



Vaasan yliopisto
UNIVERSITY OF VAASA

Anniina Kylkisalo

**Enhancing supply chain transparency in
manufacturing companies: Impact on stakeholder
engagement**

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UNIVERSITY OF VAASA**School of Technology and Innovations****Author:** Anniina Kylkisola**Title of the Thesis:** Enhancing supply chain transparency in manufacturing companies:
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ABSTRACT:

Supply chain transparency has become a key issue in manufacturing industry as sustainability requirements, regulations, and stakeholder pressure have increased. It remains unclear how transparency efforts affect stakeholder trust and engagement, even though companies have tried to improve supply chain transparency through various monitoring and reporting practices. The aim of this study is to examine transparency in manufacturing companies' supply chains and its impact on stakeholders.

The study is based on a literature review and analyzes the existing academic research on supply chain transparency and stakeholder engagement. The data was analyzed using a thematic analysis to identify key themes and find appropriate answers to the research questions.

The results of this study emphasize that supply chain transparency is particularly influenced by regulatory and stakeholder pressures, technological enablers for transparency, and the complexity of global and multi-tiered supply chains. Transparency can also strengthen stakeholder commitment and trust, especially when it is perceived as authentic and credible. The study also highlights challenges such as limited visibility of suppliers at lower levels of the supply chains and the risk of symbolic transparency.

KEYWORDS: Supply Chain Transparency, Stakeholder Engagement, Manufacturing Companies, Stakeholder Trust

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TIIVISTELMÄ:

Toimitusketjujen läpinäkyvyys on noussut keskeiseksi teemaksi teollisuudessa kestävyysliittävien vaatimusten, sääntelyn sekä sidosryhmäpaineiden lisääntyessä. On edelleen epäselvää, miten läpinäkyvyyspyrkimykset vaikuttavat sidosryhmien luottamukseen ja sitoutumiseen, vaikka yritykset ovat pyrkineet parantamaan toimitusketjujen läpinäkyvyyttä erilaisten seuranta- ja raportointikäytäntöjen avulla. Tämän tutkimuksen tavoitteena on tarkastella läpinäkyvyyttä teollisuuden toimitusketjuissa sekä sen vaikutusta sidosryhmiin.

Tutkimus perustuu kirjallisuuskatsaukseen, ja siinä analysoidaan olemassa olevia akateemisia tutkimuksia toimitusketjujen läpinäkyvyydestä sekä sidosryhmävuorovaikutuksesta. Aineisto analysoitiin temaattisen analyysin avulla, jotta tunnistetaan keskeisiä teemoja sekä, että tutkimuskysymyksiin löydetään sopivat vastaukset.

Tutkimuksen tuloksissa korostuu, että toimitusketjujen läpinäkyvyyteen vaikuttavat erityisesti sääntely- sekä sidosryhmäpaineet, teknologiset mahdollisuudet sekä globaalien ja monitasoisten toimitusketjujen monimutkaisuus. Läpinäkyvyys voi lisäksi vahvistaa sidosryhmien sitoutumista sekä luottamusta, erityisesti kun se koetaan aidoksi sekä uskottavaksi. Tutkimus tuo esiin myös haasteita, kuten rajallinen näkyvyys toimittajiin alemmalla tasolla sekä riski muodollisesta läpinäkyvyydestä.

AVAINSANAT: Supply Chain Transparency, Stakeholder Engagement, Manufacturing Companies, Stakeholder Trust

Table of Contents

1	Introduction	7
1.1	Research Background	7
1.2	Research Objectives and Research Questions	8
1.3	Research Method	9
1.3.1	Data Collection, Source Selection Criteria and Consistency	9
1.3.2	Data Analysis	12
1.4	Scope and Limitations of the Thesis	12
1.5	Structure of the thesis	13
2	Theoretical Framework	15
2.1	Stakeholder Theory	15
2.2	Legitimacy Theory	16
2.3	How Stakeholder Theory and Legitimacy Theory Help Explain the Relationship Between Transparency and Stakeholder Behavior	16
3	Literature review	19
3.1	Defining Supply Chain Transparency	19
3.2	Stakeholder Engagement	20
3.3	Transparency and Stakeholder Trust	21
3.4	Transparency in the Manufacturing Context	22
3.5	Technologies Enabling Transparency	24
3.6	Voluntary vs. Regulatory Drivers	25
4	Analysis and Discussion	27
4.1	Thematic Analysis of Literature	27
4.1.1	Drivers of Supply Chain Transparency	27
4.1.2	Digital Tools for Transparency	28
4.1.3	Stakeholder Trust and Expectations	28
4.1.4	Barriers to Implementation	29
4.2	Discussion of Findings by Research Question	29
4.3	Theoretical Implications	32

4.4	Critical Reflections	33
5	Conclusions	35
5.1	Overall Conclusions of the Research	35
5.2	Practical Recommendations	35
5.3	Limitations and Directions for Future Research	36
	References	38
	Appendices	41
	Appendix 1. List of reviewed articles according to the theme	41

Tables

Table 1. Search commands used in Theoretical Framework.

Table 2. Overview of Most Used Databases, Search Themes and Sources Used.

1 Introduction

1.1 Research Background

Jia et al. (2024, p.2665) state that as global trade continues to evolve and supply chains become more complex, the lack of transparency in supply chains has become increasingly visible. They show that visibility and transparency are now essential in managing global supply chain complexity, forming the foundation of stakeholder trust and efficient operations. In support of this, Brun et al. (2020, p. 5) describe transparency as not only the internal ability to know that companies are functioning responsibly, but also the external obligation to prove this to external parties. With growing pressure from stakeholders, such as regulators, suppliers as well as investors, transparency in the supply chain has become a crucial factor in maintaining competitiveness of all parties involved (Jia et al., 2024, p.2665).

The need for transparency becomes even more urgent in manufacturing industries, where companies often operate across multiple tiers of suppliers. Fraser et al. (2020, p. 2) state that transparency and tracing is very difficult in manufacturing industries since raw materials undergo numerous processing stages, which may include for example smelting and refining and often spanning more than one continent. In such cases, maintaining transparency is not only a matter of stakeholder communication but an crucial issue in supply chain management that must to be addressed (Fraser et al. 2020, p. 1).

Stakeholders play a critical role in the context of transparency in supply chains, and stakeholder pressure has been identified as the most important driver of sustainable supply chain management, stakeholder involvement also help to influence and accept the sustainable development strategies made by decision makers (Schäfer, 2023, p. 590). Engaging stakeholders allows companies to shape, legitimize, and implement sustainability-related decisions more effectively since stakeholders can influence both strategy formulation and acceptance. In this engagement process, transparency plays a

key role as well. Fraser et al. (2020, p. 5) describe that supply chain transparency can be defined as the extent to which all stakeholders have a common access to product-related information that they request. In this context, stakeholders are not only the recipients of information, but also initiators since they must request and seek transparency to meet their needs of information. This two-way relationship underlines the importance of stakeholder-driven transparency throughout the supply chain specially to build trust and accountability.

1.2 Research Objectives and Research Questions

The aim of this thesis is to investigate how supply chain transparency affects stakeholder engagement in manufacturing companies. In particular, it seeks to explore the factors affecting implementation of transparency initiatives and how these efforts affect stakeholder trust and engagement.

To achieve the objectives, this thesis is guided by two research questions. Both questions are aligned to explore both the factors that affect the implementation of supply chain transparency, as well as the effects that transparency has on stakeholder engagement. Balanced analysis of the internal and external dynamics that shape transparency in manufacturing companies is acquired by focusing on these two research questions

To achieve the objects, the key factors that influence the implementation of supply chain transparency need to be identified, the challenges that manufacturing companies face in making transparency relevant for stakeholders need to be analyzed and the digital tools and technologies used to enhance transparency in supply chains need to be examined. This brings us to the main research question:

RQ1: What are the key factors that influence supply chain transparency in manufacturing companies?

Since stakeholders play a critical role in this thesis' context, as mentioned before, it is crucial to explore how supply chain transparency affects trust and engagement among different stakeholder groups, especially those that are most relevant to supply chains and most likely to be influenced by transparency. As internal stakeholders they are the employees and management, as external stakeholders they are suppliers, customers, investors, and regulators. This brings us to our second, more of a secondary research question:

RQ2: How does supply chain transparency influence the trust and engagement of different stakeholder groups?

1.3 Research Method

This thesis is based on literature-based research methodology, using existing academic and practical real-world publications like industry reports, that are specifically related to supply chain transparency and stakeholder engagement in manufacturing companies. The research is done by collecting, analyzing, and interpreting for example peer-reviewed articles and books to address the two research questions and to achieve the objectives of this thesis.

Literature-based research is a suitable choice for the subject of this research, since both main topics, supply chain transparency and stakeholder engagement, are seen to be well-presented in existing academic research. This allows to carry out a well-rounded analysis based on peer-reviewed academic sources.

1.3.1 Data Collection, Source Selection Criteria and Consistency

Multiple different databases were used in finding suitable data for this thesis. The validity and reliability of this research was assured by using databases that University of Vaasa's students have access to and using only peer-reviewed articles published in approximately the last 5 years in the research, but older articles were also used if they

fit the context and still were accurate. The databases most used in the research to find relevant literature were Emerald Insight, Springer and ScienceDirect, but also I used other databases such as Sage and PROQuest in the research as well. The most used databases are also mentioned in Table 2 below.

The process of research included the use of keywords with Boolean operators according to the theme to find the most relevant articles. For the theoretical framework the most used search commands were for example the ones presented in the Table 1 below.

Table 1. Search commands used in Theoretical Framework.

Theme	Search Command Used
Stakeholder theory and stakeholder engagement	"Stakeholder theory" AND ("stakeholder trust" OR "stakeholder engagement")
Stakeholder theory and transparency	"Stakeholder theory" AND transparency
Stakeholder theory and legitimacy theory	"Stakeholder theory" AND "legitimacy theory"
Legitimacy theory and transparency	"Legitimacy theory" AND transparency

The credibility and consistency of this literature-based thesis was ensured by a clear and structured approach to select and analyze appropriate sources. The main criteria of the sources used on this thesis were that using only academic and peer-reviewed articles, written in English or Finnish, but the only accurate ones found and used were in English. Also, that they were published recently, preferably within the last five years. This was done to assure that the sources used in this thesis are reliable and valid. Some articles were excluded if they were too outdated, not accurate in today's world, not peer-reviewed, or too unrelated to supply chains or transparency outside manufacturing companies.

Table 2 summarizes the most used databases for the literature research, which were the main themes guiding the search process, example of the keywords that were used, and

the number of articles used in this thesis from each database. Because the literature search was done continuously throughout the writing of this thesis, the original commands for the search and the number of the search results were not systematically documented and therefore this table focuses on presenting the most important sources and the final selection of literature from databases rather than presenting the exact numerical data from the initial search.

The table shows that the literature review of this thesis was based on several academic databases and was guided by defined areas that fit the topic of this thesis, including supply chain transparency, stakeholder engagement and the two theories that are presented in the second part of this thesis. The final selection of articles reflects their meaning on these themes and their contribution to the theoretical framework of this thesis.

Table 2. Overview of Most Used Databases, Search Themes and Sources Used.

Most used databases in research	Main themes searched	Example keywords	Number of total articles used in this thesis from the selected database
Emerald Insight	Supply Chain Transparency, Technologies on Supply Chain Transparency	“Supply Chain Transparency” AND blockchain	9
Springer	Stakeholder Theory, Supply Chain Transparency	“Stakeholder theory” AND transparency	4
ScienceDirect	Stakeholder Engagement, Legitimacy Theory	“Legitimacy Theory” AND transparency	3

Sage	Stakeholder Engagement, Supply Chain Transparency	“Stakeholder engagement” AND transparency	2
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1.3.2 Data Analysis

The existing literature found was analyzed using thematic analysis. The reason for this approach was to identify common patterns and key themes regarding supply chain transparency and stakeholder engagement in manufacturing companies. The analysis was focused on combining the results of the existing literature rather than evaluating individual articles separately.

The selected articles of the existing literature were first read to gain an overview of the research subject, then relevant information was collected based on its significance on the subject and relation to the two research questions. These collected information were grouped into broader themes such as drivers of supply chain transparency, stakeholder trust and commitment, digital tools enabling transparency in supply chain as well as barriers to the implementation of transparency initiatives, see Appendix 1 for details to identified themes. The identified themes were finally compared to highlight the similarities and gaps in the existing literature. This thematic analysis formed the basis of the chapter four, in which analysis and discussion is presented.

1.4 Scope and Limitations of the Thesis

This thesis is literature-based research into the relationship between supply chain transparency and stakeholder engagement in the context of manufacturing companies. In particular, this thesis focuses on three main areas: identifying the key drivers and barriers to implementing transparency in supply chains, examining the technologies that support transparency initiatives, and analyzing how transparency affects trust and

commitment among various stakeholder groups for example employees, customers, and suppliers.

This thesis has some limitations, for example it does not provide an in-depth assessment of financial or operational performance measures such as profitability or supply chain costs. The results of this thesis highly rely on the availability and the quality of existing literature, and it may not fully reflect emerging or industry-specific practices. A potential bias also exists on source selection, as only accessible, peer-reviewed, and academic sources were considered. Also, some stakeholder perspectives may not be as well represented as others, especially those of smaller companies, stakeholders that do not have a huge impact in companies' supply chains or which are not as presented in the existing literature as others.

1.5 Structure of the thesis

This thesis is structured into five main chapters which are the following.

The first chapter introduces the study with providing the background to the research, the objectives of this thesis and research questions.

The theoretical framework is presented in the second chapter of this thesis including stakeholder theory and legitimacy theory which guide the thesis. It also explains how these theories are used to understand the relationship between supply chain transparency and stakeholder behavior in the supply chain.

In the third chapter of this thesis the relevant literature is reviewed about supply chain transparency and stakeholder engagement. The literature review defines key concepts of the supply chain transparency, examines transparency and trust, as well as discusses the manufacturing context in supply chain transparency, technological tools for transparency and, voluntary and regulatory drivers of transparency.

In the fourth chapter the analysis and discussions of the findings is presented. A thematic analysis of literature, discussions about the results in terms of the research questions presented in the first chapter, interpretations of the findings through the theoretical framework as well as critical reflections on gaps and limitations in the existing literature is presented.

The thesis is concluded in the fifth chapter by summarizing the main findings that were made, also providing with practical recommendations for companies in the manufacturing industry as well as outlining the limitations of the thesis and directions for possible future research.

2 Theoretical Framework

2.1 Stakeholder Theory

Stakeholder theory was first introduced by Freeman in 1984, Freeman (2010, p. 46) defines a stakeholder as a group or individual that can influence the achievement of the organization's objectives or be affected by the achievement of the organization's objectives. According to Tao et al. (2023, p. 691) before Freeman's popular work on stakeholder theory, the traditional view was that the sole objective of the company was to maximize the interests of shareholders, but the stakeholder theory on the other hand advocates a much broader objective of the company. Morgan et al. (2023, p. 1426) state that the fundamental logic behind stakeholder theory is that companies should take into account multiple actors in every decision. These stakeholders include everyone from employees and shareholders to suppliers and customers (Morgan et al., 2023, p. 1428).

Stakeholder theory is deeply connected to corporate social responsibility, trust, and stakeholder engagement. Awa et al. (2024, p. 12) state that stakeholder theory explains the motive behind corporate social responsibility, as companies are being pressured by stakeholders and society to act more responsibly, transparently, and sustainably. Kujala et al. (2022, p. 1136) emphasize that effective transparency practices are crucial to building trust among stakeholders, from employees to suppliers and investors. In addition to this, Kumar et al. (2024, p. 3) highlight how companies are consciously empowering its stakeholders through open communication and shared responsibility, which strengthens stakeholder trust and proactive engagement even more.

According to Morgan et al. (2023, p. 1438), the integration of stakeholder theory into supply chain transparency highlights specifically its importance in addressing both social and environmental stakeholder concerns. Transparency of different kind of processes, such as those creating waste or emissions, allows stakeholders to assess the companies' accountability and therefore supports legitimacy.

In summary, stakeholder theory provides a valuable perspective especially for understanding how stakeholders react to transparency initiatives. For example, when companies openly disclose their supply chain practices, stakeholders are more likely to interpret this as a sign of honesty and respect, which therefore builds trust. Transparent communication also seems to attract stakeholder engagement. Therefore, it can be said that stakeholder theory helps to explain why transparency enhances trust and engagement among different stakeholders.

2.2 Legitimacy Theory

The purpose of applying legitimacy theory in this thesis is to provide further explanation and understanding as to why companies try to enhance transparency in their supply chains. In addition to seeking to maintain strong relationships with stakeholders, as discussed in the previous part, according to legitimacy theories companies also seek to respond to wider societal expectations. This theory is especially important for understanding how external pressures shape transparency efforts in manufacturing companies.

According to legitimacy theory, companies seek to operate within societal boundaries and norms (Reid et al., 2024, p. 84). In other words, companies need to behave in ways that are seen to be acceptable, and companies risk losing legitimacy if they fail to meet these expectations. Losing legitimacy can lead to reputational damage. Chawarura et al. (2025, p. 7) describe that companies' reputation is dependent on the social pillar, which reflects companies' alignment with societal expectations, and can lead to reputational damage if companies fail to maintain these societal expectations.

2.3 How Stakeholder Theory and Legitimacy Theory Help Explain the Relationship Between Transparency and Stakeholder Behavior

Stakeholder theory provides a good understanding for this thesis to how and why stakeholders react to transparency. Stakeholders are not just passive observers but also

can be seen well informed and proactive in shaping corporate social responsibility and transparency issues (Awa et al., 2024, p. 1). Stakeholders are more likely to respond with trust, support, and engagement when companies provide information about their operations more transparently with them, such as supply chain practices or labor conditions. Therefore, transparency also creates a stronger relationship between the company and its stakeholders.

Legitimacy theory, as mentioned in the previous part, explains why companies feel that they are forced to be transparent. Companies operate in a wider social context and must comply with social norms, laws, and ethical expectations to maintain their legitimacy, and maintaining it is easier than gaining or repairing it (Deegan, 2019, p. 2312). Reputational damage is a risk if these expectations are not met, as well as stakeholder backlash or even as far as legal consequences. Transparency is therefore especially used as a strategic tool to demonstrate compliance, ethical behavior, and conformity with societal values, particularly in response to external pressure from governments, consumers, and regulators.

In conclusion it can be said that stakeholder theory and legitimacy theory, together, reveal a two-way relationship. Stakeholders are demanding transparency, and expectations for ethical and sustainable business practices are growing often. Companies respond by disclosing information to maintain their legitimacy and gain stakeholder support. Disclosure in turn influences the way stakeholders perceive the company, either by reinforcing trust or, if it is not fulfilled, often by withdrawing from the company or by pressuring the company.

These theories will guide the literature review and analysis in the next part of this thesis and will be used to assess how transparency strategies affect stakeholder relations in manufacturing companies. The theories also serve as an interpretative framework to analyze the results in response to the two research questions. To the first research question, stakeholder theory helps to explain how transparency shapes stakeholder trust

and commitment, while to the second research question legitimacy theory enlightens the motivations behind transparency efforts.

3 Literature review

3.1 Defining Supply Chain Transparency

Supply chain transparency refers to the extent to which all stakeholders in the supply chain understand and have share access to the product information they request without loss, disruption, delay, or distortion (Fraser et al., 2020, p. 5). This includes sharing information about suppliers, practices and materials throughout the supply chain to improve accountability and trust. Wang et al. (2024, p. 947) describe supply chain transparency as a situation where companies achieve upstream and downstream traceability, enabling a detailed view of supply chain collaboration, operations, products, and services. These both views give a good understanding about the operational and relational dimensions of supply chain transparency, it focuses not only on what is made public, but also on how companies obtain traceability information and use it to effectively manage their supply chains. Transparency also includes traceability and disclosure. The ability to track and trace information is referred to as traceability (Khan et al., 2022, p. 1). Disclosure means communicating this information to stakeholders such as consumers, regulators, and investors (Delgado et al., 2025, p. 4).

The terms supply chain transparency and supply chain visibility are often used in the same context, however they are two different concepts. Sodhi and Tang (2019, p. 2947) explain that visibility is an internal capability that allows companies to monitor, control and manage supply chain activities for operational purposes. They explain that transparency is the external communication of relevant supply chain information to stakeholders. Therefore, visibility can enable transparency, but in the end, they are not the same. Sodhi and Tang (2019, p. 2955) state that transparency is a strategic choice for a company, it offers companies competitive advantage over its competitors and helps gain trust among stakeholders.

3.2 Stakeholder Engagement

Siems et al. (2023, p. 747) describe that various supply chains' internal and external stakeholders facilitate, monitor, or promote supply chain implementation. External stakeholders, such as NGOs, customers and investors apply pressure on companies and act as drivers for even more transparency within the supply chains, according to Siems et al. (2023, p. 755) they drive awareness for the integration of the sustainable supply chain practices for example in case of low transparency in supply chains. Internal stakeholder's, such as employees' and managers' engagement are essential for implementing initiatives for transparency related strategies. As Siems et al. (2023, p. 764) describe that enhanced communication within internal stakeholders in the supply chain is obligated to meet expectation regarding transparency and to apply sustainability practices.

Improved communication between different supply chain stakeholders, both traditional and non-traditional, such as universities, play key role in promoting sustainable supply chain management and can support exchange of best practices across the whole industrial sector (Siems et al., 2023, p. 763). A key role in strong communication is however the internal stakeholders, since they can better identify and address sustainability related risks, which strengthens overall risk management and structures (Siems et al., 2023, p. 764). As a conclusion, engaging stakeholders in supply chain is critical to achieve even more transparent supply chain, as it helps especially the communication and trust needed to manage risk in the supply chain and share the information effectively across the whole supply chain.

A company can facilitate a dialogue between its stakeholders through a variety of activities, which are known as stakeholder engagement, in terms these are referred as communication, collaboration, consultation and joint decision-making, these can be one-way activities, such as informing stakeholders or two-way activities, for example as one-on-one communication between company and its stakeholder (Kujala et al., 2022, p. 1156). Stakeholder engagement isn't just for a show, Siems et al. (2023, p. 769) explain

that for example proactive cooperation with external stakeholders in the supply chain facilitates the organization's learning process, as it develops capabilities and increases understanding and awareness of knowledge creation, so it helps companies to learn, adapt and build capabilities around supply chain transparency. Enhanced stakeholder engagement doesn't just impact supply chain transparency, as Kujala et al. (2022, p. 1156) describe that effects of stakeholder participation also point to improved competitive advantage, social and ecological well-being as well as concerning the participating stakeholders and other parties, in an intentional or unintentional way.

3.3 Transparency and Stakeholder Trust

Trust is a fundamental prerequisite for establishing and maintaining bilateral communication in relations between organizations, as Jia et al. (2024, p. 2674) explain that building trust among stakeholders increases for example the willingness to cooperate in information exchange, disclose internal information and exchange sensitive information to the trusted stakeholders. Jia et al. (2024, p. 2674) also state that trust between companies has a notable positive impact on supply chain transparency, but however the traditional centralized supply chain technologies can be manipulated, which reduces trust and diminishes supply chain transparency. Companies can however use new technologies, for example blockchain technology to increase transparency through data and information sharing, also externally companies can use for example inter-party collaborations to improve overall supply chain transparency (Jia et al., 2024, p. 2681).

Transparency regarding stakeholder trust in the supply chain does not only concern external stakeholders, enhancing supply chain transparency promotes fair working conditions, safe working environments, and respect for human rights internally, securing the well-being of workers and communities, as well as aligning with companies' social sustainability goals (Jia et al., 2024, p. 2665).

It is important that trust between stakeholders is seen as authentic, as Chawarura et al. (2025, p. 7) explain that companies' reputation is dependent on the societal expectations of them, eventually it can lead to reputational damage if these societal expectations aren't met, and this reinforces the role of transparency especially in the means of maintaining stakeholder trust. Jia et al. (2024, p. 2668) explain that overall, it can be said that supply chain transparency plays a key role in building trust by promoting ethical and fair practices throughout the whole supply chain, so when stakeholders see that companies are open about their practices, it therefore positively influences economic, social, and environmental performance.

3.4 Transparency in the Manufacturing Context

Transparency in manufacturing companies and global supply chains is a key issue that need to be addressed, since in current times when consumers are increasingly interested in where and how their products are manufactured and how sustainable they are, taking into account the raw materials needed for their production (Fraser et al., 2020, p. 1). However, continual advances in information have led to near-global connectivity, as Fraser et al. (2020, p. 1) explains that for this reason global outsourcing has become more practical, and it is now easier for suppliers, sub-suppliers, and buyers to communicate information more efficiently.

Even though global connectivity has improved the potential for information sharing, transparency in multi-tier supply chains remains a significant challenge. Still many companies struggle to obtain data from their sub-suppliers, as according to Fraser et al. (2021, p. 2) raw materials often pass through multiple processing stages like smelting and refining, across multiple continents and therefore it is making it difficult for companies to trace product origins and verify ethical standards. Without a clear transparency into these lower tiers of manufacturing, companies are not able to fully ensure the compliance with sustainability goals or respond effectively to growing consumer and regulatory demands. As Dijmarescu (2024, p. 2) points out, multiple tiers of suppliers are often involved in the production of a single component from raw

material to final assembly, making comprehensive tracking resource-intensive and complex.

In response to these challenges within the global supply chain, companies are facing increasing pressure from stakeholders and therefore transparency in supply chain information is increasingly demanded (Brun et al., 2020, p. 2). Transparency involves both the internal ability to know that companies are acting responsibly and the external obligation to show that this is really the case (Brun et al., 2020, p. 5). The complexity of global supply networks is the reason why reaching the sub-suppliers and gathering credible information often is proved as difficult. To overcome these obstacles, companies must invest in stronger supplier relationships, collaborative initiatives and digital tools that can enhance the transparency. Therefore, supplier engagement and supply chain collaboration are becoming essential strategies for improving transparency and supporting more sustainable manufacturing practices (Brun et al., 2020, p. 12).

Transparency is increasingly recognized as a critical enabler of sustainable development in global manufacturing supply chains. Without the information about who is involved in the production process and under what conditions, companies cannot effectively monitor environmental practices or maintain social standards. Fraser et al. (2020, p. 5) argue that transparency is a very necessary first step in implementing multi-level sustainable supply chain management, as it enables companies to identify key players in the supply network that need to be involved. Similarly, Brun et al. (2020, p. 15) emphasize that supply chain visibility is essential for overcoming the challenges posed by complexity especially when striving for transparency in global supply chains. They explain that supply chain information can only be revealed once the companies are able to identify their supply chain partners and determine what is actually happening in their supply chains (Brun et al., 2020, p. 15). This suggests that many companies may be struggling to achieve their sustainability goals, not because of a lack of commitment but rather than because they do not have access to the reliable information about sub-suppliers operating at different levels and in different geographical areas.

3.5 Technologies Enabling Transparency

In recent years, we have seen digital technologies emerge one after another, and leading technologies such as the Internet of Things (IoT), big data, blockchains, cloud computing and artificial intelligence (AI) are being integrated into companies' supply chains to manage it and to seek driving efficient operations (Wang et al., 2024, p. 946). Wang et al. (2024, p. 953) describe that supply chains are integrating these technologies such as Internet of Things (IoT), big data and blockchain to drive change. In manufacturing companies' supply chain, the advanced technologies for example enhance transparency in product specification, throughout the retailing process, in warehouse operations and ensure transparency in the supply chain for suppliers and customers (Kandarkar & Ravi., 2023, p. 996-998).

By integrating IoT with other digital technologies, companies are enabled to collect and share real-time data on operations, logistics, and demand, which improves transparency across the whole supply chain (Wang et al., 2024, p. 948). A critical component of the IoT, the Industrial Internet of Things (IIoT), is designed specifically for industrial applications and plays an important role in monitoring processes, measuring output, and improving efficiency (Zelbst et al., 2019, p. 443). Zelbst et al. (2019, p. 442) state that IIoT provides an ideal environment for supply chain collaboration by ensuring that relevant information is available to all authorized members in a shared digital infrastructure. Stakeholder trust and accountability is reinforced when IIoT is integrated with blockchain technology to further increasing supply chain transparency by providing traceable, verifiable, and real-time information (Zelbst et al., 2019, p. 444)

Blockchain technology is being applied in supply chains across multiple industries to improve efficiency and transparency (Brun et al., 2020, p. 6). Hastig and Sodhi (2020, p. 936) state that it is especially useful if applied to supply chains for transactional data as the goods constantly change ownership along the supply chain. They also describe that many different sectors have proposed or already have implemented blockchain-based

traceability systems, which enhance stakeholder engagement by improving coordination, increasing transparency, and building trust through real-time information sharing, clearer ownership tracking and reduced information asymmetry across the supply chain. According to Longo et al. (2019, p. 58) blockchain also fosters collaboration and reduces trust issues by creating a secure, decentralized system. In this decentralized system, according to them, each actor can verify the authenticity and integrity of shared information, and by doing so it provides a single and secure point of trust for all participants in the supply chain.

3.6 Voluntary vs. Regulatory Drivers

Supply chain transparency involves openly disclosing and sharing corporate information, including details of procurement, manufacturing costs and logistics (Jia et al., 2024, p. 2665). Nowadays, stakeholders such as customers, employees, communities, and shareholders are highlighting transparency as an increasingly important component of business operations, which is motivating companies to introduce different policies to increase transparency (Liu et al., 2024, p. 1). As stakeholders are also pressuring companies about the significance of supply chain transparency in competitiveness (Jia et al., 2024, p. 2665), many companies are voluntarily disclosing information to keep up with other companies and remain competitive.

Jia et al. (2024, p. 2675) explain that regulated compliance is a necessary condition for supply chain transparency, since regulations define what and how much information companies must disclose and collect, and these compliances with regulatory requirements may ensure compliance with the rules, but it also may lead the companies to use the compliances as a justification for meeting minimum requirements, and that way without completely striving for a better supply chain transparency for stakeholders. Regulatory compliances, however, guide supply chain operations in adherence to legal and industry standards, they are also often mandatory for companies and are upheld through adherence to legal guidelines, safety protocols and environmental standards (Patil et al., 2024, p. 2542). Patil et al. (2024, p. 2549) also support that regulatory

compliance positively influences supply chain transparency. The relationship between regulatory compliance and supply chain transparency is suggested to be strong, it strengthens trust and responsible practices within the companies, for example by using different technologies it helps companies to ensure compliance across the entire supply chain (Patil et al., 2024, p. 2542).

4 Analysis and Discussion

4.1 Thematic Analysis of Literature

In this section of this thesis, a thematic analysis of existing literature on supply chain transparency in manufacturing companies will be presented. By combining the results of previous studies that were presented in this thesis, four main themes can be identified, which are the drivers of supply chain transparency, the role of digital tools for transparency, stakeholder trust and expectations as well as barriers to the implementation of the transparency activities.

4.1.1 Drivers of Supply Chain Transparency

The literature consistently identifies regulatory and market pressures as key drivers of supply chain transparency in manufacturing companies. Compliance with regulations is often mandatory for companies but according to Patil et al. (2024, p. 2542-2549) it has a positive effect on supply chain transparency as it strengthens trust and responsible practices in companies. In addition, growing stakeholder awareness of ethical production has increased external pressure for transparency, for example Jia et al. (2024, p. 2665) argue that stakeholders are pressuring companies regarding the importance of supply chain transparency, which is why so many companies voluntarily disclose information to remain competitive. Several studies also highlight the internal drivers such as risk mitigation, reputational protection, and the strategic use of transparency as drivers of transparency. As described by Siems et al. (2023, p. 764) the commitment of internal stakeholders is essential for transparency strategies and improving communication between internal stakeholders is necessary to meet transparency expectations, they can also better identify, and address risks related to transparency as well as to sustainability and it strengthens overall risk management.

4.1.2 Digital Tools for Transparency

Digital tools are widely discussed as enablers of supply chain transparency in the existing literature. In this thesis two main digital tools were presented, Internet of Things (IoT) and the blockchain technology. According to Wang et al. (2024, p. 948) the integration of IoT with other digital technologies improves the transparency across the whole supply chain. And in manufacturing setting the Industrial Internet of Things (IIoT) improves efficiency, stakeholder trust and accountability and therefore increases supply chain transparency further (Zelbst et al., 2019, p. 442-444). Blockchain-based traceability systems enhance stakeholder engagement by for example information sharing and therefore increases transparency across the supply chain (Hastig and Sodhi, 2020, p. 936). Blockchain also increases trust and mitigates the issues around trust, and blockchain therefore provides a single secure point of trust among all stakeholders of the supply chain (Longo et al., 2019, p. 58).

4.1.3 Stakeholder Trust and Expectations

The relationship between transparency and stakeholder trust is emphasized in the existing literature a lot. Transparent supply chain practices are usually associated with increased credibility and legitimacy. As Kujala et al. (2022, p. 1136) emphasize that effective transparency measures play a crucial role in building stakeholder trust. Transparency also works as a relative process rather than a one-way flow of information, as Fraser et al. (2020, p. 5) explain that the two-way relationship with stakeholders as not only being recipients of information but also the initiators to seek transparency, it builds trust and accountability in the supply chain transparency. It can be observed that companies' reputation is closely tied to societal expectations from stakeholders, as Chawarura et al. (2025, p. 7) argue that failure to meet the expectations of stakeholders and if trust is perceived as unauthentic it can eventually lead to reputational damage in companies. This risk can be seen as reinforcing the role of transparency as an important mechanism for maintaining stakeholder trust.

4.1.4 Barriers to Implementation

As this thesis has some limitations, such as it does not provide an in-depth assessment of financial or operational performance measures such as profitability or costs, really the only main barrier to implementation of transparency in manufacturing concepts in this thesis according to the existing literature is the global supply chains. As transparency in global supply chains remains a significant challenge and especially in multi-tiered supply networks. The key component of transparency is defined as the communication of supply chain information to stakeholders such as consumers, investors, and regulators (Delgado et al., 2025, p. 4). However, effective disclosure is becoming increasingly difficult as supply chains extend across multiple tiers and geographical areas as raw materials often go through several stages of processing in global supply chains on different continents, and it is making it difficult to trace the origin of products and verify ethical standards (Fraser et al., 2020, p. 2) which can be seen as a barrier to transparency implementation. Similarly, the involvement of multiple tiers of suppliers in the production of a single component makes comprehensive monitoring resource-intensive and complex as Dijmarescu explains (2024, p. 2), and as a result companies often lack reliable information about lower-tier suppliers, which is also a barrier to fulfill the transparency expectations in the supply chain.

4.2 Discussion of Findings by Research Question

In this section the research questions of the study will be discussed by combining the key themes identified in the literature review.

RQ1: What are the key factors that influence supply chain transparency in manufacturing companies?

According to the findings from the existing literature in this thesis several factors influence the level of supply chain transparency in manufacturing companies. The main

four found in this thesis are regulatory compliance, technological capability, global supply chains and stakeholder pressure.

Regulations define what information must be collected and disclosed, making compliance an essential requirement for driving transparency initiatives (Jia et al., 2024, p. 2675). Compliance ensures adherence to laws, safety, and environmental standards but it was also found that it can also lead to companies barely meeting minimum requirements rather than actively improving transparency. However, compliance has been shown to have a positive impact on supply chain transparency as it promotes responsible practices and trust in supply chains (Patil et al., 2024, p. 2542-2549).

It was found that technological capabilities continue to influence transparency outcomes even further. Manufacturing companies are increasingly integrating digital tools such as the Internet of things (IoT), Industrial Internet of Things (IIoT), blockchain and other to improve supply chain visibility and information sharing (Wang et al., 2024, p. 946-953). These technologies improve transparency by enabling traceability and improving access to product and operational information for stakeholders such as suppliers and customers (Kandarkar & Ravi, 2023, p. 996-998).

Key factors that were found influencing supply chain transparency in manufacturing companies were not only things that improve transparency, for example, global supply chains remain a significant barrier in driving transparency in manufacturing companies. Fraser et al. (2020, p. 2) explain that multi-tier supply networks that often span multiple continents limits companies' ability to trace the origins of the products and therefore verify ethical standards. The involvement of multiple supplier tiers makes the tracking resource-intensive and complex therefore restricting visibility into lower-tier suppliers and challenging the achievement of sustainability objectives which can be seen direct translating into transparency (Dijmarescu, 2024, p. 2).

In addition to the regulatory, technological, and global supply chain factors, also pressure and expectations from stakeholders can also be seen as to have a significant impact on the transparency of supply chains in manufacturing companies. Growing pressure from stakeholders like suppliers, investors, and regulators has made transparency a significant critical factor in maintaining competitiveness in global supply chains (Jia et al., 2024, p. 2665). Previous studies have identified stakeholder pressure as one of the most influential factors in supply chain management as it shapes decision-makers' sustainable development strategies and supports their implementation (Schäfer, 2024, p. 590). As seen from a theoretical perspective, stakeholder theory offers a useful perspective for explaining this relationship since it for example emphasizes stakeholders and societal pressure on companies to act in a more responsible, transparent, and sustainable way (Awa et al., 2024, p. 12).

RQ2: How does supply chain transparency influence the trust and engagement of different stakeholder groups?

The existing literature highlights supply chain transparency as a key factor in influencing stakeholder trust and engagement in external as well as in internal stakeholders. External stakeholders such as customers, investors and non-governmental organizations are seen to act as important drivers of transparency by increasing pressure on firms to adopt and disclose sustainable supply chain practices especially when transparency is limited (Siems et al., 2023, p. 747-775).

Internal stakeholders like employees and management play a key role in implementing transparency initiatives into the companies. Siems et al. (2023, p. 764) explain that effective internal communication and stakeholder involvement are essential for meeting transparency expectations and applying sustainability practices still while also strengthening risk management and governance structures.

When transparency is supported by two-way interaction, stakeholder engagement can be seen as most effective, enabling dialogue, collaboration, and organizational learning as Kujala et al. (2022, p. 1156) explain. Trust can be seen as a foundational condition in this process as it increases the willingness of stakeholders to share information and cooperate across the whole supply chain (Jia et al., 2024, p. 2674). However, as mentioned, trust still must be seen as authentic, since as a failure to meet societal expectations it may lead to reputational damage, reinforcing the importance of credible and consistent transparency practices (Chawarura et al., 2025, p. 7).

4.3 Theoretical Implications

The findings of this thesis' literature review can be interpreted effectively from the perspectives of the stakeholder theory and legitimacy theory, that were presented in the second chapter of this thesis. Both theories help to explain why supply chain transparency affects stakeholder trust and commitment in manufacturing companies.

The results support from the stakeholder theory perspective that companies should consider the expectations of different stakeholder groups rather than focusing only on shareholder interests. As Freeman (2010, p. 46) defines stakeholders as individuals or groups that can influence the organization's objectives or be affected by them, reflecting a broader corporate purpose than traditional shareholder-oriented models (Tao et al., 2023, p. 691). The findings made in this thesis align with this perspective as supply chain transparency meets the information needs of various stakeholders like employees, suppliers, customers, investors, and regulators (Morgan et al., 2023, p. 1426-1428). Stakeholder theory explains further how transparency supports trust, responsibility, and engagement. According to Awa et al. (2024, p. 12) pressure from external stakeholders encourages companies to adopt more transparent practices, and Kujala et al. (2022, p. 1136) explain that effective transparency measures promote trust building and increase stakeholder influence through open communication and shared responsibility. Integrating stakeholder theory into companies' supply chain in terms of transparency

also enables them to address social and environmental concerns, and it supports the legitimacy of the organization (Morgan et al., 2023, p. 1438).

Legitimacy theory supports the views presented in this thesis by explaining transparency as a response to larger expectations from the society. According to Reid et al. (2024, p. 84) companies try to operate within socially accepted norms to maintain legitimacy and transparency is often used to demonstrate consistency with sustainable development expectations. And as mentioned before, according to Chawarura et al. (2025, p. 7) the failure to meet these expectations can damage companies' reputations.

Overall, based on the theoretical framework and the literature review, it can be said that the stakeholder theory emphasizes the compatible mechanisms through which transparency promotes trust and engagement and legitimacy theory situate transparency within a larger societal context. Together these two theories according to the existing literature suggest that supply chain transparency is as its most effective when it is being implemented in a concrete manner and stakeholders perceive it as credible and authentic.

4.4 Critical Reflections

As seen in this thesis, the literature on supply chain transparency offers mostly useful insights, but it however still has some limitations and shortcomings. Many studies seem to assume that transparency only leads to positive outcomes, like increased trust and commitment as found out regarding RQ2, but still pay a little to no attention to potential conflicts which could be for example stakeholder skepticism or information overload regarding supply chain transparency.

As seen in results regarding RQ1, the literature also focuses a lot on external stakeholders, especially in investors and regulators who are mostly considered the most important promoters for transparency initiatives. In contrast the internal stakeholders such as employees are mostly underrepresented in most of the existing literature found in the

making of this thesis, even though they should play the key role in for example implementing transparency and shaping the results of the commitment to transparency.

Furthermore, most of the existing literature found focuses largely on the Western manufacturing environments, which limits the generalizability of the research results to more global supply chains operating mostly in for example developing countries and emerging economies. Many of the found literature also is found to rely on companies' self-reported data and corporate sustainability reports, which may reflect how companies want to present themselves in the industry rather than revealing their actual practices, which makes it difficult to determine for example if the transparency efforts are actually genuine or only mainly used to maintain a good image of the company in the industry.

5 Conclusions

5.1 Overall Conclusions of the Research

This thesis examined the transparency of the supply chain in manufacturing companies and its impact on stakeholder engagement based on existing literature regarding the subjects. According to RQ1, the results show that supply chain transparency is mostly influenced by regulatory and stakeholder pressures, technological capabilities, and the complexity of global supply chains. Even though many companies today strive to improve transparency within their supply chains, still in manufacturing companies visibility into lower-tier suppliers in multi-level supply chains seem to be remained as a challenge.

It was found in this thesis that supply chain transparency usually strengthens stakeholder trust and commitment regarding to RQ2, particularly among external stakeholders like investors and regulators. Transparency seems to be supporting clarity of operations and the adoption of practices that support sustainable development for internal stakeholders.

The results found suggest that overall supply chain transparency is more of a strategic and relative process than only a technical one. Transparency is at its most effective in promoting stakeholder engagement when being implemented in a concrete manner with also aligned with stakeholder expectations as well as with social norms.

5.2 Practical Recommendations

Based on the results of this thesis manufacturing companies could implement several practical measures by improving supply chain transparency to improve stakeholder engagement.

Companies should be prioritizing credible and consistent transparency practices over selective disclosure. When providing clear and reliable information on supply chain

operations especially for example on sourcing and sustainability, it can help build stakeholder trust and reduce skepticism. From Chawarura et al., (2025, p. 7) and Jia et al.'s (2024, p. 2668) perspective we can conclude that efforts to promote transparency should focus only on content rather than presentation specially to avoid the impression of only symbolic communication which can for example reduce reliability and stakeholder trust in transparency initiatives.

Companies should also actively engage internal stakeholders in the transparency initiatives as employees, sourcing teams and managers can play a key role in collecting and sharing supply chain information. As Siems et al. (2024, p. 764) and Kujala et al. (2022, p. 1156) both suggest that improving the internal communication and stakeholder engagement can support more accurate information flow and strengthen the implementation of transparency practices within the whole organization.

Improving transparency across multiple tiers of suppliers by for example with long-term partnerships, clear expectations and support for data collection can help also address information gaps as Fraser et al. (2020, p. 2) and Dijmarescu (2024, p. 2) point out. Companies should therefore encourage collaboration with suppliers also including the lower-tier suppliers to improve transparency in complex and global supply chains.

Companies should also use digital tools for example as traceability systems to support transparency but also simultaneously recognize their limitations as well. However, technology alone does not guarantee trust, it should be completed by governance structures and continuous stakeholder dialogue so that transparency initiatives have a genuine support to stakeholder engagement and sustainable development goals just as Jia et al. (2024, p. 2674) and Kujala et al. (2022, p. 1136) initiate.

5.3 Limitations and Directions for Future Research

There are several limitations to this thesis that should be noted. The thesis is only based on a literature review and does not include any empirical data such as interviews or

surveys and therefore the results are based solely on existing literature and research and do not cover company-specific practices or stakeholder views in real manufacturing settings. Also, for example financial results such as cost or profitability may influence decisions regarding transparency initiatives in companies, which this thesis does not cover in detail.

The literature that was reviewed in this thesis was also mostly limited in a strong focus on external stakeholders and especially in Western world manufacturing contexts which therefore limits the generalizability of the results, particularly for global supply chains operating also in developing countries and emerging economies. Also, many of the literature studies are based on companies' self-reported data and corporate sustainability reporting and therefore it may reflect strategic communication rather than the companies' actual practices.

Future research could address these limitations by for example using the empirical methods such as interviews with the internal stakeholders and lower-level suppliers to gain more deep insight to how transparency is actually implemented in practice. Studies across different geographical areas and also industries would maybe also improve the understanding of how institutional contexts shape the transparency and stakeholder engagement in them. In addition, future research should also take into account the economic and operational impacts of the supply chain transparency initiatives to better understand for example its long-term effects on companies' performance.

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Appendices

Appendix 1. List of reviewed articles according to the theme

Author and year	Title of the article	Theme(s)
Awa et al. (2024)	Stakeholders, stakeholder theory and Corporate Social Responsibility (CSR)	Stakeholders, CSR, Stakeholder theory
Beske et al. (2020)	Materiality analysis in sustainability and integrated reports	Stakeholder theory, Sustainability reporting, Legitimacy theory
Brun et al. (2020)	Supply Chain Collaboration for Transparency	Transparency, Supply Chain relations, Sustainable supply chain management
Chawarura et al. (2025)	The Impact of ESG on the Financial Performance of Johannesburg Stock Exchange-Listed Companies	ESG, firm performance, sustainability,
Deegan (2019)	Legitimacy theory: Despite its enduring popularity and contribution, time is right for a necessary makeover	legitimacy theory, legitimacy, social and environmental
Delgado et al. (2025)	Barriers to Visibility in Supply Chains: Challenges and Opportunities of Artificial Intelligence Driven by Industry 4.0 Technologies.	Barriers, supply chain visibility, artificial intelligence, Industry 4.0 technologies

Dijmarescu (2024)	Supplier Collaboration Relationship: Essential Role in Building Global Supply Chain Resilience	Global supply chain, Strategic Procurement, Supplier collaboration relationship
Fraser et al. (2020)	Transparency for Multi-Tier Sustainable Supply Chain Management: A Case Study of a Multi-tier Transparency Approach for SSCM in the Automotive Industry	Sustainable supply chain management (SSCM), supply chain transparency, multi-tier SSCM, sustainability
Freeman (2010)	Strategic Management: A Stakeholder Approach	Stakeholder Theory
Hastig & Sodhi (2020)	Blockchain for Supply Chain Traceability: Business Requirements and Critical Success Factors	Supply Chain traceability systems, Blockchain, Stakeholders
Jia et al. (2024)	Supply chain transparency: a roadmap for future research	Supply Chain Transparency, Sustainability
Kandarkar & Ravi (2024)	Investigating the impact of smart manufacturing and interconnected emerging technologies in building smarter supply chains.	Smart Supply Chain Management, Industry 4.0, Smart Manufacturing, Digital transformation
Khan et al. (2022)	The Impact of Technologies of Traceability and Transparency in Supply Chains	Supply Chain, Technology, Traceability, Transparency

Kujala et al. (2022)	Stakeholder Engagement: Past, Present, and Future.	Corporate Social Responsibility (CSR), Stakeholder Engagement, Stakeholder
Kumar et al. (2025)	Responsible Stakeholder Engagement Marketing	Responsible Stakeholder Engagement Marketing (RSEM), Customer Engagement Marketing, Corporate Social Responsibility (CSR), Stakeholder theory
Liu et al. (2024)	Legitimacy and transparency in dyadic supply chains: Does competition intensity matter?	Legitimacy, Transparency, Supply Chain Transparency
Longo et al. (2019)	Blockchain-enabled supply chain: An experimental study	Blockchain, Information Sharing, Supply Chain, Trust, Industry 4.0
Morgan et al. (2023)	Supply chain transparency: theoretical perspectives for future research	Traceability, Transparency, Visibility
Patil et al. (2024)	Digital twins' readiness and its impacts on supply chain transparency and sustainable performance	Supply Chain, Digital twins Technology, Transparency, Sustainable Performance
Reid et al. (2024)	Transparency reports as CSR reports: motives,	Corporate Social Responsibility (CSR), Transparency Reports,

	stakeholders, and strategies	Content analysis, Legitimacy theory, Stakeholder theory
Schäfer (2023)	Making transparency transparent: a systematic literature review to define and frame supply chain transparency in the context of sustainability	Supply Chain Transparency, Sustainability
Siems et al. (2023)	Stakeholder roles in sustainable supply chain management: a literature review.	Sustainable Supply Chain Management, Stakeholder Roles, Engagement
Sodhi & Tang (2019)	Research Opportunities in Supply Chain Transparency	Supply Chain Transparency, Supply Chain Visibility, Stakeholder Resource-Based View, Stakeholders
Tao et al. (2023)	Do Corporate Customers Prefer Socially Responsible Suppliers? An Instrumental Stakeholder Theory Perspective	Corporate Social Responsibility, Instrumental Stakeholder Theory
Wang et al. (2024)	Impact of digital transformation on supply chain efficiency: a parallel mediation model	Supply Chain Efficiency, Digital Transformation, Supply Chain Transparency, Supply Chain Agility

Zelbst et al. (2019)	The impact of RFID, IIoT, and Blockchain technologies on supply chain transparency	Technology
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