, *Abuse of illegal status*, *Illiteracy*, *Governance issues*, *Short life-cycle of products*, *Inadequate disclosure measures*, *Corruption*, *Inadequate code of conduct*, *Enterprise resource planning*, *Conflict of interest*, *Poor work ethics*, *Poverty*, *Supply chain mapping*, *Overproduction*, *Poor living conditions*, *Weak leadership*, *Lean supply chain*, *Lack of enforcement and compliance*. Figure 5.3 presents priorities for the set of indicators for modern slavery in global supply chains.

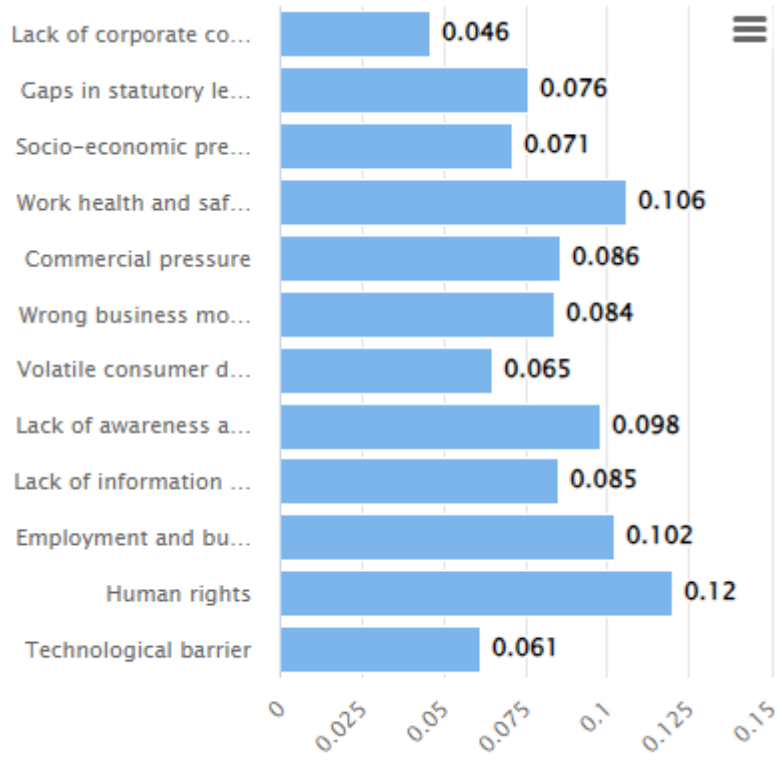
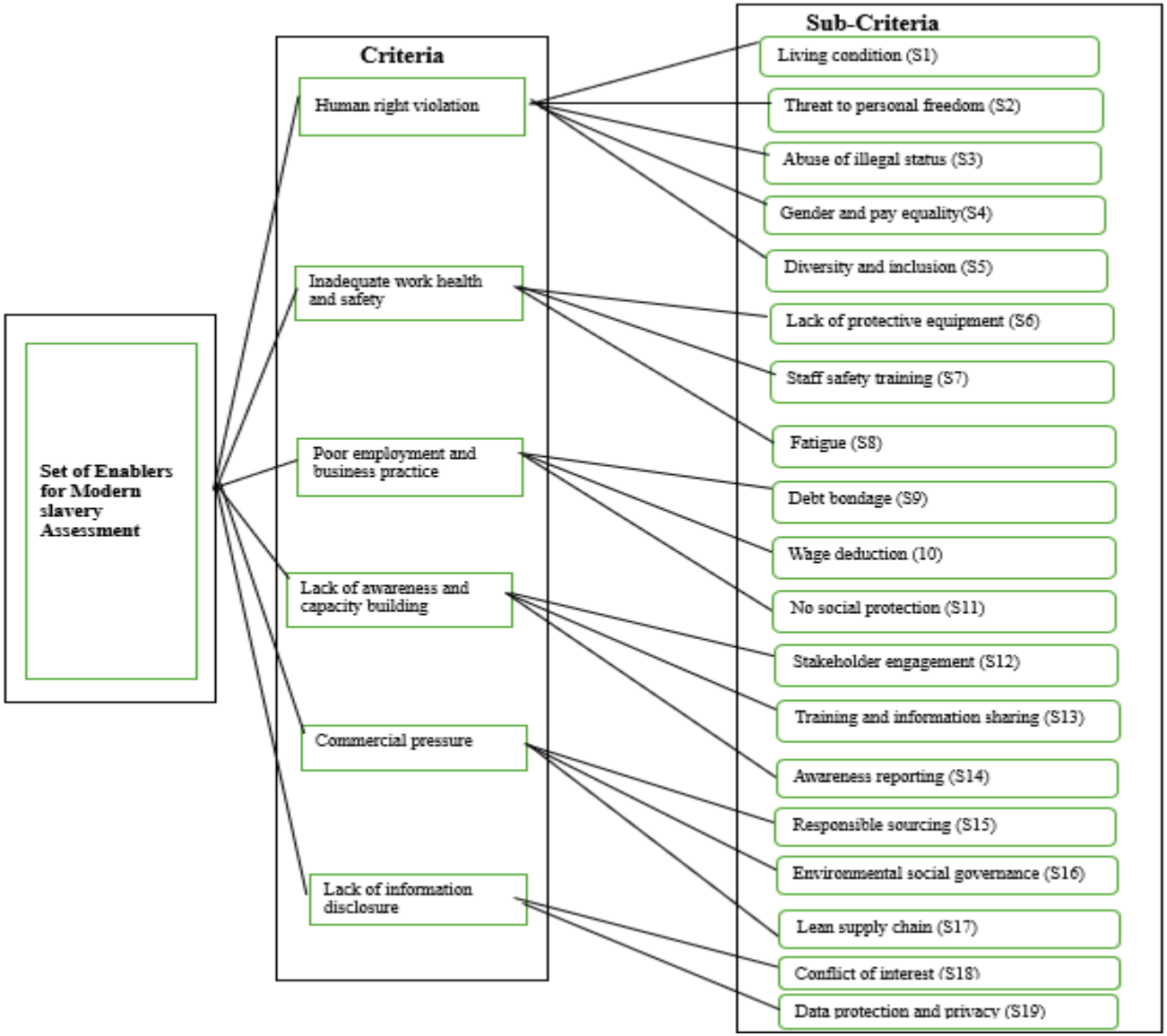


Figure 5:3Priorities with respect to set of indicators for modern slavery assessment and sustainable supply chain performance

Source: Author work

5.2.6: A sustainable supply chain decision making model

Notably, the input to all the criteria was clearly defined and described to give participants a clear insight into all criteria that needed to be assessed. The evaluators for this study, including the survey respondents, were actively involved and asked to compare each criterion at a level group of the hierarchy on a pairwise basis, ensuring their active involvement in the research process. Figure 5.4 shows the final objective hierarchy for assessing socially sustainability in supply chains. This study's main criteria serve as umbrella categories that allow various sub-criteria to be united under a single heading. The twelve main criteria and thirty-nine sub-criteria selected for use in this study are shown in the diagram below.


Set of Enablers for Modern slavery Assessment
Criteria
Human right violation
Inadequate work health and safety
Poor employment and business practice
Lack of awareness and capacity building
Commercial pressure
Lack of information disclosure
Sub-Criteria
Living condition (S1)
Threat to personal freedom (S2)
Abuse of illegal status (S3)
Gender and pay equality(S4)
Diversity and inclusion (S5)
Lack of protective equipment (S6)
Staff safety training (S7)
Fatigue (S8)
Debt bondage (S9)
Wage deduction (10)
No social protection (S11)
Stakeholder engagement (S12)
Training and information sharing (S13)
Awareness reporting (S14)
Responsible sourcing (S15)
Environmental social governance (S16)
Lean supply chain (S17)
Conflict of interest (S18)
Data protection and privacy (S19)

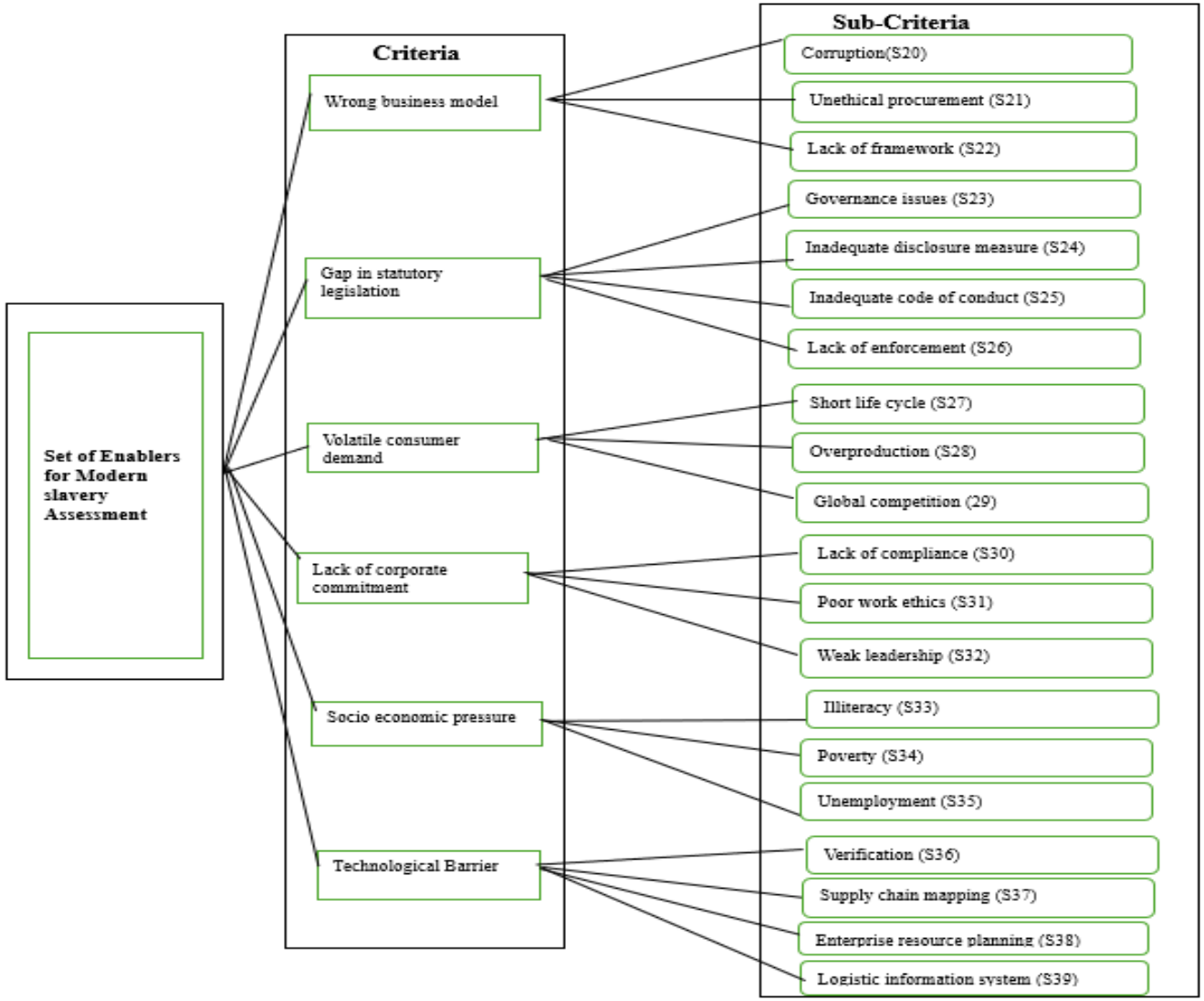


Figure 5:4Final hierarchical structure for modern slavery enablers through AHP
Source: Author

5.3: Results from the TISM technique

The results from the TISM analysis are discussed in the following sections. The TISM model is further developed by adding the polarity of relationships among its elements and transitive links. This polarity is vital for clarifying whether one variable has a positive or negative impact on another (Sushil, 2017; Sushil, 2018a, 2018b; Vaishnavi et al., 2019). A number of previous studies have undertaken similar investigations that reinforce the findings of this research (Dubey et al., 2017; Shibin et al., 2018; Ruben and Varthanan, 2019; Dixit et al., 2021; Dubey et al., 2021).

5.3.1: Structural Self-Interpretive Matrix SSIM Step 1

The first step in developing a theoretical structure using TISM is to identify the twelve drivers of SSIM, as identified from our literature review in the previous sections (Table 2.2). Reviewing the structural model may be needed to validate the conceptual stability and make necessary changes in the model. These interpretive logics are the contextual relationships among the variables, derived through brainstorming during the focus interview to express the relationship between different factors for coordination and responsiveness in a complex supply chain. The SSIM for the factors identified is then formulated by mapping the views of the experts on each pair-wise interaction between the factors (Sushil, 2012). This matrix indicates interrelations based on how experts in an organization view the correlation of each parameter. In the present study, opinions from the industry in which the case study is undertaken have been considered, and an SSIM has been prepared for a company. The SSIM matrix for the modern slavery enablers is prepared as shown in Table 5.8 below.

Four symbols have been utilised to denote the direction of the relationship between the parameters i and j (here, i < j) (Warfield, 1973). Accordingly, each set has paired comparisons, and i and j represent the parameters considered. Four letters, V, A, X, and O are used to represent the type of relationship between any of these paired comparisons in the survey.

V if i will influence j, but j will not influence i.
A if i will not influence j and j will influence i.
X if i and j will influence each other.
O if i and j do not influence each other.

The responses were collected at mutually convenient times. The questionnaire included necessary demographic and professional details concerning the respondents. The various barriers to social responsibility were provided, and the respondents were requested to examine the relationships between them (From Row [Cause] to Column [Effect]), which is referred to

Table 5:8Structural self-interaction matrix (SSIM)

j i	**12**	**11**	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
Lack of corporate commitment **1**	A	V	X	X	V	O	A	A	O	A	X	X
Gaps in statutory legislation **2**	O	X	A	X	V	O	A	A	O	V	X	
Socio-economic pressure **3**	A	V	V	A	A	V	A	X	V	X		
Work health and safety **4**	A	X	A	A	X	A	A	A	X			
Commercial pressure **5**	A	V	V	A	V	X	V	X				
Wrong business model **6**	A	A	X	A	V	A	X					
Volatile consumer demand **7**	V	V	V	V	V	X						
Lack of awareness and capacity building **8**	A	A	V	X	X							
Lack of information Disclosure **9**	A	V	V	X								
Employment and business practice **10**	A	X	X									
Human rights **11**	V	X										
Technological barrier**12**	X											

Source: Author

as a pairwise comparison. In the set of 12 barriers, the experts were again asked to draw from their knowledge and expertise in identifying the set of pairs that have strong associations themselves. The meaning of each enabler was explained. If there was a relationship between the two variables, the respondents were asked to indicate a "1" and no relationship with a "0." For each entry with "1," the respondents were also asked to explain the rationale (Table 6.15). The process helped the study arrive at insightful information, and thus, an Initial Reachability Matrix (IRM) was created (Table 6.16). The IRM was created based on the cumulative responses of five experts. If three or more respondents rated a relationship as "1," then the corresponding entry in the matrix was "1," or else a "0." The transitive links were identified and cross-checked upon creating the initial reachability matrix. The process can lead to a consensus among the investigators in the context of the contents of the responses.

5.3.2: Developing a Reachability Matrix Step 2

According to Sushil (2005a), the reachability matrix (RM) is derived using the information from the SSIM. The corresponding binary relationship of each entry of the SSIM is transformed into ones and zeros in RM. The matrix's formulation is based on the relation given in Table 5.9, which forms the basis of the initial reachability matrix thus formulated from SSIM Table 5.8). A factor influencing itself is indicated by 1 in the relevant column of the matrix.

Table 5:9Formula entry for reachability matrix

(i-j) Entry	(i-j) Relation	(j-i) Relation
V	1	0
A	0	1
X	1	1
O	0	0

Source: Shibin et al. (2015)

The IRM emerged when we converted the SSIM matrix by substituting V, A, X and O by 1 and 0 as per the following rules (Sushil, 2005b; Shibin et al*.,* 2015): the substitution of 1 and 0 follows the rules below. Table 5.10 displays the IRM

1. If (i, j) in SSIM entry has V, (i, j) figure in IRM becomes 1 and (j, i) figure 0.
2. If (i, j) in SSIM entry has A, (i, j) figure in IRM becomes 0 and (j, i) figure 1.
3. If (i, j) in SSIM entry has X, (i, j) figure in IRM becomes 1 and (j, i) figure 1.
4. If (i, j) in SSIM entry has O, (i, j) figure in IRM becomes 0 and (j, i) figure 0.

Table 5:10Initial Reachability Matrix

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	1	0	0	0	0	0	1	1	1	1	0
2	1	1	1	0	0	0	0	1	1	0	1	0
3	1	0	1	1	1	0	1	0	0	1	1	0
4	0	0	0	1	0	0	0	1	0	0	1	0
5	1	1	1	1	1	1	1	1	0	1	1	0
6	1	1	1	1	0	1	0	1	0	1	0	0
7	0	0	0	1	1	1	1	1	1	1	1	1
8	0	0	1	1	0	0	0	1	1	1	0	0
9	1	1	1	1	1	1	0	1	1	1	1	0
10	1	1	0	1	0	1	0	0	0	1	1	0
11	0	1	0	1	0	1	0	1	0	1	1	1
12	1	0	1	1	1	1	0	1	1	1	0	1

Source: Author work

5.3.3: Developing a Final Reachability Matrix (FRM) to check for transitivity (Step 3)

The FRM is decomposed to create structural models (Sharma et al., 2016). This algorithm-based process provides for grouping variables into different levels depending upon their interrelationships (Menon and Suresh, 2020). The study by Wuni and Shen (2019) developed a holistic review and conceptual framework for the drivers of offsite construction using a TISM Approach. Essentially, this provides a total interpretive structural model in which the relationship among variables is classified. The FRM is obtained by correlating the transitivity among variables (Sushil, 2017).

Table 5:11Final Reachability Matrix with Transitivity

	1	2	3	4	5	6	7	8	9	10	11	12	DP
1	1	1	1*	1*	1*	1*	1*	1	1	1	1	0	11
2	1	1	1	1*	1*	0	1*	1	1	1*	1	0	10
3	1	1*	1	1	1	1*	1	1*	1*	1	1	0	11
4	0	0	1*	1	0	0	0	1	0	1*	1	1*	6
5	1	1	1	1	1	1	1	1	0	1	1	0	10
6	1	1	1	1	0	1	0	1	0	1	0	1*	8
7	1*	1*	0	1	1	1	1	1	1	1	1	1	11
8	1*	0	1	1	0	1*	0	1	1	1	1*	0	8
9	1	1	1	1	1	1	0	1	1	1	1	1*	11
10	1	1	1*	1	0	1	0	1*	0	1	1	0	8
11	0	1	1*	1	0	1	0	1	0	1	1	1	8
12	1	0	1	1	1	1	1*	1	1	1	1*	1	11
Dep power	11	9	11	12	7	10	6	12	7	12	11	6	

Source: Author

A particular factor's Driving Power (DP) is the total number of factors, including itself, which it may help achieve. At the same time, dependence is the number of factors that may help achieve it, based on driving power and dependence. Table 5.11 shows the final reachability matrix with transitivity.

The final reachability matrix depicts the driving and dependence power of each modern slavery enabler. The DP of each enabler is the total number of factors (including itself) that it affects, i.e., the sum of interactions in the rows (Farris and Sage, 1975). Conversely, the dependence power of each modern slavery enabler is the total number of enablers (including itself) by when it is affected. i.e. the sum of interactions in the columns. Depending on their driving and dependence power, the risks will be classified into autonomous, dependent, linkage and independent risk.

5.3.4: Transitivity principle

The transitivity principle is utilised in ISM to check the consistency of the model designed (Farris and Sage, 1975; Sushil, 2015a, 2015b). The transitivity principle established by Warfield (1973) can be described with an illustrative example:

> If *a* influences *b* and *b* influences *c*, the transitivity property implies that *a* influences *c*.

The transitivity property aids in removing any possible gaps among the variables. This study used the 'transitivity principle' to create the FRM. The transitivity property helps remove the gaps among the variables by adopting the above criteria. Table 5.11 presents the FRM with transitivity.

5.3.5: Partitioning of Reachability Matrix into Different Levels (Step 4)

Ranking different variables into dissimilar scales is called 'level partitioning' (Warfield, 1974; Faris and Sage, 1975; Sushil, 2012; Yadav and Barve. 2016; Jena et al., 2017). The initial step is the calculation of reachability and antecedent sets to attain the levels of variables, as demonstrated in Table 5.12. In any iteration, if the reachability set intersection antecedent set is the reachability set itself, that variable will be situated at the top level of the hierarchy. Next, level partitioning is conducted to place these enablers (elements) level-wise. Elements that are at the top of the hierarchy will not have elements above them. The Reachability Set (RS), Antecedent Set (AS) and Intersection Set (IS) are derived from the reachability matrix (Warfield, 1974). The RS consists of the element itself and other elements to which it may lead

(along the row). The AS consists of the element itself and the group of elements that help achieve it (along the column). The IS (RS n AS) is then derived. When the RS matches with the IS, it occupies the topmost level in the hierarchy. The top-level element is then removed, and the same iterative process is carried out till all the levels are determined (Sushil, 2018a).

Table 5:12Iteration I

Enablers	RS	AS	IS	LEVEL
1	1,2,3,4,5,6,7,8,9,10,11	1,2,3,5,6,7,8,9,10,12	1,2,3,5,6,7,8,9,10	
2	1,2,3,4,5,7,8,9,10,11	1,2,3,5,6,7,9,10,11,	1,2,3,5,7,9,10,11	
3	1,2,3,4,5,6,7,8,10,11	1,2,3,4,5,6,8,9,10,11,12	1,2,3,4,5,6,8,10,11	
4	3,4,8,10,11,12	1,2,3,4,5,6,7,8,9,10,11,12	3,4,8,10,11,12	1
5	1,2,3,4,5,6,7,8.10.12	1,2,3,5,7,9,12	1,2,3,5,7,12	
6	1.2.3.4,6,8,10,12	1,3,5,6,7,8,9,10,11,12	1,3,6,8,10,12	
7	1,2,4,5,6,7,8,9,10,11,12	1,2,3,5,7,12	1,2,5,7, 12	
8	1,3,4,6,8,9,10,11	1,2,3,4,5,6,7,8,9,10,11,12	1,3,4,6,8,9,10,11	1
9	1,2,3,4,5,6,8,9.10,11,12	1,2,3,7,8,9,12	1,2,3,8,9,12	
10	1,2,3,4,6,8,10,12	1,2,3,4,5,6,7,8,9,10,11,12	1,2,3,4,6,8,10,12	1
11	2,3,4,6,8,10,11,12,	1,2,3,4,5,7,8,9,10,11,12	2,3,4,8,10,11,12	
12	1,3,4,5,6,7,8,9,10,11,12	4,6,7,9,11,12	4,6,9,11,12	

Source: Author

Table 5:13Iteration II

Enablers	RS	AS	IS	LEVEL
1	1,2,3,5,6,7,9,11	1,2,3,5,6,7,9,12	1,2,3,5,6,7,9	
2	1,2,3,5,7,9,11	1,2,3,5,6,7,9,11,	1,2,3,5,7,9,11	II
3	1,2,3,5,6,7,11	1,2,3,5,6,9,11,12	1,2,3,5,6,11	
5	1,2,3,5,6,7,12	1,2,3,5,7,9,12	1,2,3,5,7,12	
6	1.2.3,6,12	1,3,5,6,7,9,11,12	1,3,6,12	
7	1,2,5,6,7,9,11,12	1,2,3,5,7,12	1,2,5,7,12	
9	1,2,3,5,6,9,11,12	1,2,3,7,9,12	1,2,3,9,12	
11	2,3,6,11,12,	1,2,3,5,7,9,11,12	2,3,11,12	
12	1,3,5,6,7,9,11,12	6,7,9,11,12	6,9,11,12	

Source: Author

The level partitioning process, a key aspect of the ISM model, is an iterative one, ensuring a comprehensive and thorough ranking of variables (see Table 5.13). The reachability set and antecedent set for each enabler are obtained from the FRM. The RS and the AS intersection will be the same as the RS if the variable is at the top level. The top-level elements satisfying

this condition are removed from the element set, and the iterations are carried out till all the levels are determined (Sushil, 2012). This iterative approach contributes to the accuracy of the ISM model. The iterations carried out to identify the levels of all the factors obtained are shown below in Table 5.12 to Table 5.19.

Table 5:14Iteration III

Enablers	RS	AS	IS	LEVEL
1	1,3,5,6,7,9,11	1,3,5,6,7,9,12	1,3,5,6,7,9	
3	1,3,5,6,7,11	1,3,5,6,9,11,12	1,3,5,6,11	
5	1,3,5,6,7,12	1,3,5,7,9,12	1,3,5,7,12	
6	1.3,6,12	1,3,5,6,7,9,11,12	1,3,6,12	III
7	1,5,6,7,9,11,12	1,3,5,7,12	1,5,7,12	
9	1,3,5,6,9,11,12	1,3,7,9,12	1,3,9,12	
11	3,6,11,12,	1,3,5,7,9,11,12	3,11,12	
12	1,3,5,6,7,9,11,12	6,7,9,11,12	6,9,11,12	

Source: Author

Table 5:15Iteration 1V

Enablers	RS	AS	IS	LEVEL
1	1,3,5,7,9,11	1,3,5,7,9,12	1,3,5,7,9	
3	1,3,5,7,11	1,3,5,9,11,12	1,3,5,11	
5	1,3,5,7,12	1,3,5,7,9,12	1,3,5,7,12	IV
7	1,5,7,9,11,12	1,3,5,7,12	1,5,7,12	
9	1,3,5,9,11,12	1,3,7,9,12	1,3,9,12	
11	3,11,12,	1,3,5,7,9,11,12	3,11,12	IV
12	1,3,5,9,7,11,12	7,9,11,12	9,11,12	

Source: Author

Table 5:16Iteration V

Enablers	RS	AS	IS	LEVEL
1	1,3,7,9,	1,3,9,12	1,3,7,9	V
3	1,3,7,	1,3,9,12	1,3	
7	1,7,9,12	1,3,7,12	1,7	
9	1,3,9,12	1,3,7,9,12	1,3,9,12	V
12	1,3,7,9,12	7,9,12	9,12	

Source: Author

Table 5:17Iteration VI

Enablers	RS	AS	IS	LEVEL
3	3,7,	3,12	3	
7	7,12	3,7,12	7,12	VI
12	3,7,12	7,12	12	

Source: Author

Table 5:18Iteration VII

Enablers	RS	AS	IS	LEVEL
3	3	3,12	3	VII
12	3,12	12	12	

Source: Author

Table 5:19Iteration VIII

Enablers	RS	AS	IS	LEVEL
12	12	12	12	VIII

Source: Author

5.3.6: Digraph formation (Step 5)

A digraph consisting of nodes and edges visually represents the factors and their interdependencies (Prasad and Suri, 2011; Sandbhor and Botre, 2014). A digraph containing transitive links also evolved from the FRM. After excluding indirect links, a final digraph (Figure 5.5) was developed, showing only significant transitive links. This study provides an industrial-level analysis using empirical evidence and identifies several specific enablers of modern slavery in global supply chains. They are analysed through the TISM process to find direct and indirect relationships. The TISM digraph is plotted to highlight the influence patterns among indicators.

At Level 1: The following enablers of modern slavery in the supply chains are assigned the top position in the TISM hierarchy: (s4) *Work health and safety*, (s8) *Lack of awareness and capacity building*, (s10) *Poor employment and business practices*.

At Level 2: The following enabler of modern slavery in the supply chains is partitioned second in the TISM hierarchy: (s2) *Gaps in statutory legislation*.

At Level 3: The following modern slavery enabler is partitioned third in the TISM hierarchy: (s6) *Wrong business model*.

At Level 4: The following modern slavery enablers are partitioned fourth in the TISM hierarchy: (s5) *Commercial pressure* and (s11) *Human rights violations*.

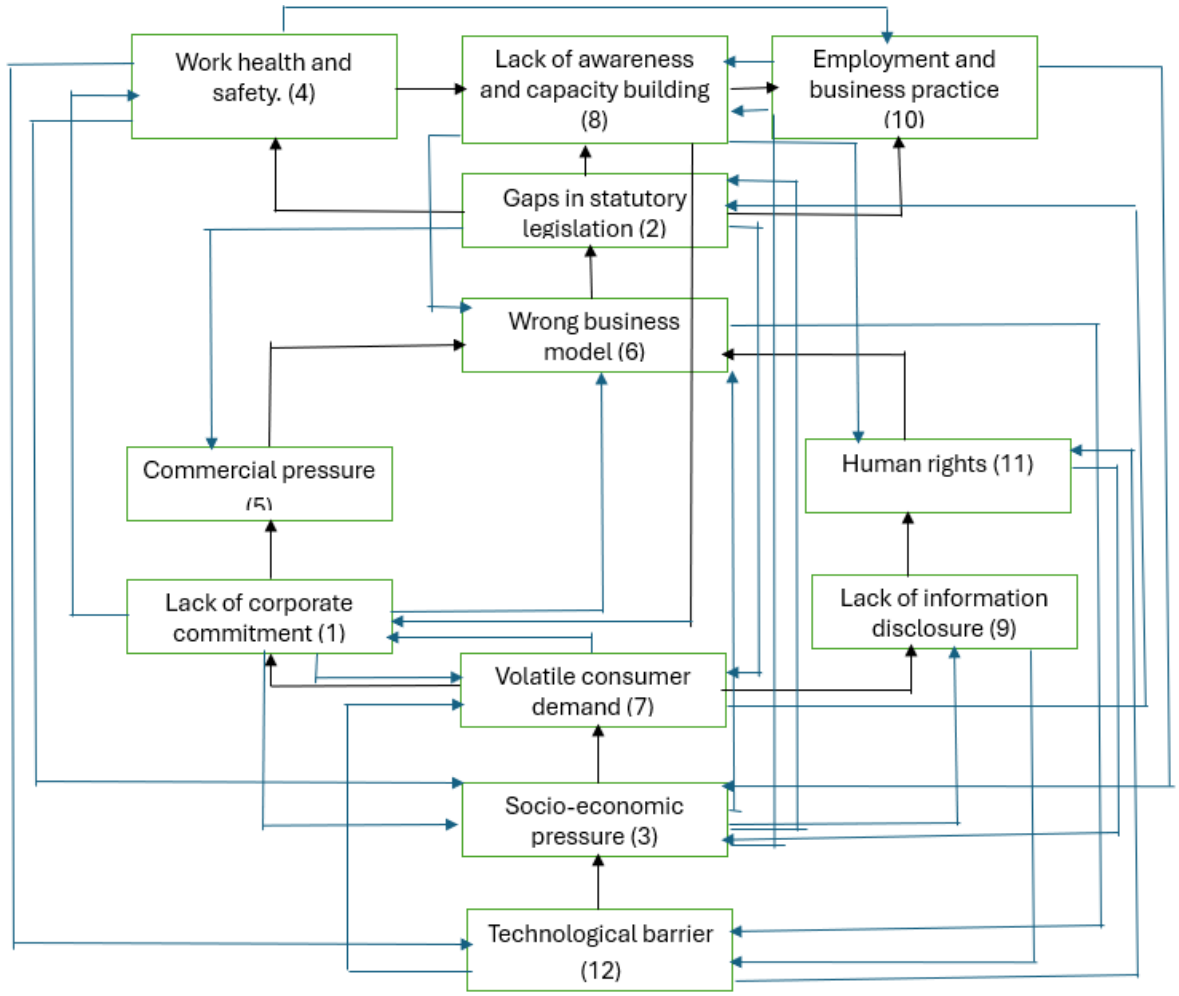


Figure 5:5TISM Digraph for modern slavery enablers

Transitivity link

Source: Author work

At Level 5: The following modern slavery enablers are partitioned fifth in the TISM hierarchy: (s1) *Lack of corporate commitment* and (s9) *Lack of information disclosure*.

At Level 6: The following modern slavery enabler is partitioned sixth in the TISM hierarchy: (s7) *Volatile consumer demand*.

At Level 7: The following modern slavery enabler is partitioned seventh in the TISM hierarchy: (s3) *Socio-economic pressure*.

At Level 8: The following modern slavery enabler is partitioned eighth in the TISM hierarchy: (s12) *Technological barrier*.

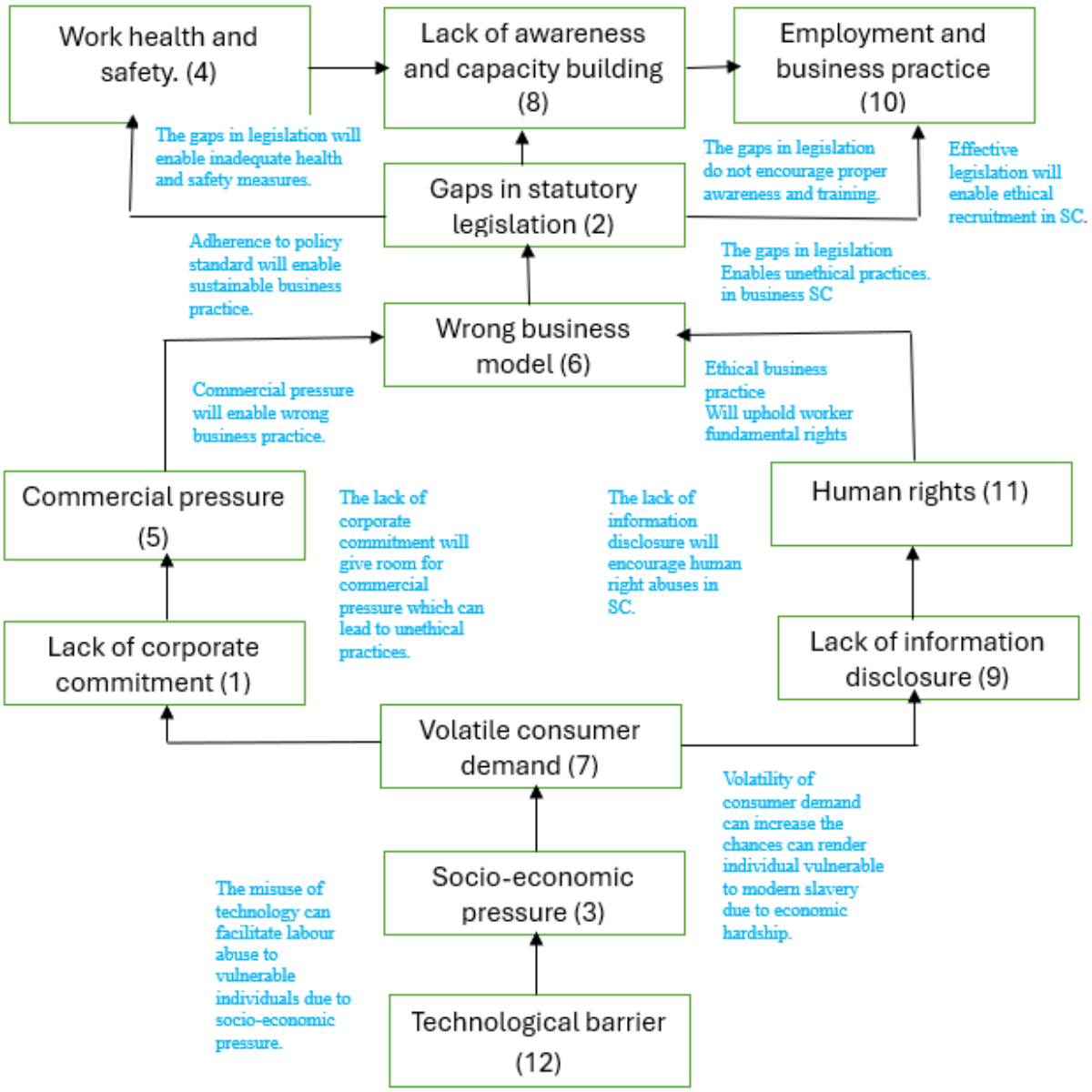


Figure 5:6TISM- Based Hierarchical Model for modern slavery enablers
Source: Author

Nodes and lines of edges make up the previous graph. In the development, the top-level factors are positioned at the top of the digraph. The second-level factor is placed in the second position, and so on, until the bottom-level factor is placed at the lowest position in the digraph. The resultant digraph is converted into a TISM-based model by replacing element nodes with statements. Finally, the TISM model is reviewed by research to check for incompatibilities; if

any are found, the result will be sent back to the professionals for revision. The final TISM diagram indicates the contextual relations between each risk factor, as shown in Figure 5.6.

5.4: Discussion of results from the research findings

This section will provide a comprehensive discussion of the results obtained from the two analytical tools, the Analytical Hierarchy Process (AHP) and Total Interpretive Structural Modeling (TISM), employed in this study. The AHP is recognized as a comprehensive decision-making framework that accommodates multiple criteria, allowing for the formulation of problems in a hierarchical manner while integrating both quantitative and qualitative factors (Taherdoost, 2017). The outcomes of the AHP analysis are presented in Table 5, where the 39 identified risk factors associated with modern slavery enablers are ranked from highest to lowest based on their respective weights. Conversely, TISM facilitates an understanding of complex systems by examining the hierarchy and interrelationships among various elements within the system (Sage, 1977). This model is particularly effective in capturing the practical experiences and insights of experts, enabling the construction of a structured representation. In this research, the TISM model is utilized to explore the interdependencies among the modern slavery enablers identified in the previous phase. Furthermore, in alignment with the research conducted by Kwak et al. (2018) and Shibin et al. (2018), this study incorporated in-person interviews to identify and validate 12 enablers that contribute to modern slavery within the global supply chain.

5.4.1: Discussion for AHP results

In this chapter, the Analytical Hierarchy Process (AHP) is identified as the multi-criteria decision analysis (MCDA) tool employed. Brunnelli (2015) highlights that AHP assigns weights to each criterion that makes up the model's components. The results of the sub-criteria from the AHP analysis of the questionnaire survey are illustrated in Table 5.7, with an example provided in Section 5.4.3. Additionally, the discussions focus on enhancing the application of AHP expertise and its integration within complex supply chain systems. The study utilized empirical methods to gather primary data concerning the weighting of indicators and their interrelations. The data collected through AHP serves as a foundational resource for industry, central government, or regional government to effectively identify the enablers of modern slavery in global supply chains. The results revealed that violations of human rights and inadequate health and safety conditions at work have the most significant impact and should be regarded as higher priorities compared to other factors. This suggests that stakeholders and

policymakers need to focus on and evaluate the effectiveness of their procedures and initiatives within intricate supply chains to address the issue of modern slavery.

5.4.1.1: Human rights violations

The Universal Declaration of Human Rights articulates four key principles: the right to work, equal pay, just remuneration, and the freedom of association. Analysis reveals that "*Human rights violations*" (0.12) rank as the foremost criterion, as those most adversely affected by human rights infringements in a company's supply chain often belong to disadvantaged groups with few opportunities. Human rights violations take precedence over other sub-categories in this context. For example, poor living conditions were calculated with a weight of 0.143 multiplied by 0.12, resulting in a global weight of 0.01716. *Threats to personal freedom* were assigned a weight of 0.243 multiplied by 0.12, leading to a global weight of 0.02916. *The abuse of illegal status* was weighted at 0.198, yielding a global weight of 0.02376, while *gender and pay inequality* received a weight of 0.199, resulting in a global weight of 0.02388. Finally, diversity and inclusion were assigned a weight of 0.218, producing a global weight of 0.02616.

Individuals who suffer the most from human rights violations within a company's supply chain typically belong to marginalized groups that lack viable means to highlight these issues or seek redress. This includes women workers, migrant labourers, child labourers, and individuals residing in impoverished rural or urban areas (Human Rights Watch, 2016; Muchlinski, 2021). The findings indicate that to effectively identify, prevent, mitigate, and report on their negative human rights impacts, businesses must engage in human rights due diligence. This process establishes the key international standards for assessing corporate accountability regarding human rights infringements (Bonnitcha and McCorquodale, 2017; Rasche and Waddock, 2021). Importantly, the obligation to respect human rights is applicable to all businesses, irrespective of their size, industry, operational context, ownership, or organizational structure. Davies (2012) elucidated the UN guiding principles on business and human rights framework, which underscores the state's responsibility to safeguard against human rights violations by third parties, including businesses, through suitable policies, regulations, and legal mechanisms. It also emphasizes the corporate duty to respect human rights, which entails refraining from infringing on others' rights and addressing any negative impacts associated with their operations. Furthermore, there is a pressing need to enhance victims' access to effective remedies, both judicial and non-judicial. This research contributes to the understanding of how private and public regulations interact as governance mechanisms to

influence corporate behaviour and mitigate adverse human rights impacts on society. This aligns with Buhmann's (2014) assertion that businesses may contribute to negative human rights outcomes through their own actions or through their relationships with other entities.

5.4.1.2: Poor Work health and safety

Ranked as the second most significant criterion in the group, *Poor work health and safety* (0.106) underscore the essential role that health and safety considerations play in various industries and companies. This importance is particularly pronounced at different levels of supply chain management, where risk management is crucial for safeguarding all stakeholders, especially following the Rana Plaza Complex tragedy in Dhaka, Bangladesh. Work health and safety includes several subcategories, such as the *lack of protective equipment,* which has a weight of 0.274 multiplied by 0.106, resulting in a global weight of 0.029044. *The lack of safety training* for staff also contributes, with a weight of 0.106 multiplied by 0.346, yielding a global weight of 0.036676. Addressing modern slavery requires coordinated efforts from governments, policymakers, labour and health safety inspectorates, and businesses. Therefore, employers should ensure that personal protective equipment is provided at no charge when a risk assessment indicates its necessity (Gardner, 2017). Additionally, *fatigue* is assigned a weight of 0.38 multiplied by 0.106, producing a global weight of 0.04028. Mezzadri (2015) explored the informalization of social responsibility concerning health and safety provisions.

5.4.1.3: Poor employment and business practices

Poor employment and business practices, which have been identified by numerous studies as significant contributors to modern slavery, are surprisingly ranked third, with a weight of 0.102. The subcategories include *Debt bondage*, which accounts for a weight of 0.288106 multiplied by 0.102, resulting in a global weight of 0.029376; *Wage deduction*, with a weight of 0.396 multiplied by 0.102, yielding a global weight of 0.040392; and *Denial of social protection*, which weighs 0.316 multiplied by 0.102, leading to a global weight of 0.032232. Recently, unethical recruitment practices, such as contract substitution and the imposition of debt or recruitment fees, have significantly increased the vulnerability of workers. Additionally, companies may inadvertently employ exploited individuals in their construction, maintenance, and service operations, particularly when these tasks are outsourced to third-party suppliers (Jaffee and Bensman, 2016; Outhwaite and Martin-Ortega, 2019). The findings indicate that poor employment and business practices can foster vulnerabilities that facilitate modern slavery. Factors such as insufficient worker protections, limited job opportunities, unethical

recruitment methods, and wage deductions can render individuals more prone to exploitation and forced labour. Specific business practices, including the use of debt bondage, offering minimal or no wages, and imposing excessive working hours with few or no breaks, further exacerbate the issue of modern slavery.

5.4.1.4: Lack of awareness and capacity building

The heightened emphasis on enhancing awareness regarding the conditions necessary for fostering "decent work for all" through international organizations has been significant. The fourth most critical factor is the *lack of awareness and capacity building*, which carries a weight of 0.098. It is essential to implement thorough capacity building for workers within supply chains and to educate businesses about indicators of human rights violations in the workplace to effectively combat modern slavery. The subcategories related to this enabler include *Stakeholder engagement*, which has a weight of 0.274 multiplied by 0.098, resulting in a global weight of 0.026852; *Training and information sharing*, with a weight of 0.404 multiplied by 0.098, yielding a global weight of 0.039592; and *Lack of awareness reporting*, which weighs 0.321 multiplied by 0.098, leading to a global weight of 0.031458. These findings support Crane's (2013) assertion that insufficient awareness and inadequate capacity building are significant facilitators of modern slavery. A lack of awareness among businesses, individuals, and governmental bodies can result in the inability to identify, report, and address instances of modern slavery, while insufficient capacity hampers the effective execution of prevention and response measures. Many individuals, especially those from marginalized communities, may lack knowledge of their rights or the indicators of exploitation, rendering them more vulnerable to trafficking and forced labour (Andersen, 1992).

5.4.1.5: Commercial pressure

The term "*Commercial pressure weighed* (0.086)" pertains to the economic and commercial challenges that suppliers encounter within global supply chains, which can collectively contribute to the occurrence of modern slavery (Verité, 2014). Research on modern slavery indicates that price pressures compel suppliers to resort to inexpensive labour, while tight deadlines necessitate the hiring of temporary workers through unregulated labour intermediaries or the subcontracting of work to factories that lack proper audits (Stevenson and Cole, 2018). Commercial pressure is divided into three subcategories: *Lean supply chain*, which has a weight of 0.19, resulting in a global weight of 0.01634 when multiplied by 0.086; for instance, stringent deadlines for large product quantities may compel a reliable supplier to

seek external assistance from unverified third parties. *Responsible sourcing*, with a weight of 0.403, yields a global weight of 0.034658 when calculated with 0.086. Lastly, *Environmental Social Governance* (ESG) is assigned a weight of 0.406, leading to a global weight of 0.034916. The findings suggest that to effectively address modern slavery, businesses should incorporate this issue into their comprehensive ESG strategies by conducting supply chain audits to identify hidden abuses and aligning with international standards such as the UN Guiding Principles on Business and Human Rights. These findings are corroborated by the study conducted by Engle et al. (2019) regarding the implications of ESG for businesses and their stakeholders.

5.4.1.6: Lack of information disclosure

The weight assigned to the *lack of information disclosure* is 0.085. Recently, this form of disclosure has gained traction as a key policy tool among European policymakers, aimed at enhancing organizational effectiveness in preventing slavery and human trafficking. Nonetheless, certain companies may not fully disclose their practices, which hinders the assessment of modern slavery's prevalence. The subcategories related to this indicator include *Conflict of Interest*, which has a weight of 0.225, resulting in a global weight of 0.019125 when multiplied by 0.085. The subsequent subcategory, *Data Protection and Privacy*, is weighted at 0.362, leading to a global weight of 0.03077. Finally, *Supply Chain Data Reporting* is assigned a weight of 0.413, culminating in a global weight of 0.035105. Reporting requirements can facilitate a deeper strategic understanding of the risks and impacts of an organization’s core activities on human rights (Milne and Gray, 2013). The results indicate that a lack of information disclosure raises significant concerns regarding the proactive measures companies are taking to combat modern slavery. According to Lindsay et al. (2017), evaluating the effectiveness of corporate reporting in promoting human rights is a complex task, further complicated by a scarcity of empirical data.

5.4.1.7: Wrong business model

The *Wrong business model* carries a weight of 0.084, underscoring the necessity of comprehending the risk factors associated with business operations and the environment that foster child labour, forced labour, and human trafficking. The subcategories that contribute to this aspect of modern slavery include *Corruption,* which is weighted at 0.237 multiplied by 0.084, resulting in a global weight of 0.019908; *Unethical procurement*, with a weight of 0.454 multiplied by 0.084, leading to a global weight of 0.038136; and *Lack of framework*, which weighs 0.31 multiplied by 0.084, producing a global weight of 0.02604. These findings are

consistent with the research by Crane et al. (2022), which seeks to forge new connections between the literature on business models and the broader social harms and pathologies associated with modern organizational practices. In essence, these results reveal that the ongoing prevalence of modern slavery is linked to a range of business models with varying levels of complexity. Furthermore, the study by Allain et al. (2013) demonstrates how businesses benefit from forced labour through unethical business models.

5.4.1.8: Gaps in statutory legislation

The consistency ratio for the chosen set of sub-criteria related to Gaps in statutory legislation is 0.003, which falls within the acceptable threshold of up to 0.10 (refer to section 5.2.1.). This finding indicates that the judgments made are both informed and acceptable. Furthermore, the analysis has also provided insights into the local weights of the criteria at the sub-criteria level. As illustrated in Table 5.7, the sub-criteria under *Gaps in statutory legislation* received a weight of 0.076, with *Governance issues* (0.291) contributing to a global weight of 0.022116, marking it as the top priority due to its relevance to specific concerns of policymakers. Following closely is *Inadequate disclosure measures* (0.262), which results in a global weight of 0.019912. A significant gap identified in the statutory legislation that contributes to modern slavery is the disparity between the original objectives of the Modern Slavery Act 2015 and its present execution, especially regarding victim support and access to justice (Gold et al., 2015). Frasen and Burgoon (2012) posited that leveraging home state legislations to enhance corporate accountability is essential due to the regulatory and enforcement deficiencies surrounding labour standards and global supply chains. The findings indicate that legislative gaps facilitate extensive labour exploitation and abuse across various industries and business models.

The growing prevalence of modern slavery in supply chains has led to the enactment of legislation designed to prevent and manage these issues. An *inadequate code of conduct,* which has a weight of 0.261 multiplied by 0.076, results in a global weight of 0.019836, evaluating the social effects of labour-related corporate social responsibility (CSR) policies or corporate codes of conduct on maintaining labour standards through global supply chain benchmarking. This challenge is intensified by insufficient enforcement, which carries a weight of 0.186 multiplied by 0.076, yielding a global weight of 0.014136. These results highlight the pressing need for the development of a government and law enforcement database to address trafficking and combat modern slavery and human trafficking, particularly in the context of global forced labour politics (see Section 4.5.2). The findings corroborate those of several studies (Gold et

al., 2015; LeBaron, 2021; Islam, 2021; Trautrims et al., 2021; Meehan and Pinnington, 2021), which suggest that a lack of awareness obstructs the effective implementation of the Act, leaving businesses susceptible to exploitation in their supply chains. Furthermore, these findings support Odia (2018), who explored the challenges associated with legislation and mandatory disclosures in the fight against modern slavery in global supply chains. To effectively combat modern slavery, the government must confront the inadequacies in the existing legal framework and its execution by bolstering protections for victims, enhancing prosecution and sentencing measures, and instituting comprehensive due diligence obligations for businesses (Shaila and Arun, 2023). This requires a collaborative effort that brings together government, businesses, law enforcement, and civil society organizations in a unified approach.

5.4.1.9: Volatile consumer demand

Volatile consumer demand can lead to downward pressure on wages and unsafe working environments, increasing the likelihood of modern slavery. This instability, which carries a weight of 0.065, arises from the fleeting nature of fashion and the unpredictable trends that drive consumer demand. Volatile consumer demand is defined by abrupt and irregular fluctuations in the need for products or services, often triggered by external influences such as economic changes, shifts in consumer behaviour, or global events. This unpredictability poses significant challenges for businesses in accurately forecasting and managing their supply chains, which may result in exploitative practices among suppliers. The *short product life cycle* is assigned a weight of 0.315, *overproduction* is weighted at 0.27, and *global competition* is given a weight of 0.415. The COVID-19 pandemic has created a surge in demand, leading to increased working hours for those in production roles. This claim is supported by multiple studies (Christ and Burritt, 2020; Flynn et al., 2021).

5.4.1.10: Lack of corporate commitment

Lack of corporate commitment, assigned a weight of 0.046, combined with *poor work ethics* (0.409), results in a global weight of 0.018814, marking it as the most critical indicator. Ethical dilemmas can emerge at various stages of the supply chain, encompassing issues such as labour practices, forced labour, working hours, worker representation, disciplinary actions, and discrimination. The second most significant indicator is *weak leadership*, which, when weighted at 0.365 and multiplied by 0.046, yields a global weight of 0.01679. This highlights the crucial role of leadership in fostering a socially sustainable organization. Following this is

the *lack of compliance*, weighted at 0.226 and multiplied by 0.046, resulting in a global weight of 0.010396. This factor is vital in the fight against modern slavery within supply chains, as indicated by the calculated weights. In a business context, commitment is fundamental to effective teamwork, and robust commitment among supply chain partners fosters high levels of customer trust. The absence of corporate commitment is a key factor in combating modern slavery in supply chains (Townsend et al., 2016). Conversely, insufficient corporate dedication to tackling modern slavery can result in the exploitation and suffering of workers, particularly in sectors such as seafood, construction, and textiles. New (2015) addressed the limitations of corporate social responsibility in their report.

5.4.1.11: Socio-economic pressure

The results of the sub-criteria related to *Socio-economic pressure*, which carries a weight of 0.071, indicates that such pressures make individuals and workers susceptible to modern slavery. The factor of *unemployment*, with a weight of 0.415, when multiplied by 0.071, results in a global weight of 0.029465, highlighting that a lack of job opportunities can facilitate pathways to slavery. Following this, *illiteracy*, which has a weight of 0.326, yields a global weight of 0.023146 when combined with 0.071. Individuals with limited educational qualifications often lack the necessary skills and negotiating power to obtain decent employment in the formal sector, rendering them more vulnerable to rights violations in the labour market, including forced labour and human trafficking. *Poverty* assigned a weight of 0.259, when multiplied by 0.071, results in a global weight of 0.018389 and is frequently associated with illiteracy. There is considerable evidence linking child labour, forced labour, and human trafficking to both income-related poverty and non-income factors such as food insecurity and poor health (Ford et al., 2012). Research by Datta and Bales (2013) supports these findings, indicating that socio-economic pressures like poverty and limited opportunities can greatly heighten an individual's risk of falling into modern slavery. These pressures, often intensified by crises such as natural disasters or economic recessions, can compel individuals to make desperate decisions, including entering exploitative situations to support themselves or their families (Walk Free Foundation, 2018).

5.4.1.12: Technological barriers

The results pertaining to the sub-criteria of *Technological barriers*, which carry a weight of 0.061, underscore the necessity of employing technology for *Supply chain mapping*, which has a weight of 0.295. This results in a cumulative weight of 0.017995, highlighting the importance

of identifying the various actors within a company's supply chain and their interconnections. Research by Musto and Boyd (2014) suggests that modern slavery is increasingly recognized as a technological issue that necessitates collaborative solutions to combat trafficking. This approach will allow managers and stakeholders to trace a product or its components through different phases of the supply chain, including production, processing, manufacturing, and distribution—an advantage referred to as traceability. It is anticipated that the origins of materials within supply chains will be evaluated for compliance or potential compliance risks, leveraging advanced technologies in alignment with corporate commitments.

Recent advancements in technology, particularly *Enterprise Resource Planning* (ERP) systems, which have a weight of 0.314 multiplied by 0.061, resulting in a global weight of 0.019154, have been increasingly adopted by numerous organizations to assess risks related to modern slavery and to ensure compliance with corporate commitments. This study sheds light on the application of contemporary technologies in the fight against modern slavery within supply chains. Additionally, *Logistics Information Systems*, with a weight of 0.391 multiplied by 0.061, yield a global weight of 0.023851. Nevertheless, traditional approaches, such as conducting audits or utilizing supplier self-assessment questionnaires, remain more prevalent. Conversely, the literature review indicates that modern technology could assume a more significant role in the future, particularly with the anticipated integration of machine learning. This trend is expected to be crucial in the practical detection of modern slavery in the coming years. These findings align with the research conducted by Crawford and Kafton (2020), which explores the use of technology to combat exploitation. Furthermore, various studies (Nishinaga and Natour, 2019; Saberi et al., 2019) highlight that technology is being employed to identify and locate offenders, as well as to gather evidence for criminal prosecution and other enforcement actions.

5.4.1.13: The top nine criteria by weight

The following criteria represent the top nine regarding weight in the decision-making process. See Table 5.6 for the ranking of the main criteria. The ranking of the top nine main criteria is as follows:

1). Human rights violations.
2). Inadequate work health and safety.
3). Poor employment and business practices
4). Lack of awareness and capacity building

5). Commercial pressure
6). Lack of information disclosure
7). Wrong business model
8). Gaps in statutory legislation
9). Socio-economic pressure

These top nine heavily weighted criteria constitute 82.8% of the total weight in the decision-making process. A broader range of approaches to addressing the issue of modern slavery in global supply chains could be spread across these criteria. A combination of these factors could be utilised to try and make the less weighted modern slavery enablers more critical in actualising social sustainability.

5.4.1.14: The top four criteria by weight

Human rights and *Work health and safety* were the top two criteria by weight, representing 22.6% of the total weight in the decision-making process. The most efficient way of influencing social sustainability in ethical supplier selection decision-making is to work on the top four criteria (*Human rights violations*, *Work health and safety*, *Poor employment and business practices*, and *Lack of awareness and capacity building*). These provide 42.6% of the weight within the process of ethical supplier selection decision-making. With this representing over half of the weight in the decision, any supply chain standard that performs well when measured against these criteria is likely to be selected over another less favourable standard.

5.4.1.15: Implications of the top four criteria by weight

The top four criteria by weight show that the key questions being asked when an ethical supplier selection decision is being made are:

1. Does the company behave responsibly in respecting, protecting, and fulfilling human rights and fundamental freedom?
2. Will personal protective equipment and adequate work hours be distributed to on-site workers?
3. Will there be awareness of the modern slavery issue and training of staff and stakeholders?
4. Will the company carry out due diligence during recruitment?

This information could help improve a particular business venture involved in international trade. If stakeholders within supply chains came together, they could put agreements in place that could benefit their whole market sector. Its emphasis that companies should concentrate their efforts on building a reputation based on their supply chain's ability to ensure workers' human rights are respected, they have sufficient rest and appropriate safety training, awareness, and capacity building. They must ensure an ethical recruitment process that complies with modern slavery and human rights legislation.

For the model's validation, AHP was conducted among three respondent groups: industrial professionals with extensive expertise in modern slavery, research scholars from a supply chain background and modern slavery experts from NGOs. So that a thorough assessment of data and data analysis was performed through the AHP process, the 19 respondents stated their perceived and expected importance rating of the enablers of modern slavery. Accordingly, the pair-wise comparisons performed by the experts provided a valid set of consistent responses. The stakeholders placed greater emphasis on *Human rights* and *Work health and safety* as these are ranked 1 and 2, respectively. This finding, in combination with the weights given to the rest of the leading indicators, such as *Employment and business practice*, necessitates the need to gain a deeper insight into how to improve the recruitment policies of the company and stakeholders in business organisations to ensure ethical conduct throughout global supply chains. In addition, these findings appear to be consistent with some previous studies, such as (Arowoshegbe et al., 2016; Liu et al., 2017; Alsamawi et al., 2019; Benstead et al., 2020; Islam and Van Staden, 2021) (see Section 2.2.2).

5.4.2: Discussion from TISM results

In alignment with the research conducted by Dubey et al. (2017), this study investigation employs TISM as a robust framework for assessing the incidence of modern slavery within global supply chains. The objective of this study is to develop a theory of SCM through the application of TISM. To achieve this, we conducted a comprehensive literature review to identify the factors that facilitate modern slavery in supply chains. The TISM methodology, as defined by Sushil (2012a), is an evolution of the ISM approach introduced by Warfield in 1973 (Warfield, 1973). TISM represents an enhanced version of the ISM technique (Warfield, 1974) that aids in modelling the interactions among various factors for improved understanding (Sushil, 2005a, 2005b; Bhattacharya and Momaya, 2009; Sushil, 2012). Sushil's (2018b) research highlighted the interpretive multi-criteria assessment of flexibility initiatives within

the direct value chain. Additionally, Shibin et al. (2015) explored the facilitators and obstacles associated with flexible green supply chain management.

The TISM model was developed based on interviews with experts from both micro and macro-level stakeholders, including academics, employers, professional organizations, and policymakers. Their insights highlighted the effects of modern slavery within global supply chains. Additionally, the research utilized documentary analysis to uncover key social issues in these supply chains, drawing from comments, reports, articles, and videos contributed by a diverse array of stakeholders. This study examined the causal relationships among various factors that affect an organization's ability to deliver transformative services, employing TISM to analyse the factors identified in the literature review. TISM facilitated the interpretation of direct and significant transitive connections among these factors.

The analysis focused on the contextual relationships between pairs of elements for the twelve selected enablers of modern slavery, based on findings from the AHP method. A structural self-interaction matrix (SSIM) was constructed to represent the pairwise relationships among each enabling factor, as illustrated in Table 5.8. This matrix was then converted into an initial reachability matrix (RM), with its transitivity assessed in line with recommendations from the literature (Yadav and Sushil, 2014). Subsequently, the final reachability matrix, shown in Table 5.11, was utilized to develop the TISM-based model, as depicted in Figures 5.6 Furthermore, a MICMAC analysis was performed on the twelve enablers of modern slavery, resulting in their classification into four clusters (autonomous, dependent, linkage, independent) based on their driving and dependence powers, as represented in Figure 5.7 These results contribute to a deeper understanding of the identified enablers of modern slavery at various levels of the TISM model. To support the prioritization of these enablers in the decision-making process, the hierarchical TISM model includes all types of modern slavery enablers, organized from highest to lowest across different levels.

Mapping inter-relationships is an effective approach for supply chain managers to assess social risk factors and understand the consequences of these risks within the supply chain (Pfohl et al., 2011). Consequently, grasping the implications of modern slavery at various levels is essential, as it aids managers in formulating and executing successful strategies to mitigate modern slavery, thereby fostering a socially sustainable supply chain (Pagell and Wu, 2010; Lambrechts, 2020). This perspective is supported by Shibin et al. (2017), who developed a comprehensive framework for sustainable supply chain performance based on an extensive

review of literature, expert opinions, and the total interpretive structural modelling (TISM) method.

The empirical results suggest that *Work health and safety*, *Lack of awareness and capacity building,* and *Poor employment and business practices* play a significant role in the unethical production of goods and services for human consumption. Commitment towards the well-being of the broader level of society depends on the commitment of the business model towards corporate social responsibility and gaps in statutory legislation. These are the significant factors influencing the performance of a complex global supply chain.

This investigation not only elucidates the interrelated factors that impact the performance of supply chains in the UK but also delivers practical recommendations for managers and businesses. Essential factors drawn from the literature were included in the analysis. The relationships among these factors were informed by the insights of individuals working in the maritime industry, law enforcement, education, NGOs, and supply chain management; only these insights were utilized in this research. The TISM framework was applied to establish a structured representation of the causal relationships among the factors (Jain and Raj, 2015; Yeravdekar and Behl, 2017).

This research may provide valuable insights for managers aiming to achieve sustainable development, maximize customer satisfaction, secure substantial revenue, cultivate a favorable word-of-mouth reputation, and enhance organizational share. Furthermore, research by Manjunatheshwara and Vinodh (2018) examined the implementation of TISM and MICMAC to assess the critical factors affecting the sustainable development of tablet devices. TISM has been utilized by numerous scholars to analyse and interrelate factors in various contexts, such as Humanitarian Supply Chains (Yadav and Barve, 2016), Green Supply Chain Management (Dubey et al., 2015), Enterprise Resource Planning (Gandhi, 2015), Frugal innovation (Dubey et al, 2021), and Sustainable Development Goals (Sreenivasan et al., 2023).

The effectiveness of existing strategies to combat modern slavery in supply chains can be guided by the TISM model, which in turn guides the decision-making process across businesses. This helps businesses operate in a compliant and integrity-making way and make responsible decisions (Silvestre, 2015). In so doing, it will promote a level playing field for firms attempting to do the right thing. For example, it can help to set clear standards for businesses, workers, and investors that aim to address the causes of labour exploitation (New, 2015). In addition, a benchmark model should be incorporated to examine governance

structures, such that action on modern slavery will be seen as an essential corporate value and a potential source of competitive advantage.

This study offers essential lessons for the manufacturing sector, government officials, and business executives, emphasizing the need to prioritize the hierarchy and importance of enablers identified in the research. By doing so, they can make strategic decisions that lead to increased profitability and enhanced competitiveness in the supply chain arena. The findings reveal that when industries and governments invest in the health and safety of their workforce and comply with transparency regulations that uphold basic human rights, they can effectively reduce instances of modern slavery. Additionally, businesses should utilize technology to trace their supply chains and adopt practices such as raising awareness, building capacity, engaging in ethical recruitment, and promoting sustainable production to further address the issue of modern slavery.

The TISM model stands out for its capacity to prioritize Work health and safety as the foremost enabler, as shown in Figure 5.6. This insight is invaluable for stakeholders in the manufacturing industry, government officials, and business leaders. The AHP ranking yields comparable outcomes, thus validating the results obtained from the TISM model.

5.4.2.1: Matrice d'Impacts Croisés Multiplication Appliquée à un Classement (MICMAC) analysis Step 6

This study is notable for its innovative use of TISM and MICMAC in examining the factors that facilitate modern slavery. The identified enablers were carefully mapped and classified into four quadrants based on their levels of dependence and driving power. Foli (2022) employed a similar methodology to assess knowledge risks in ICT-supported collaborative initiatives, offering a novel insight into the intricate dynamics among the identified enablers. MICMAC serves as an indirect classification technique that thoroughly evaluates the significance of each variable (Dubey and Ali, 2014). This analysis is part of a broader structural examination aimed at pinpointing the most influential variables within a system, as illustrated by the relationships depicted in a matrix (Sreenivasan et al., 2023). The analysis was performed to categorize each enabler of modern slavery based on its driving and dependence power, as demonstrated in Figure 5.7. The MICMAC analysis scrutinizes both the dependence and driving power of each enabler. Cluster I comprises autonomous enabling factors characterized by low driving and dependence power, indicating they exert minimal influence on the system and thus require limited managerial attention from an anti-slavery standpoint. Notably, Figure

5.5 indicates that no enabler falls within this cluster. Cluster II contains dependent enabling factors that exhibit driving power but weak dependence, positioned at the lower tier of the model. However, no enabler has been identified within this cluster.

Cluster III comprises linkage-enabling factors with solid driving and dependence power. Figure 5.7 shows that most of the modern slavery enablers come under the linkage cluster; namely, *Work health and safety* **(S4)**, *Lack of awareness and capacity building* **(S8)**, *Poor employment and business practices* **(S10)**, *Gaps in statutory legislation* **(S2)**, *Wrong business model* **(S6)**, *Commercial pressure* (**S5)**, *Human rights violations* **(S11)**, *Lack of corporate commitment* **(S1)**, *Lack of information disclosure* **(S9**) and *Socio-economic pressure* **(S3).** These factors form the middle level of the TISM hierarchy model. Though the lower level enabling factor induces or affects these modern slavery risks, these also have significant driving power to influence some other modern slavery risks, which are at the top of the model (Prohl et al., 2011). More importantly, these modern slavery-enabling factors are unstable because if any change occurs to these enablers, they will influence other enablers (Manjunatheshwara and Vinodh, 2018). Therefore, these identified modern slavery enablers need continuous top management focus.

Cluster IV includes the driving factors with solid driving power and weak dependence. Although *Volatile consumer demand* (S7) and *Technological barriers* (S12) are grouped at the margin line of clusters IV and III, their dependence factor is six. It is good to note that the modern slavery risk factors are always unstable because if there are any changes, the enablers will lead to consequences for other enablers. Therefore, more attention should be given to these enablers so that management identifies the dependence of these enablers on the level, and this will help to achieve a supply chain with socially sustainable goals and objectives.

This study introduces a theoretical framework that has been constructed through the integration of TISM modelling to elucidate the interconnections among various enablers. As noted by Gandhi (2015), the graph generated through MICMAC analysis, which features axes representing dependence and driving power, offers valuable insights into the relative significance and interrelationships of these enablers. MICMAC utilizes the multiplication properties of matrices to identify critical factors across different categories that influence the system (Dixit et al., 2021). Ultimately, MICMAC analysis aids decision-makers in comprehending the dependence and driving power of key drivers of modern slavery within

their supply chain networks, thereby assisting in the development of effective strategies for mitigating modern slavery.

Linkage factors: These factors have strong drive power and strong dependence power. They are unstable in that any action on one will influence the other and have a feedback effect on themselves (Hasan et al., 2019).

Dependent factors: These factors have weak drive power but strong dependence.

Independent factors: These factors have strong drive power but weak dependence power. A factor with an extreme drive power, called the critical factor, falls into the category of dependent linkage factors.

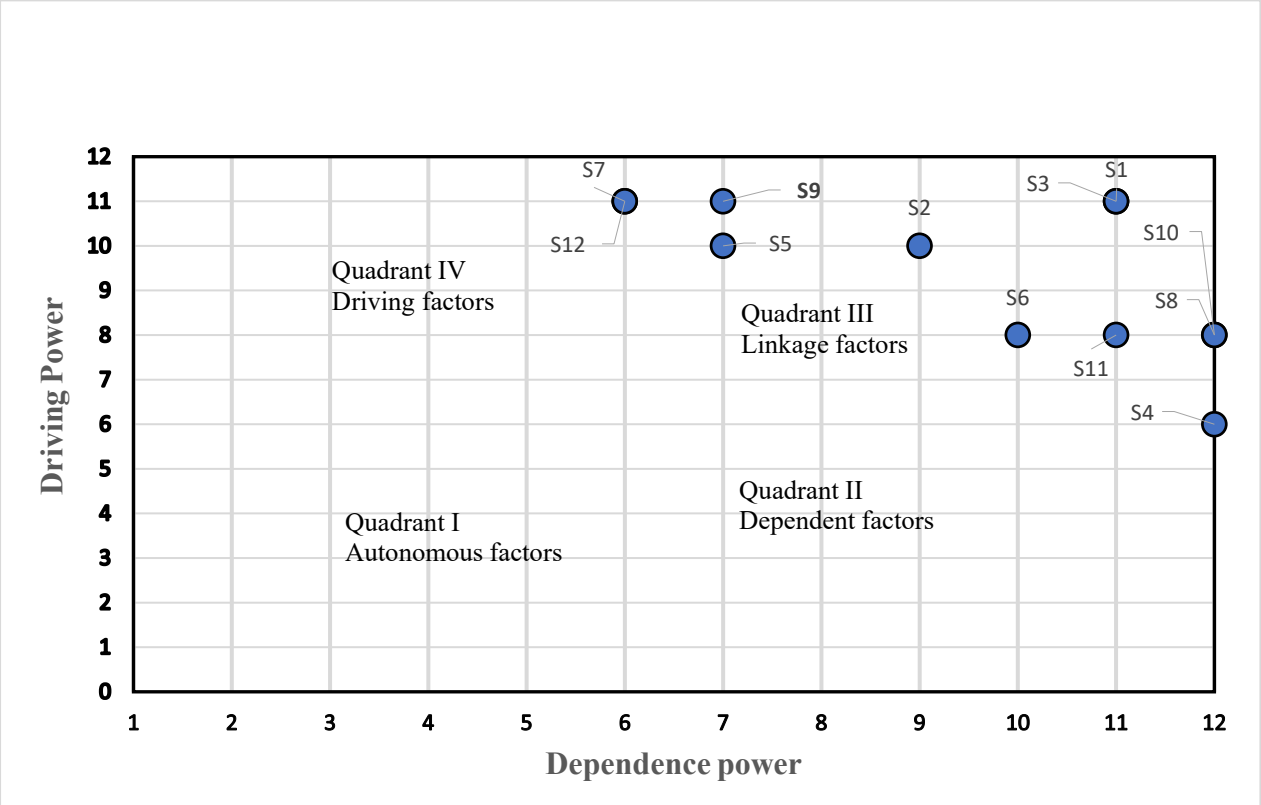


Figure 5:7Driving power and dependence diagram for modern slavery enablers
Source: Author

Note: (s1) *Lack of corporate commitment* (s2) *Gaps in statutory legislation* (s3) *Socio-economic pressure* (s4) *Work health and safety* (s5) *Commercial pressure* (s6) *Wrong business model* (s7) *Volatile consumer demand* (s8) *Lack of awareness and capacity building* (s9) *Lack of information disclosure* (s10) *Poor employment and business practices* (s11) *Human rights violations* (s12) *Technology barriers*.

5.5: Summary of the key findings from the research results AHP and TISM

The results of the research indicate that empirical studies on modern slavery in the business environment are gaining traction as a significant area of inquiry. To advance the global initiative aimed at combating modern slavery, it is crucial to undertake further empirical research within the business sector that encompasses social, technological, and legal aspects. Perpetrators of modern slavery rarely operate independently; they frequently engage in collaboration, with multiple factors interacting and intensifying each other in intricate manners. The slight variations noted in these findings underscore the vital significance of all elements related to modern slavery.

This investigation introduces the TISM and AHP techniques to conduct a systematic and thorough analysis of the factors that enable modern slavery in global supply chains. The choice of methodology is guided by the specific goals of the study and the nature of the issues being addressed. The AHP method employed in this chapter is particularly valuable in contexts where decision-making is fraught with uncertainty, such as when determining the global importance of each enabler and their hierarchical arrangement. The pairwise comparison of each enabler associated with modern slavery is informed by the insights of experts from both academic and practical domains, ensuring contributions from individuals who possess a deep understanding of the challenges involved. As a result, the models produced from this research are intended to raise awareness among stakeholders and decision-makers, enabling them to better grasp the priority rankings, relationships, and impacts of various complex risks and consequences in supply chains. This ultimately influences decisions related to strategies for mitigating modern slavery. Utilizing the pairwise comparison, the main constructive contribution of the AHP technique, when contrasted with other comparison techniques, is the ability to convert empirical data into mathematical models (Vargas, 2010).

The TISM model offers a framework for understanding the intricate risks associated with supply chains and provides valuable insights into the interconnections among twelve factors that enable modern slavery. The findings suggest that decision-makers should redirect their attention towards social sustainable supply chain management (SSCM) to promote sustainable development within the global supply network and to combat modern slavery. Additionally, it is crucial to prioritize human rights and occupational health and safety, as highlighted by the AHP pairwise comparison of key factors. In this context, it is advisable to consider the interrelatedness of various modern slavery enablers, as they significantly impact the assessment

of risk within global supply chains. Lower-tier factors predominantly contribute to an increased risk level, as they exert a strong influence on higher or equivalent tier factors. Finally, the TISM method validates the results of the findings and builds a robust model, suggesting that the driving power obtained from TISM, and weights obtained from the AHP can be used for ranking purposes.

The principal conclusions derived from the multimethod approach can be outlined as follows. Initially, recognizing modern slavery within the supply chain necessitates the consideration of various indicators (Avis, 2020). The qualitative analysis has identified these indicators, which are further scrutinized through quantitative empirical research. The findings indicate that economic, political-legal, social, and environmental factors significantly impact the prevalence of modern slavery in supply chains. Consequently, supply chain managers are crucial in achieving operational excellence and securing a competitive edge, as their efforts contribute to ongoing improvements in assessing the risks associated with modern slavery. The existing literature and empirical research propose multiple strategies to combat modern slavery, including fostering collaboration among stakeholders, enacting transformative changes in corporate culture, implementing robust legislation, enforcing penalties for noncompliance, adopting self-regulatory measures, encouraging initiatives led by employees, raising awareness through campaigns, and utilizing technology to address this critical issue (Han et al., 2022; Szablewska and Kubacki, 2023). Lotfi (2024) conducted an empirical study examining the obstacles to managing risks associated with modern slavery within supply chains. The persistent existence of modern slavery highlights a deeply rooted societal challenge, illustrating the intricate difficulties that society encounters in tackling this issue.

The countermeasures employed by organizations to tackle modern slavery within their supply chains can be classified into three distinct categories based on qualitative analysis: preventive, detective, and reactive. Empirical findings indicate that companies with a structured management approach to address modern slavery tend to implement both preventive and detective strategies. This assertion is supported by the literature (Allain et al., 2013; Lake et al., 2016; Townsend et al., 2016). Conversely, reactive measures appear to be less significant in corporate practices according to this study. Nevertheless, the literature review highlights that these reactive measures are crucial for effectively addressing modern slavery in supply chains. Few research has corroborated this assertion (Benstead et al, 2020; Hicks, 2021).

This research has demonstrated that by utilizing benchmarking in supply chain management initiatives, stakeholders can enhance their assessment processes and gain a comprehensive understanding of performance drivers, costs, and quality. This, in turn, allows organizations to improve their performance, boost customer satisfaction, and ensure compliance, as suggested by Bhattacharya and David (2018). There are strong ethical and business motivations for investors and companies to actively work towards mitigating modern slavery risks and addressing incidents of modern slavery when they arise. Essentially, organizations can elevate their performance by drawing lessons from both similar and different entities. Additionally, benchmarking enables organizations to pinpoint performance deficiencies in relation to their peers. Given the severe impact of modern slavery on the supply chain, it has garnered significant attention from governments and stakeholders, including NGOs and the media (ILO, 2017).

Chapter 6: Conclusions

6.1: Introduction to the chapter

This concluding chapter briefly overviews the study and introduces future directions for developing anti-slavery work. Initially, the chapter returns to the outlined research objectives and questions to present the research's significant findings. The conclusion describes the contribution to knowledge and practical implications. The chapter then investigates limitations and future research directions arising from this research.

This work aims to evaluate the enablers of modern slavery that significantly determine the overall social sustainability performance of global supply chains and proposes a novel benchmarking framework that will integrate various anti-slavery strategies. The hypothesis taken as its starting point is that it is possible to overcome the limited amount of quantitative data that businesses involved in supply chain activities make available to researchers by analysing qualitative responses provided by crucial individuals within the supply chain sector. This work has proven this hypothesis to be true. In doing so, several models have been built. These amount to a novel pathway for communicating the development of socially sustainable supply chain policies to mitigate modern slavery within Northwest England. If policymakers adopt these models, the development of future supply chain policies will be more likely to achieve the desired sustainability.

Existing policies try to optimise supply chain performance, including using inherently more resource-efficient mitigating strategies to combat modern slavery issues. Through various disclosure measures, the fundamental purposes of standard EU supply chain policy are to enhance sustainable development and, simultaneously, facilitate a maximum level of economic activities, employment, and social protection by raising the standard of living and economic and social cohesion. This study discusses the development of an EU strategy for combatting trafficking in human beings, which includes training frontline individuals from the business sector, private sector, public sector and third sector in recognising the indicators of these crimes, knowing how to report them, and encouraging data sharing.

Benchmarking, a powerful tool for comparing a company's product, services, or process against those of another business, is widely recognised as one of the most effective techniques for enhancing organisational performance and gaining competitive advantages. It empowers organisations to learn best practices from their peers, driving performance improvement and

continuous growth. This approach can pave the way for a socially sustainable supply chain management framework to identify enablers of modern slavery in global supply chains, providing a strong motivation for companies to take proactive measures against slavery.

6.2: Key Findings

Contemporary media reports about the uncovering of widespread modern slavery practices, especially forced labour in Thailand's shrimp industry, bonded labour at one of Apple's major Chinese electronics suppliers, and the fatal incidents that resulted in the death of workers constructing stadiums for Qatar's World Cup, have brought businesses that indulge in exploitative and illegal labour practices into the global spotlight. Moreover, an alarming new report by Human Rights Watch suggests that car manufacturers, including Toyota, Volkswagen, Tesla, and General Motors, are failing to reduce the risk of Uyghur forced labour in their aluminium supply chains, where concerns have been raised about aluminium being produced by systematic state-imposed forced labour in the Xinjiang Uyghur autonomous region.

Amid public and consumer calls to address forced labour and hold businesses accountable, governments around the world are enacting more legislation to combat and prevent modern slavery in supply chains. Almost 10% of global aluminium is produced in the Uyghur region, and it is likely to be distributed to car manufacturing operations around the globe. However, strong laws continue to be introduced worldwide, including in the US and EU, while the UK risks becoming a dumping ground for goods made with forced labour. Accordingly, the UK government must compel companies to put people and the planet before profit and ensure that consumers can be confident that everyday goods are not tainted with forced labour.

This thesis complements the current literature by proposing a comprehensive framework that provides abundant insights into how modern slavery risks are increasing rapidly in the global economy and supply chain systems. It is evident from this study that the concepts of regional supply chain mapping and global supply chain mapping have been achieving increased awareness in Europe and other parts of the planet; nobody should be forced to work to make the goods we consume. However, different policies, approaches, and governance issues require a coordinated response to maximise the availability of a socially sustainable supply chain. These findings demonstrate how urgently UK laws need to be strengthened to stop goods made

with forced labour coming to the UK. As well as legislative changes, collaboration between stakeholders is essential for achieving sustainability in the private and public sectors.

The analysis of data provided by the surveys carried out in this research has shown that effective supply chain management can benefit considerably from pre-competitive collaboration among companies sourcing from the same areas or groups of suppliers; for example, by sharing information related to risk assessments and supplier noncompliance and by working together on capacity-building activities that support supplier compliance. For this reason, conducting this type of research is vital, as it will allow policymakers and practitioners to adjust their procedures and supply chain strategies to mitigate modern slavery issues in global supply chains.

Finally, no research has yet identified the most critical modern slavery enablers associated with supplier selection, which would enable the identification and evaluation of effective anti-slavery measures. Practitioners and policymakers can use the findings of such a study to strengthen the global supply chains more efficiently.

Accordingly, the study's research questions were formulated to fill these blanks. An interdisciplinary strategy based on a combination of a questionnaire survey, a document examination, and face-to-face interviews was used to deduce the answers. The research questions are discussed further below.

6.2.1: Research question 1: What constitutes an anti-slavery supply chain management framework?

It is necessary to develop an anti-slavery supply chain management framework to integrate performance measurement of the enablers of social sustainability in global supply chains. This study has measured the implementation of anti-slavery responses by the government, law enforcement and civil society and assessed the current state of the art on prevention of modern slavery in the UK's supply chains. Stakeholders consider the advantages and disadvantages of various decision analyses, consumer expectation modelling, and awareness techniques. Chapter Three assessed the identified performance indicators by adopting TISM to analyse the complex relationships among identified enablers. The study presents a theoretical framework to explain how the enablers are interlinked. The study also employs AHP models to find the priorities and context relations among the enablers identified. There were many reasons for adopting these forms of analysis, but the most significant factor was the transparency of these methods to industry practitioners.

Modern slavery is not just a globally prevalent problem but a real-world issue that predominantly affects workers in labour-intensive markets, where such issues linger within multiple tiers of a supply chain. The manufacturing industry, one of the sectors most vulnerable to modern slavery risks, is not just a statistic but a sector that needs practical solutions. Based on interviews conducted with senior human resource management, procurement and seafaring professionals and experts in the supply chain industry, this study has not just empirically identified the policies, systems, and processes that affect an organisation's approach to modern slavery risk but also proposed a framework that can be practically applied by entities in the manufacturing industry to address modern slavery in their operations and supply chains (as shown in Figure 2.11.). This research reinforces previous research findings that governance largely determines an entity's readiness to combat modern slavery. Policies lie at the heart of the various governance initiatives guiding an organisation's actions in addressing modern slavery risk. This research echoes prior arguments that the degree to which the policies, such as the code of conduct, are communicated and mainly enforced impacts the effect of the policy instruments. This research also highlights that modern slavery is not just a concept but part of the organisation's overall ESG strategies. Thus, compliance and certification with existing standards relevant to ESG also contribute to better performance in addressing modern slavery.

6.2.2: Research question 2: What are the enablers of modern slavery, and how are they categorised?

The insights gained by determining the industry's perception of itself are invaluable, especially when developing a decision-making framework after collecting data on the region's modern slavery challenges in supply networks. The next step was to develop a multi-criteria analytical framework identifying the enablers of modern slavery, so as to inform the policies and practices that underpin the anti-slavery effort. A framework was developed to model the anti-slavery decision-making process using the list of criteria along with input from journal papers and the personal experience of expert respondents (see Figure 5.4). This model is built on twelve main criteria: namely, *Lack of corporate commitment*, *Gaps in statutory legislation*, *Socio-economic pressure*, *Work, health, and safety factors*, *Commercial pressure*, *Wrong business model and ethics*, *Volatile consumer demand*, *Lack of awareness and capacity building*, *Lack of information disclosure measure*s, *Human rights violations*, and *Technological barriers***.**

Thirty-nine sub-criteria were included; namely, *Lack of compliance*, *Weak leadership*, *Poor work ethics*, *Weak law enforcement*, *Inadequate code of conduct*, Disclosure Measures, Governance issues, Poverty, unemployment, Illiteracy, Lack of protective equipment, Staff

Safety Training, Fatigue, Lean Supply chain, Responsible sourcing, Environmental Social Governance, Corruption, Unethical Procurement, Lack of Framework, Short life circle of the product, Overproduction, Global Competition, Stakeholder engagement, Training & information sharing, Awareness reporting, Conflict of interest, Data protection and privacy, Supply chain data reporting, Debt bondage, Wages deduction, No Social Protection, Living condition, Threats to personal freedom, Discrimination, Gender and pay equality, Diversity and inclusion, Supply chain mapping, Enterprise Resource Planning, Logistic Information System.

6.2.3: Research question 3: What is the relative importance of the enabling factors of modern slavery?

The quality of empirical studies is judged on the research design, including reliability, construct validity, and internal and external validity. In Chapter 4: , construct validity is achieved when multiple sources of evidence are employed to assess the validity of the enabling factors. Questionnaires and interviews were used as the primary data collection approach. At the same time, official documentation reviews were also gathered for triangulation purposes, generating much valuable data. As a result, a deeper understanding of the supply chain industry was established. In addition, an extensive list of potential factors was identified that experts in the supply chain industry believe influence the decision-making process for anti-slavery choices.

Also, a list of key stakeholders was identified that members of the Northwest England supply chain industry consider the most important to their businesses. Identifying key stakeholders was crucial, as identifying these organisations is vital to understanding whose decision-making needs to be influenced to deliver more ethical supplier selection. Equally important was a list of modern slavery enablers identified from the literature review, which provided valuable insight into why the global supply chain is highly compromised with unethical activities, especially in the upstream segments.

The development of the anti-slavery decision model has ensured that the study establishes each criterion's weight within the decision-making framework**.** Data was collected from experts through pairwise comparisons and then analysed using AHP. The top twenty-two indicators represented 75% of the total weight from the thirty-nine sub-criteria included in the framework. These twenty-two sub-criteria are *Lack of compliance*, *Weak leadership*, *Poor work ethics*, *Weak law enforcement*, *Inadequate code of conduct*, *Inadequate disclosure measures*, *Governance issues*, *Poverty*, *Unemployment*, *Illiteracy*, *Lack of protective equipment*,

Inadequate staff safety training, *Fatigue*, *Lean supply chain*, *Irresponsible sourcing*, *Environmental & social governance*, *Corruption*, and *Unethical Procurement.* The study broadly identifies areas where policymakers could apply an effort to bring change to the issues of modern slavery in Northwest England's supply chains.

The study's focus on the most heavily weighted criteria in the first model led to the construction of a more detailed model. The aim was to create a more comprehensive anti-slavery choice framework based on main criteria and sub-criteria (Chapter five Figure 5.3). This effort resulted in a model that is much more accessible to grasp than its predecessor, potentially making it more helpful to policymakers. The top four criteria by weight in the simplified version were *Human rights violations*, *Inadequate work health and safety*, *Poor employment and business practices*, and *Lack of awareness and capacity building*. These criteria carry 42.6% of the weight within the ethical supplier selection decision-making process, as detailed in Section 5.4.1.14:.

6.2.4: Research question 4: What strategies are currently implemented to mitigate and tackle modern slavery in supply chains?

Modern slavery is a complex crime that is affected by a complex interaction of factors associated with the presence or absence of protection, respect for human rights, health and safety, and access to the necessities of life, such as food and water. Addressing modern slavery is a severe challenge for governments, businesses, NGOs and society. Based on the TISM analysis, benchmarking a company's supply chains is a seen as a significant mitigating strategy to actualise social sustainability (see Chapter Five Section 5.5:). However, efforts are hampered by a range of factors, including a need for more understanding of the enablers that increase the risk of enslavement and the scale of the practice at national and sub-national levels. The UNGPs provide an authoritative framework for efforts to address the human rights impacts of business. Essentially, mandatory human rights due diligence laws, like the French Duty of Vigilance law, require businesses and other organisations to perform due diligence to identify and remediate forced labour risks proactively and cover the entire value chain, including end-users (see Chapter 2:). Furthermore, risk assessments and performance measurement are vital in strategy formulation in order to evaluate risk objectively based on clearly defined metrics that pertain to the company's commitments, as explained in Chapter 4: .

Technology, particularly SAP Ariba and ERP software, plays a pivotal role in our fight against modern slavery. These tools help us identify the countries where modern slavery is most prevalent, enabling us to focus our efforts where they are most needed. It is also crucial to

assess how well the responsible departments of companies in developed and emerging economies have built an evidence base and a relevant portfolio of work to tackle this global challenge. This assessment includes supplies from the company's operations and those purchased from other entities, establishing processes by which buyers can trace the origins of the materials they buy, assess risk, identify instances of supplier noncompliance with company commitments, and engage suppliers in improvement processes towards full adherence to commitments.

6.2.5: Research question 5: What are the priorities of these supply chain strategies implemented to tackle modern slavery?

Based on data collected through an extensive survey amongst 19 supply chain professionals in the UK, has led to a significant development. The study has established the interdependencies between various sustainability metrics and determined the most critical ones by calculating their relative weights. This research is not just a collection of data, but a powerful tool that provides essential guidance to buyers in the supply chain, including processors and traders who purchase directly from producers, and downstream companies that purchase raw, processed, or finished products at different supply chain stages. It empowers these companies to ensure that their entire supply base complies with company commitments, emphasising their crucial role in the solution.

As shown in Table 5.6 and Table 5.7 above, according to the indicators for modern slavery assessment and sustainable supply chain performance, *Human rights violations* are the leading indicator among the main criteria; next is *Inadequate work health and safety*, and so on. For the sub-criteria, *Wage deduction* was considered the most important indicator, followed by *Fatigue*. This establishes where the weight lies in the supplier selection decision-making process.

The results are disappointing within the UK supply chains and illustrate how much things still need to change, as well as how little progress has been made over twenty years of EU disclosure measures that are designed to help mitigate modern slavery. Moreover, scholars have echoed these concerns, including researchers who have found that workers who have been 'liberated' from slavery and trafficking by civil society groups are likely to end up again in exploitative labour conditions. However, this research corroborates and adds empirical strength to existing claims in the literature, such that vulnerability to severe labour exploitation is fundamentally shaped by poverty, the lack of labour protection rights, and social discrimination.

6.3: The Key contributions

This thesis is significant as it seeks to enrich the existing literature by proposing a detailed framework that sheds light on the understanding of modern slavery risks in global supply chains and offers strategies for organizations engaged in international trade to manage these risks effectively. Businesses are inclined to adopt sustainable practices when they are economically justified. Nonetheless, there is currently a lack of clarity regarding the economic incentives for implementing modern slavery-free practices within supply chains. This research is pioneering in its development of an integrated benchmarking model that utilizes both qualitative and quantitative approaches for the identification, assessment, and mitigation of modern slavery risk factors in the global supply chain. Although there have been studies on this subject, they have generally been limited to specific modes or phases of modern slavery identification, thereby lacking a comprehensive approach to modern slavery risk management.

6.3.1: Contribution to Knowledge

1. This research adds to the body of knowledge by providing an in-depth analysis of anti-slavery initiatives. A thorough understanding of the supply chain industry under consideration is vital for developing an effective decision-making process. To achieve this understanding, data was gathered through questionnaire surveys and interviews (see Chapter 5 and Chapter 6). Chapter 5 presents a unique approach to the decision-making model, focusing on the integration of performance measurement for the enablers of social sustainability in global supply chains. The criteria established were validated for internal consistency and reliability using Cronbach's alpha. The study reveals that the global economic trend significantly contributes to the issue of modern slavery in supply chains, while also uncovering the perceptions and expectations of stakeholders in both emerging and developed economies in Northwest Europe, with particular emphasis on the UK.
2. The innovative aspect of the proposed model is its integration of the AHP and the TISM framework, which allows for the incorporation of specific preferences of decision-makers in the strategic decision-making process regarding socially sustainable supply chains. Additionally, the model addresses uncertainties arising from unknown data. The implementation of MICMAC analysis further aids organizations in effectively managing decision-making uncertainties in a timely manner. In contrast to the majority of existing literature on socially sustainable supply chains that relies on secondary data

for simulations, this study offers practical insights through empirical research conducted within UK international supply chains.

3. Ultimately, this research has created a decision-making tool that is efficient in terms of resources and time for managers involved in manufacturing, recruitment, and supplier selection. It delivers up-to-date information that accurately mirrors the current conditions in both developed and developing nations. Significantly, rather than just pinpointing modern slavery risk mitigation strategies through literature reviews, this study explores the strategies that are actually in use, enhancing their applicability in real-world contexts. Consequently, multinational corporations can compare their existing slavery risk management efforts with the strategies and practices suggested in this research.

6.3.2: Contribution to Theory

1. The research presents a conceptual framework that highlights several key factors, including the origins of modern slavery risk. In addition, the utilization of the TISM and AHP models in a regional supply chain case study has yielded a clear and integrated methodology for evaluating socially sustainable development at a micro level. This methodology features an industrial survey that allows for the inclusion of specific decision-makers' preferences in strategic supply chain decision-making. Moreover, the model addresses the variability introduced by unknown data.
2. This investigation underscored the significance of benchmarking global supply chains as a strategy to combat the increasing prevalence of modern slavery. The literature review presented in Chapter 2 identified several research deficiencies. The most significant of these was the lack of a thorough framework for evaluating initiatives against modern slavery, which encompasses the pursuit and prosecution of perpetrators, the prevention of individuals from engaging in slavery, and the protection of at-risk individuals through improved victim identification and enforcement strategies. Furthermore, a second gap was the inadequate emphasis on institutional support for identifying risk factors associated with slavery in global supply chains. There is an urgent requirement for more effective supply chain mapping to assist in uncovering unethical practices within business supply chains.
3. In Chapter 6, an integrated methodology for macro-level analysis is introduced, built upon an established model that outlines the drivers for performance assessment related to decision-making criteria in intricate supply chains. This approach utilizes AHP and

TISM. The data collection involved administering a questionnaire, which was facilitated through interviews and email outreach to individuals from diverse fields in Northwest UK.

6.4: Research Implications

This investigation contributes notably to the existing literature on global supply chains. Benchmarking serves to pinpoint internal areas ripe for enhancement. By evaluating a company's practices regarding modern slavery against recognized best practices, firms can establish benchmarks that promote continuous improvement.

The study synthesizes viewpoints from both academic and industry experts, offering an extensive inventory of potential factors that may foster modern slavery within supply chains. For instance, issues such as poverty and social exclusion can exacerbate vulnerability to modern slavery. Furthermore, the research outlines possible intervention strategies to combat labour exploitation at production sites, which could lead to substantial improvements in working conditions both upstream and downstream.

By merging insights from various academic and industrial perspectives, this research creates a comprehensive list of potential risk factors related to modern slavery that correspond to the twelve key indicators identified. This will aid researchers and practitioners in recognizing and categorizing potential risks of modern slavery in global supply chains, while also laying the groundwork for a model aimed at its mitigation.

This insight can be leveraged by law enforcement agencies to profile diverse categories of offenders, informed by their business models.

6.4.1: Practical implication

1. The structural mapping of the TISM model offers decision-makers solutions to intricate problems by visually representing the relationships among various elements. This approach is regarded as an interactive learning experience, as it takes into account both direct and indirect relationships among risk factors, thereby allowing for a comprehensive depiction of the complex interconnections of risks within the model.
2. Practitioners can leverage the benchmarking framework outlined in this study to gain insights into modern slavery from diverse angles, allowing them to pinpoint and reduce risks related to modern slavery in supply chains. In terms of practical outcomes, the establishment of additional avenues for developing effective solutions to modern

slavery, along with evaluating their overall social impact on diminishing corporate exploitation risks, calls for more thorough formative evaluations that incorporate feedback from a wide range of stakeholders and cross-sector entities.

3. This study encourages practical engagement in the coordination of empirical research globally, supporting ethical and socially sustainable decision-making in supply chains. It provides a valuable tool for internal decision-makers and supplier management teams to embrace best practices in training on indicators of forced labour through benchmarking.
4. The findings of this study suggest that organizations must broaden their supplier training initiatives to include high-risk suppliers across the entire supply chain, extending well beyond just first-tier suppliers. Furthermore, there is a need for a new performance evaluation framework that integrates expert opinions and systematically formulates scenarios for sustainable growth in the future.
5. This research has developed scenarios for key priority supply networks to facilitate sustainable development. Insights from the modern slavery case study also stress the importance of utilizing technology to foster social sustainability. The AHP is integral to the risk assessment and benchmarking framework presented in this thesis. Implementing AHP evaluation enhances the reliability of performance assessment metrics, particularly in complex and dynamic environments that require the identification and ranking of essential performance indicators. The proposed methodology advocates for the incorporation of TISM in the theoretical development of SCM.
6. The results of this research empower stakeholders and decision-makers to anticipate and effectively address issues related to modern slavery. Importantly, this study examined current mitigation strategies that have demonstrated greater practicality compared to those derived solely from literature reviews. Consequently, anti-slavery organizations can leverage the modern slavery mitigation strategies and techniques outlined in this research to evaluate their existing approaches to managing slavery risks. The implementation of these anti-slavery initiatives is substantiated by data collected from both experts and organizational reports.

6.4.2: Theoretical implication

1. From a theoretical implication’s viewpoint, this study's findings highlight the importance of expanding the theoretical frameworks and methodologies currently

utilized to better capture the complex and varied nature of modern slavery in supply chains. To facilitate a more dynamic contribution to the discourse, it is crucial to foster greater interaction with global business and human rights frameworks, as well as sustainable development efforts. Furthermore, a detailed investigation into the power dynamics present in buyer-supplier relationships at lower tiers of supply chains, alongside a review of domestic legal and regulatory systems, is necessary.

2. This study explores the theoretical ramifications of assessing supply chain interventions, particularly in identifying performance deficiencies and promoting improved strategies aimed at reducing labour exploitation within supply chains. The theoretical insights gained are intended to enhance the operational efficiency of a firm's supply chain. The benchmarking framework tackles contemporary slavery concerns and requires companies to offer a more detailed account of the factors influencing their business practices.
3. This investigation highlights the relevance of the benchmarking model in addressing modern slavery, providing an essential theoretical framework for future studies. As a result, subsequent research can leverage this benchmarking approach to examine the factors contributing to slavery at various levels, including firms, supply chains, industries, and countries, thereby deepening our understanding of the functioning of business supply chains in the context of modern slavery. The model's basis in formal theory establishes a clear relationship between theoretical insights and practical implications. For instance, the research emphasizes the importance of firms recognizing and tackling issues related to slavery within their supply chains. Moreover, the benchmarking framework is designed to encourage the establishment of fair working conditions among suppliers in emerging economies (Chazal and Raby, 2021). Therefore, developing initiatives to enhance working conditions for suppliers is a significant area for future exploration in supply chain research.

6.4.3: Managerial Implications

1. The TISM model provides managers with a framework to recognize the enablers of modern slavery that propel other enablers. This insight can be leveraged to formulate strategies through collaborative brainstorming activities designed to link different modern slavery enablers. Furthermore, this technique can act as a robust substitute for conventional cause-and-effect diagrams.

2. The research highlighted the necessity of establishing a supplier management system that articulates policies, procedures, expectations for suppliers, and strategies for supplier engagement within the commodity-buying organization or its supply chains. Nonetheless, it is crucial to conduct supply chain mapping and traceability to pinpoint the actors and origins within the supply chain. This mapping process will evaluate the risk of unmet company commitments. By adopting these strategies, managers can gain assurance and confidence in their efforts to promote social sustainability and combat modern slavery within their supply chains.
3. Senior executives assert that maintaining competitiveness can be achieved through low labour costs and a secure working environment. Nonetheless, consistent engagement with suppliers can enhance their operations in combating labour exploitation. Buyers are generally expected to implement a supplier management system that addresses ethical commitments across all supply chains, particularly those exposed to environmental or social risks. This obligation extends to all stakeholders, including buyers, processors, traders, and downstream purchasers, regardless of whether they are sourcing from primary producers, intermediaries, or downstream entities.
4. The results of this research provide stakeholders and decision-makers with the ability to anticipate and proactively address potential modern slavery risk factors. While this study does not encompass every conceivable risk associated with global supply chain operations, it thoroughly examines several significant modern slavery risk factors, utilizing sources such as academic research, official documents, and insights from professionals in various roles within the anti-slavery management field.
5. Furthermore, the study revealed that inadequate sourcing and purchasing practices impose financial strain on suppliers, leading to incentives for cost-cutting that may worsen workplace abuses. The findings also indicate that companies with poor corporate sustainability performance are unlikely to effectively tackle modern slavery in their supply chains. Therefore, it is vital to provide the necessary support to help firms develop the capabilities required to enhance their sustainability performance.
6. Decision-makers have increasingly recognized the importance of employing a comprehensive methodological strategy when analysing existing and prospective supply chain networks in relation to sustainable development. In Chapter 2, the research outlines a thorough discussion of the proposed methodology for data collection. This methodology is intended to explore the various elements and challenges that impact the

prevention and management of modern slavery within global supply chains, further emphasizing the practical implications of the study's approach.

6.5: Research Limitation

1 All surveys have their limitations, including every method of conducting a survey. The research limitations of this study were situations and circumstances that prevented the collection of sufficient data and restricted its analysis. This lack of data was a result of low response and reluctance to participate in the survey that was conducted, particularly in the last section of the questionnaire. Some respondents dropped out halfway through this section because they needed clarification, which took time. The TISM outcomes and AHP parameter ranks may alter if the study is performed in a different supply chain and geography. Notwithstanding, we have concluded our research and identified numerous opportunities that may help take the current study to the next level.

2 This study stands out as the first to present an integrated supply chain model, using both qualitative and quantitative techniques, for the identification, assessment, and mitigation of modern slavery risk factors in a global supply chain setting. Unlike related studies that focused solely on supplier selection management, this investigation takes a holistic view of modern slavery risk mitigation. To achieve this holistic perspective, the study developed specific research questions and employed a multi-method approach, including a questionnaire survey, documentation review, and focus interviews.

3 Modern slavery is challenging to investigate, given that it is illegal. Powerful corporations and governments are unwilling to give academics access to their workers and supply chains. Forced labour research is also filled with ethical challenges, including the possibility that involving highly vulnerable workers in research could further endanger them if managers detect it.

4 It is essential to acknowledge further limitations of the study. The opinions and insights from the nineteen participants, including the five interview participants, may not accurately mirror the topics and issues concerning complex supply chains and addressing modern slavery. The themes and sub-themes may become irrelevant or more important as the level of readiness or maturity increases. For example, some current “good practices” may become “business as usual” in a few years. Modifications, adjustments, and enrichments to the readiness assessment framework will be needed as retail businesses' approach to addressing modern slavery matures.

5 Given the risks associated with researching the business of modern slavery, until very recently, few scholars even attempted to collect complex or systematic data. Instead, researchers have often had little choice but to rely on poor-quality second-hand data, frequently generated by civil society or industry actors interested in portraying the problem in a particular light. As a result, the evidence base on contemporary modern slavery needs to be more robust.

6 Despite the limitations of this research, it lays a solid foundation for further research attempts in this field. Based on the themes and sub-themes identified, an industry-wide questionnaire survey (an example is shown in Appendices II and III) can be developed and administered to gain a better understanding of organisations' readiness to address modern slavery. Given that a large volume of modern slavery statements has been submitted, the framework from this study forms a basis for developing a performance evaluation framework when performing data analysis of the statements. As the practices in modern slavery prevention develop, a third-party certification of freedom from modern slavery is likely to emerge. The research findings can then be further incorporated into developing the certification system.

7 Due to time limitations and the size of the questionnaire survey, which generally needed pairwise comparison between each component, this study could only get a few participants for the survey. The time spent doing the interview is another crucial aspect that must be examined. For this study, the interview questions were developed to ensure that the interviews lasted 30 minutes (the total amount of time assigned for the discussions). However, some participants may have felt there were too many questions, and these sentiments would have affected how they thought about the questions. The interview process reflects another limitation of this study.

6.6: Recommendations and Future Research

The following recommendations for further work are proposed based on the work carried out:

1.The context of this work and the available time allowed only a limited data analysis. Therefore, it is essential to conduct further investigation into the effects of the identified criteria and sub-criteria to a more detailed resolution. It is recommended that the effects of the top two criteria by weight (human rights and work health and safety) should be further examined within the supply chains. Effective human rights measures should be taken to determine how these

criteria can best influence the decision-making process to promote socially sustainable production of goods within the geographical area covered by this work.

2. The context of this work and the available time allowed only a limited data analysis. Therefore, it is essential to conduct further investigation into the effects of the identified criteria and sub-criteria to a more detailed resolution. Despite the availability of codes of conduct, researchers have argued that they have little benefit to vulnerable workers, who experience labour abuse.

3. During this research, a relatively small number of experts were approached for their opinions. It is highly recommended that additional experts' views be sought to validate or dispute the weights calculated from the data provided by the experts consulted in this work. The interview participants stressed the importance of effective governance in combating modern slavery. Amongst the various governance mechanisms, policies are considered critical in guiding an organisation's actions to address modern slavery risk. An approach to modern slavery is integral to ESG and CSR; most organisations embed the provisions and procedures on modern slavery in existing policies in these areas.

4. Collaboration: Companies should aim to collaborate with multi-stakeholder initiatives, trade unions or civil society, especially in circumstances with minimum influence and low visibility, as these are effective means of mitigating risks. Where modern slavery risks are endemic in a sector, industry, supply chain or geographical jurisdiction, collaborating with other companies, industry bodies, national governments, and stakeholders helps tackle common problems, mitigate risks, and improve practices in the longer term. Incorporating the AHP and TISM as an integrated methodology makes the proposed model unique.

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Appendix I Definitions of Key Terms

In the context of this research, 'modern slavery' covers a set of specific legal concepts, including forced labour, debt bondage, other slavery and slavery-like practices, and human trafficking.

Modern slavery

Modern slavery is an umbrella term, encompassing human trafficking, slavery, servitude and forced labour. Essentially, it refers to situations of exploitation that a person cannot refuse or leave, because of threats, violence, coercion, deception, and/or abuse of power. For example, their identity documents might be taken away if they are in a foreign country, they may experience threats or actual violence, or their family might be threatened. Countries use varying terminology to describe modern slavery, including the term 'slavery' itself, as well as other concepts such as 'human trafficking', 'forced labour', 'debt bondage', 'forced' or 'servile marriage', and the sale or exploitation of children. These terms are defined in various international agreements and treaties, which many countries have voluntarily signed up to and ratified into law. The following are the key definitions most governments have agreed to, thereby committing to prohibit them through their national laws and policies:

Human trafficking

Human trafficking is defined in the UN Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children as involving three steps.

1. Recruitment, transportation, transfer, harbouring, or receipt of persons
    1. by means of threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person.
    2. with the intent of exploiting that person through: prostitution of others, sexual exploitation, forced labour, slavery (or similar practices), servitude, and removal of organs.

The recruitment, transportation, transfer, harbouring, or receipt of a child for the purpose of exploitation shall be considered "trafficking in persons" even if this does not involve threat, use of force, or coercion.

Forced labour.

Forced labour is defined in the International Labour Organization Forced Labour Convention, 1930 (No.29) as "all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily." The ILO conventions C29 and C105 list precise exceptions under which labour can be imposed by state authorities.

Labour exploitation: a victim is made to work with little or no pay and may face violence or threats. If they are foreign nationals, their passports may be confiscated by their exploiters, and they may be made to live in terrible conditions and under constant threat.

Servitude is similar to slavery, in that a person is under an obligation to provide a service which is imposed on them, but there is no element of ownership.

Domestic servitude: victims work in a household where they may be ill-treated, humiliated, subjected to exhausting hours, forced to work and live under unbearable conditions.

State-imposed forced labour.

State-imposed forced labour refers to forced labour imposed by state authorities, including involuntary labour exacted by government officials, as means of:

a. political coercion, education, or as a punishment for expressing political views.

b. punishment for participating in non-violent strikes.

c. mobilising labour for the purpose of economic development.

d. enforcing labour discipline; or

e. discrimination based on race, social status, nationality, or religion.

While some circumstances may justify a state's ability to impose compulsory work on citizens for specific tasks – for example, to perform civic or military obligations or to enforce penal sanctions – the scope of this ability is limited by conditions set in international conventions such as ILO Forced Labour Convention, 1930 (No. 29) and ILO Abolition of Forced Labour Convention, 1957 (No. 105). Imposing compulsory labour outside of these limitations may result in an activity being regarded as state imposed forced labour.

Slavery and slavery-like practices

Slavery is defined in the 1956 Slavery Convention as the status or condition of a person over whom any or all of the powers attaching to the right of ownership are exercised. In a later treaty, states agreed that there are also certain "slavery-like practices": debt bondage, forced or servile marriage, sale or exploitation of children (including in armed conflict), and descent-based slavery.

Debt bondage

Debt bondage is a status or condition where one person has pledged their labour or service (or that of someone under their control) in circumstances where the fair value of that labour or service is not reasonably applied to reducing the debt or length of debt, or the length and nature of the service is not limited or defined.

Worst forms of child labour

Drawing on the ILO Worst Forms of Child Labour Convention, 1999 (No. 182), the term "worst forms of child labour" for the purpose of these estimates is comprised of:

1. all forms of slavery or practices like slavery, such as the sale and trafficking of children, debt bondage and serfdom and forced or compulsory labour, including forced or compulsory recruitment of children for use in armed conflict.
2. the use, procuring or offering of a child for prostitution, to produce pornography, or for pornographic performances.
3. the use, procuring or offering of a child for illicit activities, for the production and trafficking of drugs as defined in the relevant international treaties.

Modern slavery in Supply Chain

Supply chain:
a set of entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer.

Upstream and downstream:
Think of a supply chain as a river. Downstream refers to the demand side of the supply chain where goods flow. Upstream refers to the source, that is, the supply side of the supply chain.

Global supply chains:

The cross-border organization of the activities required to produce goods and services and bring them to consumers through various phases of development, production, and delivery.

Appendix II AHP Questionnaire

A Performance Evaluation on the Detection and Prevention of Modern Slavery in Global Supply Chains

Participant Information Sheet

Name of Researcher and School/ Faculty

My name is Ishaya Barnabas, and I am carrying out a research project at Liverpool Logistics, Offshore and Marine (LOOM) Research Institute. You have been selected to take part in a research study. Before you decide whether you would like to participate, it is important that you understand why the research is being conducted and what it involves. Please take the time to read the following information. Your input is required to help in developing a key performance indicator and a decision-making model to integrate performance measurement of the enablers of social sustainability in global supply chains. This model will measure the performance of anti-slavery responses by government, law enforcement, and civil society and assess the current state of the art on preventing modern slavery in the UK's supply chains. Please feel free to ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not. You may also suggest any additional criteria and sub-criteria that you feel may add value to the development of the model and are relevant to the purpose of the study.

What is the purpose of this study?

The primary purpose of this questionnaire is to analyse the set of indicators that have been highlighted for the prevention and management of modern slavery in global supply chains. The aim of the above research topic is to analyse how the various decision-making techniques can influence the visibility of long and complex supply chains so as to prevent and mitigate modern slavery for a more sustainable future. For this purpose, AHP will be used to prioritise and detect the critical risk factors that can lead to labour exploitation in global supply chains. This research

is student led, and to improve its quality and relevance, the researcher would greatly appreciate your willingness to contribute your views by completing the provided questionnaire.

Do I have to take part?

No. It is up to you to decide whether to take part. If you do, you will be given this information sheet. You are still free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your rights or any future treatment or service you receive.

What will happen to me if I take part?

The questionnaires take a maximum of 20 minutes of your time; however, it is vital to the research development. Within the next 2 months, the researcher hopes to have collected significant data. The duration of this research is 36 months, although a significant proportion of this time has already elapsed.

Are there any risk involved?

There are no risks involved.

Will my taking part in the study be kept confidential?

All responses will be treated with strict confidentiality, as the researcher will make every effort in line with LJMU data protection policy to prevent anyone who is not on the research team from knowing that you provided this information or what the information is about. Ethical approval for this study has been given by LJMU's Research Ethics Committee.

I hope that you find participating in this study enjoyable. If you have any question or would like further clarification, please do not hesitate to contact the researcher through telephone +447936073076, or email me at BJ.ishaya@2020.ljmu.ac.uk, or Contact my Director of Studies Dr Dimitrios Parakevadakis Telephone +44(0)151 231 2766, Email at d.parakevadakis@ljmu.ac.uk, Liverpool Logistics, Offshore and Marine (LOOM) Research Institute James Parsons Building Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK.

Thank you for your assistance.

Yours faithfully,

Ishaya Barnabas

PhD Candidate

Participant Information

Name of Organisation	
Country of Operation	
Type of organisation	
Title/ Position	
Years of experience	☐ <5 years ☐ 6-10 years ☐ 11-15 years ☐ 16-20 years ☐ >20 years

Analytic Hierarchy Process (AHP)

For your opinion as an expert, the pair-wise comparison scale can be used to assess or express the importance of one element over another. The linguistic judgements and their explanations used for evaluating the importance of the elements in pair-wise comparison shown in Table 1.

Table 1. Scale of preference between two parameters in AHP.

Intensity of importance	Definition	Explanation
1	Equally	Two factors contribute equally to the objective
3	Moderately	Experience and judgment slightly favour one factor over the other
5	Strongly	Experience and judgment strongly favour one activity over the other
7	Very Strongly	Experience and judgment very strongly favour one over the other
9	Extremely	The evidence favouring one over another is of the highest possible order of affirmation
2,4,6,8	Intermediately	Used to represent compromises between the preferences in weights 1, 3, 5, 7 and 9
Reciprocals	Opposites	Used for inverse comparison

Example

In the pairwise comparison of three criteria, if you judge A>B and B>C, then you must judge A>C. Based on pairwise comparisons between A and B, B and C, then the right answer for comparison between A and C must be more than 5. Please scroll to the end of the screen to view all angles of the Question.

PAIRWISE COMPARISON				
CRITERION	UNIMPORTANT	EQUALLY IMPORTANT	IMPORTANT	CITERION
A	(9) (8) (7) (6) (5) (4) (3) (2) (8) (9)	(1)	(2) (3) (4) (5) (6) (7)	B
B	(9) (8) (7) (6) (5) (4) (3) (2) (8) (9)	(1)	(2) (3) (4) (5) (6) (7)	C
A	(9) (8) (7) (6) (5) (4) (3) (2) (8) (9)	(1)	(2) (3) (4) (5) (6) (7)	C

This research is enriched by the invaluable contributions of experts with extensive experience and impeccable qualifications in supply chain management and social science. These experts, chosen for their work and not their identities, bring a wealth of knowledge and astuteness to this research. This approach, which values quality over quantity, recognizes that the expertise of a select few professionals can outweigh that of a larger pool of non-experts. A brief profile of the categories of experts is as follows:

1. Directors with over twenty years' experience in the manufacturing industry.
2. Consultants, anti-slavery experts and human rights advocates in NGOs with over twenty years of experience in the modern slavery and human trafficking sector
3. Professors and Senior Lecturers who are experts in the supply chain, social sciences, or modern slavery with over ten years of experience.
4. Crewing officer and Seafarer who is a captain and master mariner with over ten years of experience in the shipping industry.
5. Retail Business owners of food and beverage supermarkets involved in international trade.

6. Civil servant in port administration with experience in port duties and goods importation.

In this survey, we ensure that the opinions of each expert are given equal weight, reflecting our commitment to a fair and unbiased research process. The survey procedure means that none of them is of more importance or has a deeper level of insight into the issue than others. The opinions of these experts were fortified through the pairwise comparison technique. A pairwise comparison is a useful tool due to its simplicity, spontaneous nature, and the ease with which experts can understand it. Table below displays the pairwise comparison questionnaire for the leading indicators.

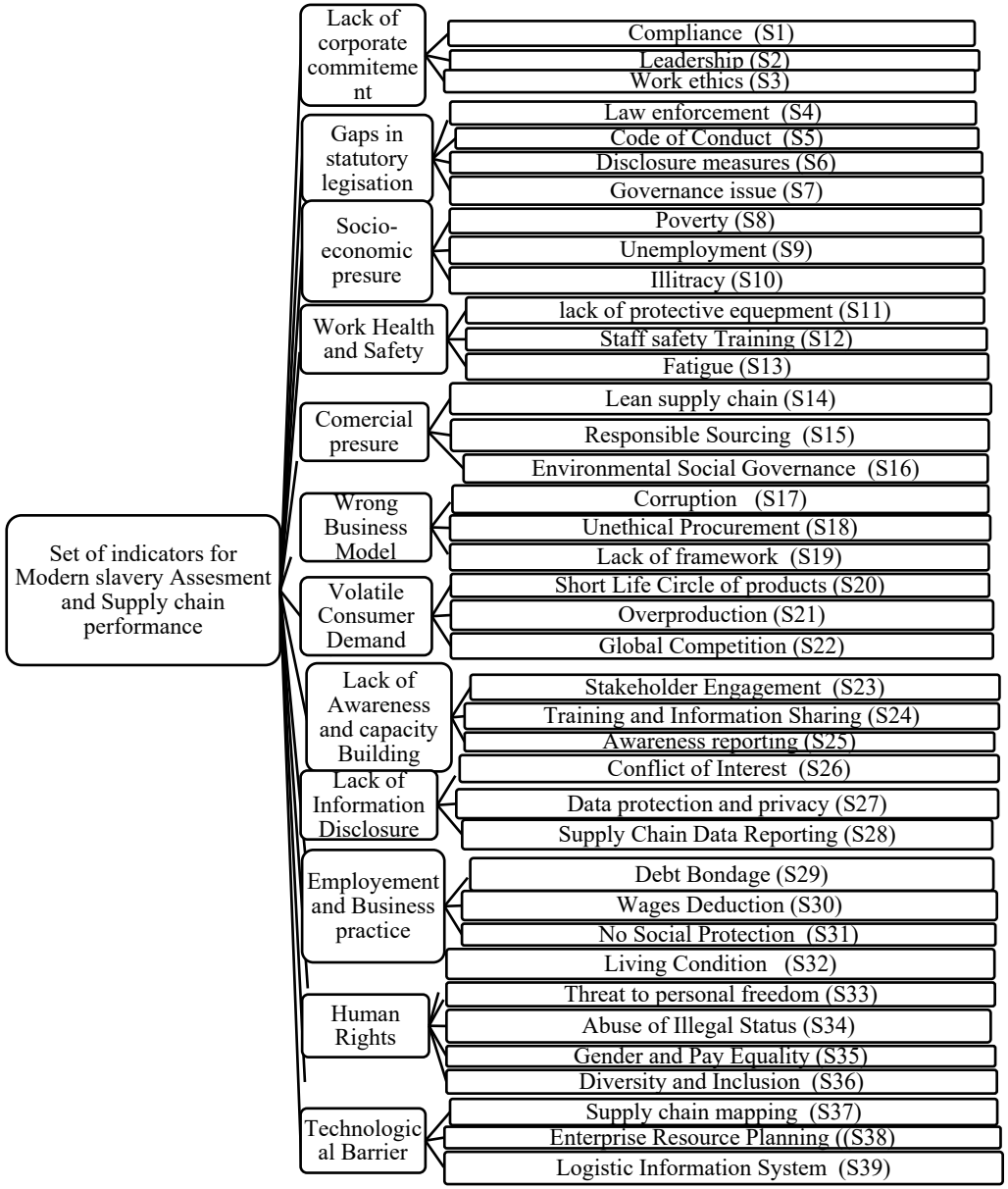
Pairwise comparison questionnaire for the main indicators

Modern slavery main indicators	**9**	**7**	**5**	**3**	**1**	**3**	**5**	**7**	**9**	Modern slavery main indicators
LC										GL
GL										SP
SP										WS
WS										CP
CP										WM
WM										VD
VCD										AC
AC										ID
ID										EB
EB										HR
HR										TB
TB										LC

LC=Lack of corporate commitment
GL=Gaps in statutory legislation
SP=Socio-economic Pressure
WS=Work Health and Safety
CP=Commercial Pressure
WM=Wrong Business Model
VD=Volatile Consumer Demand
AC=Lack of Awareness and Capacity building
ID=Lack of Information Disclosure
EB=Employment and Business Practice
HR=Human Rights
TB=Technological Barriers

1=Equally important
3=Moderately important
5=Strongly important
7=Very strongly important
9=Extremely important
2,4,6,8= Intermediately

Example:
If lack of corporate commitment is more important than gaps in statutory legislation and this is absolutely the case, then please tick 9 on the right-hand side.
If lack of corporate commitment is less important than gaps in statutory legislation and this is very strongly the case, then please tick 7 on the left-hand side.


Set of indicators for Modern slavery Assesment and Supply chain performance
Lack of corporate commiteme nt
Compliance (S1)
Leadership (S2)
Work ethics (S3)
Gaps in statutory legisation
Law enforcement (S4)
Code of Conduct (S5)
Disclosure measures (S6)
Governance issue (S7)
Socio-economic presure
Poverty (S8)
Unemployment (S9)
Illitracy (S10)
Work Health and Safety
lack of protective equepment (S11)
Staff safety Training (S12)
Fatigue (S13)
Comercial presure
Lean supply chain (S14)
Responsible Sourcing (S15)
Environmental Social Governance (S16)
Wrong Business Model
Corruption (S17)
Unethical Procurement (S18)
Lack of framework (S19)
Volatile Consumer Demand
Short Life Circle of products (S20)
Overproduction (S21)
Global Competition (S22)
Lack of Awareness and capacity Building
Stakeholder Engagement (S23)
Training and Information Sharing (S24)
Awareness reporting (S25)
Lack of Information Disclosure
Conflict of Interest (S26)
Data protection and privacy (S27)
Supply Chain Data Reporting (S28)
Employement and Business practice
Debt Bondage (S29)
Wages Deduction (S30)
No Social Protection (S31)
Living Condition (S32)
Human Rights
Threat to personal freedom (S33)
Abuse of Illegal Status (S34)
Gender and Pay Equality (S35)
Diversity and Inclusion (S36)
Technologic al Barrier
Supply chain mapping (S37)
Enterprise Resource Planning ((S38)
Logistic Information System (S39)

Pairwise comparison of the level of importance between each criterion

Criterion	UNIMPORTANT								Equal	IMPORTANT								Criterion
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Gaps in statutory legislation
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Socio-economic pressure
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate work health and safety
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Commercial pressure
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Wrong business model
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Volatile consumer demand
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Lack of corporate commitment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers

Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Socio-economic pressure
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate work health and safety
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Commercial pressure
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Wrong business model
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Volatile consumer demand
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Gaps in statutory legislation	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate work health and safety
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Commercial pressure

Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Wrong business model
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Volatile consumer demand
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Employment and business practice
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Socio-economic pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Commercial pressure
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Wrong business model
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Volatile consumer demand
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure

Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights
Inadequate work health and safety	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Wrong business model
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Volatile consumer demand
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Commercial pressure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Wrong business model	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Volatile consumer demand
Wrong business model	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building

Wrong business model	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Wrong business model	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practicse
Wrong business model	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Wrong business model	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Volatile consumer demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and capacity building
Volatile consumer demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Volatile consumer demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Volatile consumer demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Volatile consumer demand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Lack of awareness and capacity building	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of information disclosure
Lack of awareness and capacity building	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Lack of awareness and	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations

capacity building																		
Lack of awareness and capacity building	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Lack of information disclosure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor employment and business practices
Lack of information disclosure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Lack of information disclosure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Lack of information disclosure	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Human rights violations
Poor employment and business practices	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers
Human rights violations	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Technological barriers

Pairwise Comparison for the Sub-Criteria

Criterion

Lack of corporate commitment: Criterion that indicates the lack of commitment and acceptance of responsibility for successful implementation of an anti-slavery plan by a manager of company. The provision of a high-level framework can assist in setting robust supply chain commitments.

Sub-criteria.

(S1) Lack of compliance
(S2) Weak leadership
(S3) Poor work ethics

Lack of corporate commitment

Sub indicators	**Unimportant**								**Equally important**	**Important**								**Sub indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Lack of compliance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Weak leadership
Lack of compliance	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Work ethics.
Weak leadership	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Poor work ethics

Criterion

Gaps in statutory legislation: criterion that identifies gaps in legislations that defines crime, sets sanctions, and has common objectives of prosecuting criminals and protecting the victims.

Sub-criteria.

(S4) Weak law enforcement
(S5) Inadequate code of conduct
(S6) Inadequate disclosure measures
(S7) Governance issues

Gaps in statutory legislation

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub-indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Weak law enforcement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate code of conduct
Weak law enforcement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate disclosure measures
Weak law enforcement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Governance issues
Inadequate code of conduct	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate disclosure measures
Inadequate code of conduct	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Governance issues
Inadequate disclosure measures	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Governance issue

Criterion

Socio-economic pressure: criterion that indicates the socio-economic vulnerability of individuals and workers within the global supply chain, leading to modern slavery.

Sub-criteria.

(S8) Poverty
(S9) Unemployment
(S10) Illiteracy

Socio-economic pressure

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Poverty	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Unemployment
Poverty	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Illiteracy
Unemployment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Illiteracy

Criterion

Poor work, health, and safety factors refers to the science of the anticipation, recognition, evaluation, and control of hazards arising in or from the workplace that could impair the health and wellbeing of workers, considering the possible impact on the surrounding communities and the general environment.

Sub-criteria.

(S10) Lack of protective equipment
(S11) Inadequate Staff Safety Training
(S12) Fatigue

Poor work, health, and safety factors.

Sub indicators	**Unimportant**								**Equally important**	**Important**								**Sub indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Lack of protective equipment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate Staff Safety Training
Lack of protective equipment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Fatigue
Inadequate staff safety training	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Fatigue

Criterion

Commercial pressure: Economic and commercial pressure facing suppliers to provide purchased items is fundamental to whether decent work flourishes in any business supply chain.

Sub-criteria.

(S14) Lean supply chain
(S15) Irresponsible sourcing
(S16) Environmental & social governance

Commercial pressure

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub-indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Lean supply chain	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Responsible sourcing
Lean supply chain	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Environmental & social governance
Irresponsible sourcing	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Environmental & social governance

Criterion

Wrong business model and ethics: this applies to employees, independent contractors, consultants, and others with whom business has been done unethically. Essentially, formal policy on business conduct and compliance helps drive business ethically, honestly, and in full compliance with all laws and regulations.

Sub-criteria.

(S17) Corruption
(S18) Unethical Procurement
(S19) Lack of Framework

Wrong business model and ethics

Sub-indicators	**Unimportant**								**Equally important**	**Important**							**Sub-indicators**	
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Corruption	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Unethical Procurement
Corruption	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of Framework
Unethical Procurement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of Framework

Criterion

Volatile consumer demand: consumers' purchasing decisions affect the conditions of the workers producing their products as ethical-minded consumers feel responsible and accountable for the environment and society.

Sub-criteria.

(S20) Short lifecycle of products

(S21) Over-production

(S22) Global competition

Volatile consumer demand

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub-indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Short lifecycle of products	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Over-production
Short lifecycle of products	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Global Competition
Over-production	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Global Competition

Criterion

Lack of awareness and capacity building: Awareness and capacity building should be an ongoing activity in a company supply chain as there is a need for an information campaign to target specific groups and advocate actions to help mitigate modern slavery.

Sub-criteria.

Inadequate stakeholder engagement
Inadequate training and information sharing
Lack of awareness and reporting

Lack of awareness and capacity building

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub-indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Inadequate stakeholder engagement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate training and information sharing
Inadequate stakeholder engagement	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and reporting
Inadequate training and information sharing	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of awareness and reporting

Criterion

Lack of information disclosure measures refers to a company's responsibility to disclose financial and non-financial information in accordance with applicable regulations and prevailing industry practices and, when applicable, transparency to disclose information regarding their labour force, health and safety practices, environmental practices, business activities, financial situation, and performance.

Sub-criteria.

(S26) Conflict of interest
(S27) Lack of data protection and privacy
(S28) Inadequate supply chain data reporting

Lack of information disclosure measures

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub-indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Conflict of interest	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Lack of data protection and privacy
Conflict of interest	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate supply chain data reporting.
Lack of data protection and privacy	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Inadequate supply chain data reporting.

Criterion

Employment and business practicse: criterion that relates to unethical recruitment of individuals through decieption and coercion.

Sub-criteria

(S29) Debt bondage
(S30) Wages deduction
(S31) Denial of social protection

Employment and business practices

Sub indicators	**Unimportant**								**Equally important**	**Important**								**Sub indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Debt bondage	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Wage deduction
Debt bondage	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Denial of social protection
Wage duction	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Denial of social protection

Criterion

Human rights: Company responsibility to respect internationally recognised human rights as established in instruments such as the UN Guiding Principles on Business and Human Rights. They represent the universally agreed minimum conditions that enable all people to maintain their dignity.

Sub-Criteria

(S32) Poor living conditions
(S33) Threats to personal freedom
(S34) Discrimination
(S35) Gender and pay inequality
(S36) Neglect of diversity and inclusion

Human rights

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Poor living conditions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Threats to personal freedom
Poor living conditions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Abuse of illegal status
Poor living conditions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Gender and pay inequality
Poor living conditions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Neglect of diversity and inclusion
Threats to personal freedom	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Abuse of illegal status
Threats to personal freedom	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Gender and pay inequality

Threats to personal freedom	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Neglect of diversity and Inclusion
Abuse of illegal status	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Gender and pay inequality
Abuse of illegal status	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Negect of diversity and inclusion
Gender and pay inequality	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Negect of diversity and inclusion

Criterion

Technological barriers: these can affect the detection, traceability, and monitoring of modern slavery activities among subcontractors, suppliers, and recruiters, as traceability is becoming an increasingly essential requirement in many supply chain industries. Technology can also be used for demonstrating progress through credible monitoring, verification, and reporting techniques.

Sub-criteria.

(S37) Supply chain mapping
(S38) Enterprise Resource Planning
(S39) Logistics Information Systems

Technological barriers:

Sub-indicators	**Unimportant**								**Equally important**	**Important**								**Sub-indicators**
	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
Supply chain mapping.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Enterprise Resource Planning
Supply chain mapping.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Logistics Information Systems
Enterprise Resource Planning	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Logistics Information Systems

Appendix III TISM Questionnaire

A Performance Evaluation on the Detection and Prevention of Modern Slavery in Global Supply Chains

Participant Information Sheet

Name of Researcher and School/ Faculty

My name is Ishaya Barnabas, and I am carrying out a research project at Liverpool Logistics, Offshore and Marine (LOOM) Research Institute. You have been selected to take part in a research study. Before you decide whether you would like to participate, it is important that you understand why the research is being conducted and what it involves. Please take time to read the following information. Your input is required to help in developing a key performance indicator and a decision-making model to integrate performance measurement of the enablers of social sustainability in global supply chains. This model will measure the performance of anti-slavery responses by government, law enforcement, and civil society and assess the current state of the art on prevention of modern slavery in the UK's supply chains. Please feel free to ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not. You may also suggest any additional criteria and sub-criteria that you feel may add value to the development of the model and are relevant to the purpose of the study.

What is the purpose of this study?

The primary purpose of this questionnaire is to analyse the set of indicators for the prevention and management of modern slavery in global supply chains. The aim of this research project is to analyse how various decision-making techniques can influence the visibility of long and complex supply chains in preventing and mitigating modern slavery for a more sustainable future. The TISM technique will be used to determine the influential variable of the identified indicators and sub- indicators in the research. This research is student led, and to improve its

quality and relevance, the researcher would greatly appreciate your willingness to contribute your views by completing the provided questionnaire.

Do I have to take part?

No. It is up to you to decide whether to take part. If you do, you will be given this information sheet. You are still free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your rights or any future treatment or service you receive.

What will happen to me if I take part?

The questionnaires take a maximum of 20 minutes of your time, and your responses are vital to the success of the research. Within the next 2 months, the researcher hopes to have collected significant data. The duration of this research is 36 months, although a significant proportion of this time has already elapsed.

Are there any risk involved?

There are no risks involved.

Will my taking part in the study be kept confidential?

All responses will be treated with strict confidentiality, as the researcher will make every effort in line with LJMU data protection policy to prevent anyone who is not on the research team from knowing that you provided this information or what the information is about. Ethical approval for this study has been given by LJMU's Research Ethics Committee.

I hope that you find participating in this study enjoyable. If you have any questions or would like further clarification, please do not hesitate to contact the researcher by telephone +447936073076, or email me at BJ.ishaya@2020.ljmu.ac.uk, or contact my Director of Studies, Dr Dimitrios Parakevadakis Telephone +44(0)151 231 2766, Email at d.parakevadakis@ljmu.ac.uk, Liverpool Logistics, Offshore and Marine (LOOM) Research Institute James Parsons Building Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK

Thank you for your assistance.

Yours faithfully,

Ishaya Barnabas

PhD Candidate

Participant Information

Name of Organisation	
Country of Operation	
Type of organisation	
Title/ Position	
Years of experience	☐ <5 years ☐ 6-10 years ☐ 11-15 years ☐ 16-20 years ☐ >20 years

Section B Questionnaire: Total Interpretive Structural Modelling (TISM)

In collecting the data, certain rules are highlighted for respondents completing the questionnaire: enter V when the row influences the column, A when the column influences the row, O when there is no relation between the row and the column, and X when row and column influence each other. The matrix is developed by placing in order all the factors in equal numbers of rows (i) and columns (j). The data will be collected individually from each expert in the ij part of the matrix.

V—Factor i will support achievement of factor j.

A—Factor j will support achievement of factor i.

X—Factor i and j will support each other.

O—Factor i and j are unrelated.

The occurrence of one risk gives rise to multiple risks, resulting in a domino effect which makes it very important for the managers to control these risks before they occur. The following questions are related to analysing the inter-relationships among the identified risk factors.

TISM Structural self-interaction matrix (SSIM)

i \ j	12	11	10	9	8	7	6	5	4	3	2	1
Lack of corporate commitment **1**												
Gaps in statutory legislation **2**												
Socio-economic pressure **3**												
Inadequate work health and safety **4**												
Commercial pressure **5**												
Wrong business model **6**												
Volatile consumer demand **7**												
Lack of awareness and capacity building **8**												
Lack of information disclosure **9**												
Poor employment and business practices **10**												
Human rights violations **11**												
Technological barriers **12**												

Appendix IV Pre-testing Questionnaire for Reliability and Validity Test

Title of Research: A Performance Evaluation on the Detection and Prevention of Modern Slavery in Global Supply Chains

Name of Researcher and School/ Faculty

My name is Ishaya Barnabas, and I am carrying out a research project at Liverpool Logistics, Offshore and Marine (LOOM) Research Institute. You have been selected to take part in a research study. Before you decide, it is important that you understand why the research is being done and what it involves. Please take the time to read the following information. At this stage, your feedback will help in developing a key performance indicator and a decision-making model to integrate performance measurement of the enablers of social sustainability in global supply chains. This model will measure the performance of anti-slavery responses by government, law enforcement and civil society and access the current state of the art on prevention of modern slavery in the UK's supply chains. Please feel free to ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not. You may also suggest any additional criteria and sub-criteria that you feel may add value to the development of the model and are relevant to the purpose of the study.

1.What is the purpose of this study

The primary purpose of this questionnaire is to analyse the set of indicators for the prevention and management of modern slavery in global supply chains. The aim of the research project is to analyse how various decision-making techniques can influence the visibility of long and complex supply chains in preventing and mitigating modern slavery for a more sustainable future. However, it is necessary to pre-test the reliability and validity of the identified indicators and sub- indicators in the research. This research is student led, and to improve its quality and relevance, the researcher would greatly appreciate your willingness to contribute your views by completing the provided questionnaire.

2 Do I have to take part?

No. It is up to you to decide whether to take part. If you do, you will be given this information sheet. You are still free to withdraw at any time and without giving a reason. A decision to withdraw will not affect your rights or any future treatment or service you receive.

3 What will happen to me if I take part?

The questionnaires take a maximum of 20 minutes of your time and your responses are vital to the success of the research. Within the next 2 months, the researcher hopes to have collected significant data. The duration of this research is 36 months, although a significant proportion of this time has already elapsed.

4 Are there any risk involved?

No risks are involved.

5 Will my taking part in the study be kept confidential?

All responses will be treated with strict confidentiality, as the researcher will make every effort to prevent anyone who is not on the research team from knowing that you provided this information or what the information is about. Ethical approval for this study has been given by LJMU's Research Ethics Committee.

I hope that you find participating in this study enjoyable. If you have any questions or would like further clarification, please do not hesitate to contact the researcher through telephone +447936073076, or email me at BJ.ishaya@2020.ljmu.ac.uk, or Contact my Director of Studies Dr Dimitrios Parakevadakis Telephone +44(0)151 231 2766, Email at d.parakevadakis@ljmu.ac.uk, Liverpool Logistics, Offshore and Marine (LOOM) Research Institute James Parsons Building Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK

Thank you for your assistance.

Yours faithfully,

Ishaya Barnabas

PhD Candidate

Liverpool Logistics, Offshore and Marine (LOOM) Research Institute,
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Email BJ.ishaya@2020.ljmu.ac.uk,
Phone +447936073076

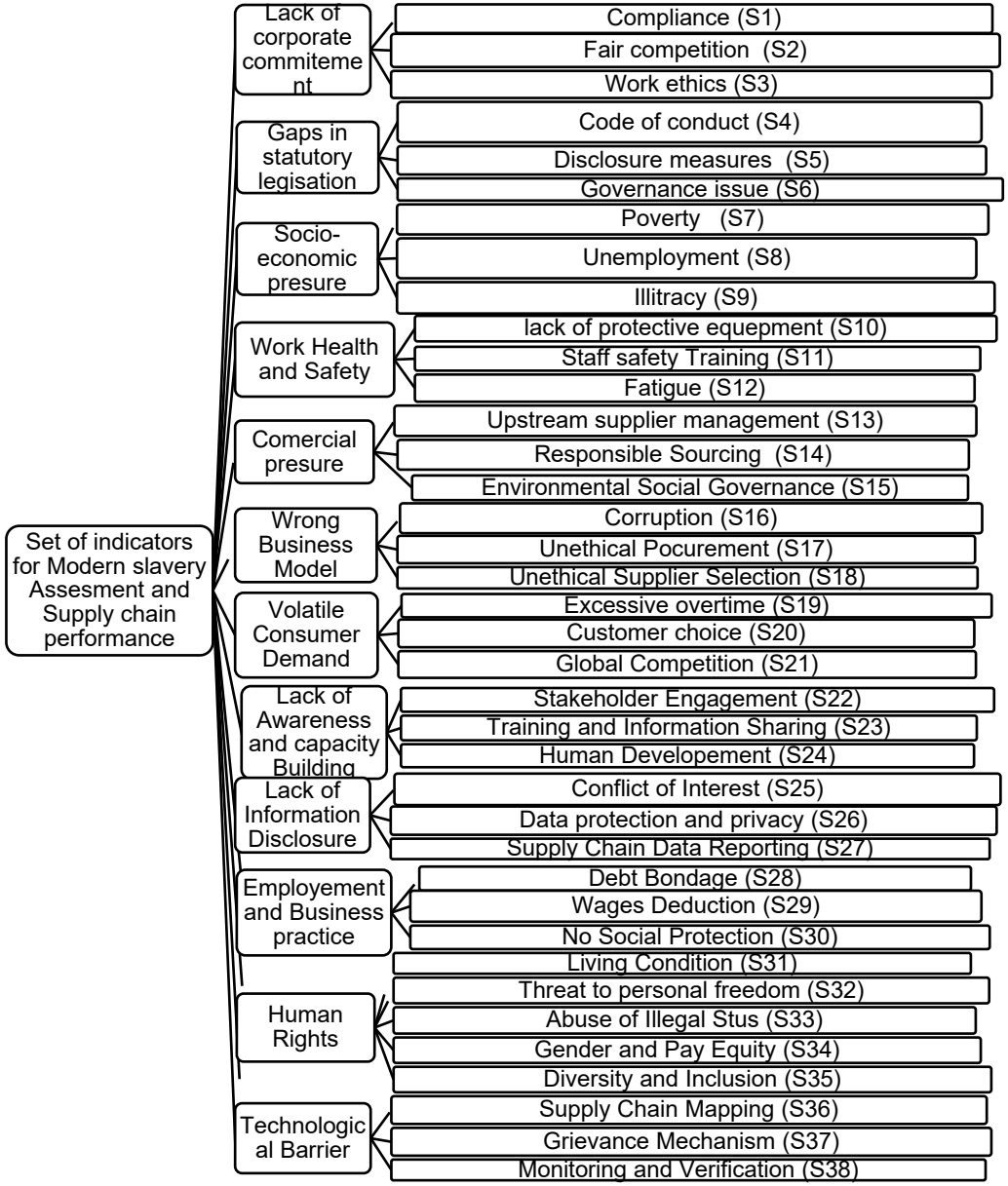
A-1: Questionnaire for The Impact of Performance Measurement Techniques on the Prevention and Management of Modern Slavery in Global Supply Chains

Name of Organisation	
Country	
Type of organisation	
Title/ Position	
Years of experience	
Age	
Willingness to participate in the next survey if necessary	Yes ☐ or No ☐

Section B Explanation

Modern slavery is a compound social, economic, and human rights issue occurring in all regions of the world. Understanding and addressing such a complex crime requires Corporate Social Responsibility (CSR) efforts through multiple initiatives and perspectives. Essentially, CSR is a management model requiring companies to integrate environmental, social, and governance (ESG) topics into their corporate strategy, operations, and supply chains.

A set of standard guidelines is spelled out in the UN Guiding Principles (UNGP) – which outlines the expectations for suppliers on key CSR/Sustainability issues, including human rights, working conditions, health and safety, environment, and business ethics. To achieve universal compliance with these guidelines, there is a need for a commonly accepted approach, which can be supported by the development of a performance measurement model with consistent key performance indicators that will benchmark global supply chains to tackle modern slavery.


Set of indicators for Modern slavery Assesment and Supply chain performance
Lack of corporate commiteme nt
Compliance (S1)
Fair competition (S2)
Work ethics (S3)
Gaps in statutory legisation
Code of conduct (S4)
Disclosure measures (S5)
Governance issue (S6)
Socio-economic presure
Poverty (S7)
Unemployment (S8)
Illitracy (S9)
Work Health and Safety
lack of protective equepment (S10)
Staff safety Training (S11)
Fatigue (S12)
Comercial presure
Upstream supplier management (S13)
Responsible Sourcing (S14)
Environmental Social Governance (S15)
Wrong Business Model
Corruption (S16)
Unethical Pocurement (S17)
Unethical Supplier Selection (S18)
Volatile Consumer Demand
Excessive overtime (S19)
Customer choice (S20)
Global Competition (S21)
Lack of Awareness and capacity Building
Stakeholder Engagement (S22)
Training and Information Sharing (S23)
Human Developement (S24)
Lack of Information Disclosure
Conflict of Interest (S25)
Data protection and privacy (S26)
Supply Chain Data Reporting (S27)
Employement and Business practice
Debt Bondage (S28)
Wages Deduction (S29)
No Social Protection (S30)
Living Condition (S31)
Human Rights
Threat to personal freedom (S32)
Abuse of Illegal Stus (S33)
Gender and Pay Equity (S34)
Diversity and Inclusion (S35)
Technologic al Barrier
Supply Chain Mapping (S36)
Grievance Mechanism (S37)
Monitoring and Verification (S38)

Criterion

Lack of corporate commitment: Criterion that indicates the lack of commitment and acceptance of the responsibility for a successful ant-slavery plan implementation by a manager of company. The provision of a high-level framework can assist in setting robust supply chain commitments.

Sub-criteria.

Chapter 7: (S1) Lack of compliance
Chapter 8: (S2) Unfair competition
Chapter 9: (S3) Poor work ethics

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Lack of corporate commitment	(S1) Lack of compliance	☐1 ☐2 ☐3 ☐4 ☐5
	(S2) Unfair competition	☐1 ☐2 ☐3 ☐4 ☐5
	(S3) Poor work ethics	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Gaps in statutory legislation: criterion that identifies gaps in legislation that defines crime, sets sanctions, and has common objectives of prosecuting criminals and protecting the victims.

Sub-criteria.

Chapter 10: (S4) Inadequate code of conduct
Chapter 11: (S5) Inadequate disclosure measures
Chapter 12: (S6) Governance issues

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance**
Gaps in statutory legislation	(S4) Inadequate code of conduct	☐1 ☐2 ☐3 ☐4 ☐5
	(S5) Inadequate disclosure measures	☐1 ☐2 ☐3 ☐4 ☐5
	(S6) Governance issues	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Socio-economic pressure: criterion that indicate the socio-economic vulnerability of individuals and workers within the global supply chain leading to modern slavery.

Sub criteria.

Chapter 13: (S7) Poverty
Chapter 14: (S8) Unemployment
Chapter 15: (S9) Illiteracy

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Socio-economic pressure	(S7) Poverty	☐1 ☐2 ☐3 ☐4 ☐5
	(S8) Unemployment	☐1 ☐2 ☐3 ☐4 ☐5
	(S9) Illiteracy	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Work, health, and safety factors refers to the science of the anticipation, recognition, evaluation, and control of hazards arising in or from the workplace that could impair the health and wellbeing of workers, considering the possible impact on the surrounding communities and the general environment.

Sub-criteria.

1. (S10) Lack of protective equipment
2. (S11) Inadequate staff safety training
3. (S12) Fatigue

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Work, health, and safety factors	(S10) Lack of protective equipment	☐1 ☐2 ☐3 ☐4 ☐5
	(S11) Inadequate staff safety training	☐1 ☐2 ☐3 ☐4 ☐5
	(S12) Fatigue	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Commercial pressure: Economic and commercial pressure facing suppliers to provide purchased items is fundamental to whether decent work flourishes in any business supply chain.

Sub-criteria.

A. (S13) Weak upstream supplier management
B. (S14) Irresponsible sourcing
C. (S15) Environmental & Social Governance

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Commercial pressure	(S13) Weak upstream supplier management	☐1 ☐2 ☐3 ☐4 ☐5
	(S14) Irresponsible sourcing	☐1 ☐2 ☐3 ☐4 ☐5
	(S15) Environmental & Social Governance	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Wrong business model and ethics apply to employees, independent contractors, consultants, and others with whom business has been done unethically. Essentially, formal policy on business conduct and compliance helps drive a business ethically, honestly, and in full compliance with all laws and regulations.

Sub-criteria.

- (S16) Corruption
- (S17) Unethical Procurement
- (S18) Unethical supplier selection

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Wrong business model and ethics	(S16) Corruption	☐1 ☐2 ☐3 ☐4 ☐5
	(S17) Unethical Procurement	☐1 ☐2 ☐3 ☐4 ☐5
	(S18) Unethical supplier selection	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Volatile consumer demand: consumers' purchasing decisions affect the conditions of the workers producing their products as ethical minded consumers feel responsible and accountable for the environment and society.

Sub-criteria.

1) (S19) Excessive overtime
2) (S20) Customer choice
3) (S21) Global competition

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Volatile consumer demand	(S19) Excessive overtime	☐1 ☐2 ☐3 ☐4 ☐5
	(S20) Customer choice	☐1 ☐2 ☐3 ☐4 ☐5
	(S21) Global Competition	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Lack of awareness and capacity building: Awareness and capacity building should be an ongoing activity in a company supply chain as there is a need for an information campaign to target specific groups and advocate actions to help mitigate modern slavery.

Sub-criteria.

- (S22) Inadequate stakeholder engagement
- (S23) Inadequate training & information sharing.
- (S24) Lack of human development

How important is this to you?

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Lack of awareness and capacity building	(S22) Stakeholder engagement	☐1 ☐2 ☐3 ☐4 ☐5
	(S23) Training & information sharing.	☐1 ☐2 ☐3 ☐4 ☐5
	(S24) Human Development	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Lack of information disclosure measures refers to a company's responsibility to disclose financial and non-financial information in accordance with applicable regulations and prevailing industry practices and, when applicable, transparency to disclose information regarding their labour force, health and safety practices, environmental practices, business activities, financial situation, and performance.

Sub-criteria.

- (S25) Conflict of interest
- (S26) Lack of data protection and privacy
- (S27) Inadequate supply chain data reporting

How important is this to you.

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance**
Lack of information disclosure measure	(S25) Conflict of interest	☐1 ☐2 ☐3 ☐4 ☐5
	(S26) Lack of data protection and privacy	☐1 ☐2 ☐3 ☐4 ☐5
	(S27) Inadequate supply chain data reporting	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Poor employment and business practice: criterion that relates to unethical recruitment of individual through decieption and coercion.

Sub-criteria

- (S28) Debt bondage
- (S29) Wages deduction
- (S30) Denial of social protection

How important is this to you.

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Poor employment and business practices	(S28) Debt bondage	☐1 ☐2 ☐3 ☐4 ☐5
	(S29) Wages and deduction	☐1 ☐2 ☐3 ☐4 ☐5
	(S30) Denial of social protection	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Human rights: Company responsibility to respect internationally recognised human rights as established in instruments such as the UN Guiding Principles on Business and Human Rights. They represent the universally agreed minimum conditions that enable all people to maintain their dignity.

Sub-Criteria

1. (S31) Poor living conditions
2. (S32) Threats to personal freedom
3. (S33) Discrimination
4. (S34) Gender and pay inequality
5. (S35) Neglect of diversity and inclusion

How important is this to you.

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set indicators	**Sub-indicators**	**Importance level**
Human rights	(S31) Poor living conditions	☐1 ☐2 ☐3 ☐4 ☐5
	(S32) Threats to personal freedom	☐1 ☐2 ☐3 ☐4 ☐5
	(S33) Abuse of illegal status	☐1 ☐2 ☐3 ☐4 ☐5
	(S34) Gender and pay inequality	☐1 ☐2 ☐3 ☐4 ☐5
	(S35) Neglect of diversity and inclusion	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Criterion

Technological barriers: these can affect the detection, traceability, and monitoring of modern slavery activities among subcontractors, suppliers, and recruiters as traceability is becoming an increasingly essential requirement in many supplies chain industries. Technology can also be used for demonstrating progress through credible monitoring, verification, and reporting techniques.

Sub-criteria.

- (S36) Supply chain mapping
- (37) Grievance Mechanism
- (S38) Monitoring and Verification

How important is this to you

1=Highly Unimportant 2=Slightly Unimportant 3= Neutral 4=Important 5=Highly Important

Identified set of indicators	**Sub-indicators**	**Importance level**
Technological barriers:	(S36) Supply chain mapping	☐1 ☐2 ☐3 ☐4 ☐5
	(S37) Grievance mechanism	☐1 ☐2 ☐3 ☐4 ☐5
	(S38) Monitoring	☐1 ☐2 ☐3 ☐4 ☐5
Please add any other indicator you think should be considered		☐1 ☐2 ☐3 ☐4 ☐5

Appendix V Consent Form

LIVERPOOL JOHN MOORES UNIVERSITY

CONSENT FORM

Title of Research: A Performance Evaluation on the Detection and Prevention of Modern Slavery in Global Supply Chains

Barnabas jossy ishaya/ School of Engineering and Maritime Operations

I have read and fully understand the information sheet for the above project. I confirm that I was provided with the opportunity to take into consideration the information, ask all the questions I wanted and have had them answered satisfactorily. ☐

I am fully aware of what is expected from me. I understand that I will be asked a set of questions which I am required to answer as honestly as possible. ☐

My decision to participate in this study is fully voluntary. I also understand that I am free to leave at any time without providing any reasons. I understand that my withdrawal will not affect my legal rights. ☐

I understand that I can withdraw permission to use my data within a week after it has been collected. I understand that in that case my data will be deleted and will not be used for this research. ☐

I understand that the data provided by me during the data collection process may be looked at by the researcher, their supervisor/tutor, and thesis committee members. I give permission for these individuals to have access to my data. ☐

I understand that my participation will not be associated with any kind of risk or benefit. I understand that my data will be treated with care and confidentiality. I also understand that it will not be given to any third party and will be disposed of after six months from the study completion date. My identity will remain anonymous. ☐

Name of participant:	Signature:	Date:

Name of Researcher:	Signature:	Date:
Name of Person taking consent: *(if different from researcher)*	Signature:	Date:
Note: When completed 1 copy for participant and 1 copy for researcher		