Impacts of Transparency and Traceability on Fashion Supply Chain System

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Abstract

The level of fashion consumer awareness and communication regarding sustainable consumption is rising. Organizations are working to provide clarity and guidance on fashion consumption. Brands are experimenting with new materials and supply chain strategies, and suppliers are improving the manufacturing processes and quality of products. However, given the size and complexity of the industrial process, these efforts are not adequate in ensuring a sustainable fashion supply chain. Transparency and traceability in the fashion supply chain are needed to improve the fashion industry by supporting sustainable and ethical practices in the apparel supply chain. Key gaps include a lack of comprehensive and transparent information about how, where, and by whom materials are sourced, processed, and assembled; a lack of transparency in the supply chain practices and procedures affects the environment, working conditions, and human health. The industry has to build the capacity to manage its supply chain, more effectively and responsibly, by improving transparency and traceability as the top goals. So, in this context, the main purpose of this research paper is to study the impacts of transparency and traceability on the dimensions of sustainability in fashion supply chain. The researchers have applied descriptive research methods in which secondary data are collected and analyzed through a literature review of peer-reviewed research papers and the primary data are collected through the survey method by distributing a semi structured questionnaire. The data collected are analyzed using statistical tools and techniques. Finally, the results are discussed and presented.

Keywords

Environment, Fashion Supply Chain, Sustainability, Transparency, Traceability

1. Introduction

One of the greatest sectors of the global economy, the clothing sector generates yearly earnings of over US$ 3 trillion, produces 80 billion garments, and directly employs between 60 and 75 million people globally. Major retailers and traders' control where products are produced, what is produced, and what prices they are sold at. As they are held accountable for the current environmental and social circumstances, businesses are coming under growing pressure to have more transparent and sustainable supply chains. Due to the complexity of global supply chains, supply chain transparency can be challenging, expensive, and time-consuming. It is the procedure by which a business acts upon the revelations made possible by increased visibility in order to better manage risks.

However, many fashion firms see transparency as a controversial tactic when a corporation is asked to divulge trade secrets or information about its intellectual property that could be useful to a rival. Due to the potential for such information to be the essence of competitive advantage, brands either unwillingly offer scant or even ambiguous information or choose to withhold all information.

In the past, terrible incidents due to ignorance and a lack of appropriate information exchange have caused major concern among governments and consumers. These occurrences have brought to light the widespread unethical and risky behaviors in the Fashion supply chain and raised concerns about accountability and auditing procedures. Consumerism is becoming a bigger issue as a result of the fashion mindset and low-price strategy, which make it still viable to create using the most economical means. This necessitates a clearer price and manufacturing policy and puts pressure on suppliers, other stakeholders, and the fashion industry to work together to develop environmentally friendly products.

Studies have demonstrated that there are more and more problems with consumerism as a result of consumers' lack of interest in purchasing eco-friendly clothing due to its unappealing texture and design. Fashion designers must increase the value of eco-friendly apparel designs without sacrificing style or brand identity in order to promote more desirable behavior. This is especially true for customers who use their clothing to set themselves apart from others, or who view it as a status symbol, a way to demonstrate their place in society, or a reflection of their way of life.

The Organization for Economic Co-operation and Development advises (in their guidelines) that one technique that might be employed to address these issues is a transparency and traceability system in order to achieve information symmetry, security, and accountability in the Fashion supply chain. Therefore, it is necessary to implement proper steps to improve transparency and traceability in the fashion supply chain.

The background of the paper is to discuss the significance of addressing knowledge asymmetries in the apparel sector with regard to the damaging effects that the fashion supply chain has on the environment, society, and public health. This paper will suggest what information should be shared, to whom it should be

shared, and to what extent the information about the companies, suppliers, sourcing locations, and processing conditions is to be made available to end consumers.

2. Literature Review

The literature review has been done on the research works published by the past researchers for the past 20 years. The reviews are classified into four categories based on the research papers published in relevance to the core area i.e. fashion supply chain and the focused areas of literature review. The classifications as shown in Figure 1, are reviewed in this section.

2.1. Review on Effects of Fashion Supply Chain on Ecosystem

The social and environmental effects of the fashion business usually take place in the upstream section of the supply chain. Key gaps in the process include a lack of comprehensive and transparent information about how, where, and by whom materials are sourced, processed, and assembled. Conveying complex information along the supply chain can be expensive and can imply investments in infrastructure, human capital, and technological knowledge [1].

The study introduces a model to evaluate the fashion supply chain's economic and environmental sustainability components and applies it to a business. Consequently, an analytical model was created by taking into account the annual kilos of CO_2 emissions as well as the total expenditures incurred in each procedure (economic evaluation) (environmental perspective). After that, a case study was used to apply the model. Data were gathered from managerial interviews. Results demonstrate that manufacturing is the most harmful activity from an environmental standpoint, whereas supply harms the economy the most [2].

Brand owners and resellers frequently disregard the violation of workers' rights during the creation of their products since they do not have direct contact with the workers. Employee rights are significantly improved when voluntary

R1	• Review on Effects of Fashion Supply Chain on Ecosystem
R1	• Review on Fashion Supplychain and Sustainability
R3	• Review on Fashion Supplychain and Transparency
R4	• Review on Fashion Supplychain and Traceability
RG	• Research Gaps

Figure 1. Classification of literature review.

efforts are incorporated into brand owners' and resellers' business practices. This study evaluates the impact of the 2016 Transparency Draft on worker protection in the global fashion sector, as well as how much the incorporation of Transparency and Sustainable Development Goals has helped to alleviate worker abuse. Through its examination of human rights reports, the ILO frequently investigates the problem [3].

2.2. Review on Fashion Supply Chain and Sustainability

Fast Fashion Companies are putting more emphasis on sustainability and attempting to maintain the same quality and standards in working and production environments throughout their supply chains as a result of the economic, social, and environmental issues in developing countries. Duygu and Ceren's study analyzed the current SSCM approach of companies in the fast fashion industry. On the reports of 9 companies in the industry, a content analysis was done. A conceptual map was developed based on Seuring and Müller's (2008) framework. As a result, compliance, monitoring, and auditing activities are critical in Sustainable supply chain management [4]. The modern fashion supply chains, as well as the environmental and social challenges connected to it, are examined in this thesis research. Fashion companies are continuing to innovate in a variety of ways to adopt supply chains that are more environmentally and socially conscious as consumer demand for sustainable practices increases. This article develops a model for how fashion supply chains can continue to be quick while also integrating sustainable business practices through a review of the literature and the conducting of interviews [5].

With increasing expectations and demands from the government and the public that enterprises should manage their wastes and products' end-of-life there is a requirement for comprehensive attention toward underlying circular supply chains and associated business models. There is a call for generating a systemwide solution. It is important to create an understanding of the main impediments that currently hinder the establishment, implementation, and mainstreaming of the supply chain. Typically, these solutions are centered on building robust products in terms of content, design, and quality that are suited to improve economic viability [6]. The study constructs an analytical model to investigate the effect of such NGO scrutiny on the sustainability of the supply chain. Examining the relationships between the choices made by buyers, NGOs, and suppliers regarding the best levels of auditing and compliance effort given whether or not the buyer has disclosed the list of suppliers. It defines the circumstances in which the auditing efforts of purchasers and NGOs can be substituted or complemented. Consumer choice should be taken into account in future research directions. Many customers desire to use product provenance information to make wise purchasing decisions [7].

Supply chain management research is currently focused on supply chain transparency and how it relates to sustainability. The researchers used and defined

supply chain transparency quite differently. Later, three dimensions of transparency were identified: sustainable supply chain information, involved stakeholders, and perspective. The assessment also showed that supply chain transparency research has been concentrating on the social aspect of sustainability. The potential for further research is indicated, and a wide range of subjects on supply chain transparency has been covered in the literature [8].

The way the fashion industry manages its supply chains has drawn criticism. Brand owners and retailers may desire greater openness, but there has never been a practical mechanism to make it happen. With the launch of tex.tracer, a new platform for supply chain transparency, change has arrived. It provides brand owners with the information they require to take appropriate action and instantly report to all stakeholders. Consumers can learn more about a garment's history by using their mobile devices to scan a QR code on it. Now that brand owners and retailers are aware of their supply chains, they are better equipped to comply with any future regulations. But they are limited to organic cotton fibers, and it takes time to process the information through the systems in place [9]. In addition to analyzing the environmental and socioeconomic hotspots along the entire textile value chain, this research also examines a variety of related consequences and how different value chain stages are more prominent in particular impacts. The next step is to create a roadmap that specifies who can perform these priority actions and how. In order to promote this agenda, UNEP looks forward to maintaining its interactions with businesses, governments, and other stakeholders. The following stage is to conduct a more thorough analysis of the prioritized activities that have been identified in order to create a roadmap showing how and by whom these can be handled to move toward a more circular textile value chain [10].

This study examines the sustainability reports of H&M and Everlane, to analyze SSCM in the fast fashion sector. This comparison demonstrates that fast fashion companies' SSCM plans have not sufficiently involved upstream and downstream stakeholders. Brands must connect with suppliers and consumers, invest in long-term decarbonization and energy infrastructure, and reexamine product design standards if they want to drastically lessen their effect. These changes will greatly lessen fast fashion's environmental impact if they are implemented at the industry level. A major challenge in analyzing SSCM for this paper and future studies is the lack of standardization and regulation in sustainability reporting or marketing [11].

2.3. Review on Fashion Supply Chain and Transparency

Transparency in the supply chain is necessary for a number of reasons. Numerous unfavorable things have happened in the fashion industry during the past ten years. In addition to having poor working conditions in the manufacturing sector, the fashion business is known to be a significant source of air and water pollution. With sustainable business initiatives, such as the Fashion Transpa-

rency Index, making transparency expected throughout the fashion industry, fashion companies are challenged to find optimal ways to communicate both negative and positive impacts on humans and the planet. How should mass and luxury brands react in order to improve their brand transparency? In order to encourage strategic thinking about transparency in the fashion industry, the objective of this quantitative study is to explore disclosure strategies for transparency in sustainability reporting. In order to identify strategic approaches for transparency in sustainability reporting by revealing common patterns in business disclosure, this study has two specific research objectives: to track progress towards greater transparency across sustainability reporting areas, across fashion brands, and years. Although this paper makes no claims about whether increased disclosure led to substantial supply chain improvements [12].

With so many social and environmental issues, the fashion sector is one of the most difficult for sustainable development. Therefore, in order to boost the visibility of the fashion supply chain and enable accountability, transparency and supply chain traceability are top concerns. Blockchain is a new technology that has the ability to solve the problems we currently face and increase the transparency of supply chain operations. The report is based on interviews with blockchain experts, as well as supply chain and sustainable fashion industry professionals. However, the role of BCT and its applicability for such purposes is yet to be analyzed within academic studies [13].

The study examines how a fashion firm establishes supply chain relationships that affect the performance of its transparency by conducting a case study involving a multinational fashion group and an influential NGO. But as the company shared more details about its supply chains, the group's perspective shifted from a legitimacy-driven reactive strategy to an ethics-driven proactive approach. Transparency in the supply chain appears to be preceded, in particular, by supplier participation, commitment, and leadership. Fashion firms have been significantly influenced by the Fashion Revolution to gather and disclose information about their supply chains. According to the findings, supply chain participation is essential for supply chain transparency, and NGOs are crucial in promoting transparency by transferring information and raising public awareness [14].

In terms of supply chain transparency and public awareness of a brand's CSR, this paper focuses on the interaction between fashion customers and retailers. The report identifies several obstacles to improved consumer knowledge and awareness within an ethical and sustainable environment, such as the use of unengaging communication technologies and a lack of connectivity. There is a lack of information regarding exploring the type of information wanted by the consumers, but also how they wanted to receive it and the preferred communication methods implemented [15]. In the report, the researchers compare the four biggest fast fashion retailers—H&M, Inditex, Gap, and Fast Retailing—in order to explain variations in transparency standards. The Paper suggests that sustaina-

bility scandals are a necessary but insufficient condition for motivating firms to increase transparency in their supply chains. A combination of comparative case studies and within-case process tracing were presented to test these hypotheses and determine the factors that promote transparency in the fast fashion industry. The rising data on transparency should be used in future studies to better understand how and why transparency changes within brands. This is crucial for knowing which initiatives will be most effective and better explaining the increase in transparency we are currently experiencing [16].

2.4. Review on Fashion Supply Chain and Traceability

This study done by Sarah Obster intends to provide a response to the query: How can transparency and product traceability be enabled in the textile and apparel supply chain? In order to identify challenges and potential for a transparent Supply Chain, a corporate analysis and an online survey were also done. The major conclusions identify Chains of Custody, vertical integration, and closer collaboration as potentially efficient means to track products back along the SC. The findings also advise businesses to promote communication and adopt a comprehensive perspective of their extended SC in order to enable a constant flow of information and to promote transparency and traceability along the SC from the cotton field to the coat hanger [17].

A Delphi study was conducted with the experts. The highest-ranked and most significant elements influencing the application of traceability in the textile and apparel supply chain are risk management, product authentication, and visibility. Information on origin, composition and sustainability is important to share with clients, but manufacturer/supplier details, product specs, and composition are key to businesses. The results of this study may be useful in creating a framework for information traceability. Policymakers to create traceability standards can use the findings or rules and senior management can create traceability-related plans [18]. The Background Analysis on Transparency and Traceability in the Garment Value Chain aims to demonstrate how traceability may transform the difficulty of transparency into fresh possibilities for creating a trustworthy apparel sector that adheres to social and environmental standards. The completion of the assignment was based on a thorough online search of the websites of relevant stakeholders, in addition to a review of published reports, and statistics. The report lists the essential components operational traceability systems ought to include. The research identifies multiple standards, guidelines, and multi-stakeholder initiatives with different focuses on various elements of the value chain. All these works against having a single traceability system in the garment global chain [19].

Customers find it challenging to get product information that might support moral purchasing behavior or guarantee product authenticity. Furthermore, it might be difficult for stakeholders to exchange critical information in a hostile environment where there is a chance of data tampering and concern over losing

an informational advantage. Author explores and suggests a blockchain-based traceability framework for the multi-tiered textile and apparel supply chain in this environment [20]. Supply chain traceability is a major issue for many sectors of the economy, as well as for regulators and policymakers. Social, environmental, and ecological concerns are common in the textile and garment industries, which emphasizes the need for efficient traceability solutions. Applications for supply chain traceability are attracted to blockchain technology because of its appealing features. In the study, we define two interrelated traceability goals: supply chain sustainability and product authentication. The research of the case study has sparked an extensive discussion regarding the many levels of traceability possible across the supply chain, the digital identification [21].

2.5. Summary of Research Gaps

Research gaps found after studying reports of various authors are-

1) Adopting traceability and transparency in a complex supply chain can be expensive as it requires investments in infrastructure, human capital, and technological knowledge.

2) It is burdensome for small chain suppliers to abide by new firm-level standards in the context of traceability.

3) It is still unclear how supply chain transparency and sustainability ideas relate to each other.

4) It is still not known whether fashion supply chain transparency and traceability will have positive effect or negative effect on the businesses.

5) Only downstream information is taken into account in reference to transparency, one should also take into account the upstream information flow.

6) Research should expand beyond the first tier or acknowledge the challenges in doing so because the majority of previous studies focused on first-tier suppliers.

7) Fast fashion sector needs to be tackled because it accounts for around half of the industry's carbon output but still the researchers have focused more on high-end brands rather than fast fashion brands.

8) There were no in-depth discussions of the ranking or clustering, how a factor affects traceability, or how recording and disseminating specific information might affect traceability.

9) There has been a gap in knowledge evidenced with regard to the consumer as an external stakeholder and the type of information that will encourage further engagement in ethical and sustainable issues.

10) Despite its many advantages, traceability is still a new and underutilized idea in Fashion supply chains. Some of the main causes, as stated, include a lack of specific and affordable technologies, a lack of knowledge and agreement among stakeholders regarding the potential advantages of a single traceability system, and the absence of traceability rules and regulations.

11) Systems for tracking products have mostly been created for the food sector. However, the complexity of clothing manufacture is different. This large

range of operations and transformations must be taken into account by traceability systems for the garment value chain.

3. Research Objectives

The main objectives of this research work are formulated as follows:
- To evaluate how every dimension of fashion supply chain sustainability can be supported with transparency and traceability, and
- To study how engagement in social and environmental responsibility can create long-term economic success for firms in the fashion supply chain.

4. Research Methodology

The study adopted a secondary research for understanding the basics of the problem area by conducting a literature review of the peer reviewed research papers published in various journals. Then, a quantitative method was applied for collecting the primary data using the survey method. The study relies on a questionnaire survey with industry professionals in the fashion industries working in the fashion supply chain system. Questionnaires were distributed to the respondents through online from various states in India. About 108 industry professionals responded. The primary data of the study were collected from the respondents of 12 states using a convenient sampling technique.

5. Data Analysis and Interpretations

A structures questionnaire was sent to the industry professionals through online, which helped to gather the data. Industry professionals were given a couple of months to respond and return the questionnaire. The primary data collected were analyzed with a mapping of demographic profiles of the respondents and presented with the inferences of each analysis in this section.

5.1. Demographic Profile of the Respondents

The demographic data of the respondents were collected by considering the variables like gender, age, state/region, level of education, type of employment, job experience, and the scale of the organization. The demographic profiles of the respondents with the percentages of respondents in each category of the demographic variables are presented in Table 1 as follows.

5.2. Analysis and Interpretations

Analysis 1: Awareness of stakeholders on transparency and traceability in the Fashion supply chain.

Figure 2 shows that 51.6% of respondents are familiar with the transparency and traceability in the fashion supply chain. 36.7% are familiar to some extent and the remaining is unfamiliar.
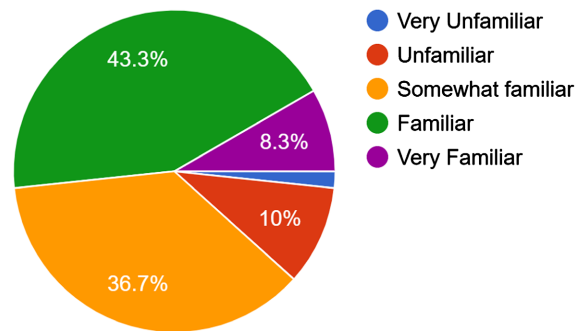
Analysis 2: Organizational awareness of sustainability approaches in the supply chain.

Table 1. Demographic profile of the respondents.

Demographic Variables	Categories	Percentage of Respondents
Gender	Male	21.7%
	Female	76.7%
	Others	1.7%
Age	Below 20 years	1.7%
	20 - 30 years	71.7%
	30 - 40 years	25%
	40 - 50 years	1.7%
	Above 50 years	-
Region/States of Respondents	Rajasthan	40.3%
	Tamil Nadu	16.5%
	Assam	1.7%
	Gujarat	3.3%
	Karnataka	3.3%
	Delhi	8.3%
	Haryana	6.7%
	Kerala	1.7%
	Punjab	1.7%
	Maharashtra	3.3%
	Uttar Pradesh	11.9%
	Jharkhand	1.3%
Education Level	SSLC/HSC	1.7%
	Diploma	5%
	Undergraduate	55%
	Postgraduate	36.7%
	Doctorate	1.7%
Employment Type	Self employed	23.3%
	Employees/Salaried	50%
	Consultant	11.7%
	Academician	6.7%
	Researchers	1.7%
	Others	6.6%
Job Experience	0 - 3 years	41.7%
	4 - 10 years	45%

Continued

	11 - 20 years	11.7%
	21 - 30 years	1.7%
	Above 30 years	-
Scale of Organization	Micro	5%
	Small	11.7%
	Medium	48.3%
	Large	33.3%
	Others	1.7%

Figure 2. Awareness of stakeholders on transparency and traceability in the Fashion supply chain.
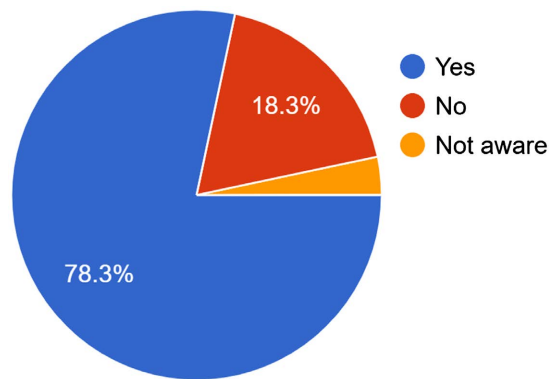
Figure 3. Organizational awareness of sustainability approaches in the supply chain.

Figure 3 shows that 78.3% of organizations are aware of sustainability approaches in the supply chain. 21.7% of organizations do not aware of the sustainability approaches.

Analysis 3: Presence of a dedicated team to ensure transparency and traceability in fashion supply chain.

From **Figure 4**, it is observed that only 11.7% of organizations have a dedicated team to look into the transparency and traceability of the fashion supply chain. 21.7% said no. 51.7% of organizations might have in future and 15% are not known.

Analysis 4: Actions and strategies of organizations to improve sustainability.

As shown in Figure 5, 38.3% of the organizations are working towards the betterment of environmental sustainability. 30% of the organizations are working for the betterment of social sustainability and 18.3% are working for economical sustainability.

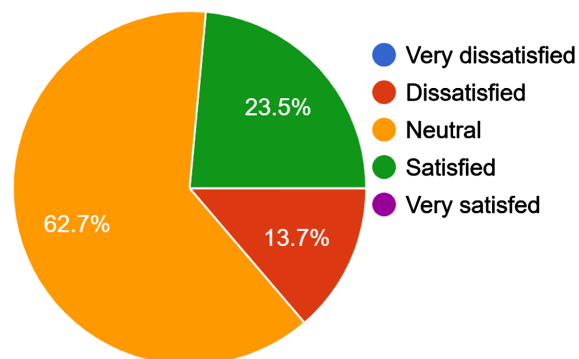Analysis 5: Operational strategies of the supply chain management system towards sustainability.

According to Figure 6, 62.7% are neutral about the operational strategies of the supply chain system towards sustainability. 23.5% of organizations are satisfied
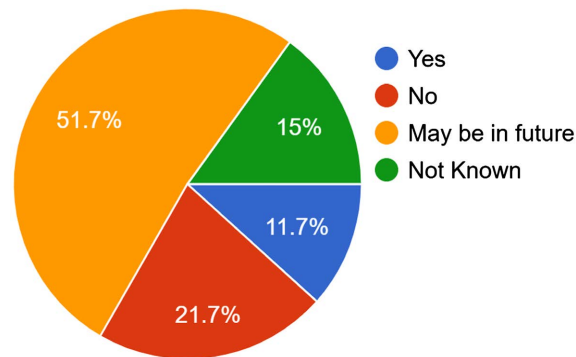
Figure 4. Presence of a dedicated team to ensure transparency and traceability in fashion supply chain.
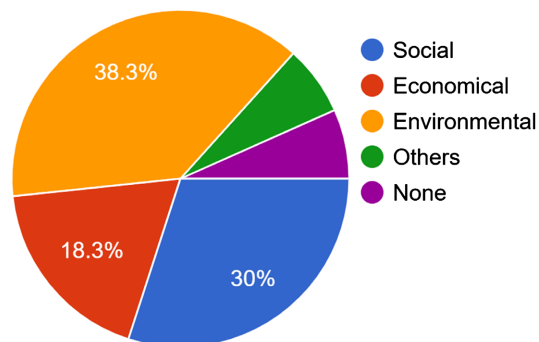
Figure 5. Actions and strategies of organizations to improve sustainability.

Figure 6. Operational strategies of the supply chain management system towards sustainability.

with the strategies of supply chain department for sustainability and 13.7% are not satisfied.

Analysis 6: Organizational belief to strengthen the brand image by supply chain transparency.

As per Figure 7, 83.3% of respondents believe that supply chain transparency can strengthen the brand image. 11.7% are neutral in their belief.

Analysis 7: Type of supply chain system adopted by the organizational stakeholders.

Figure 8 shows that 40% of the organizations have leagile system, 35% are agile in nature, 15% are Lean and 10% are having green supply chain system.

Analysis 8: Importance to know the information on the supply chain process

From Figure 9, it is observed that 86.7% of respondents believe that it is important for them to get information about the supply chain process. 11.7% are neutral.

Analysis 9: Organizational compliance of social and environmental standards with the suppliers or subcontractors

As per Figure 10, 30% are in direct relationship with suppliers and sub-contractors, 28.3% are having third party audit, 16.7% are trusting the information given by their suppliers, 15% are having their own production facilities and 10% perform audit by themselves.

Analysis 10: Transparency and traceability in the supply chain is a burden for
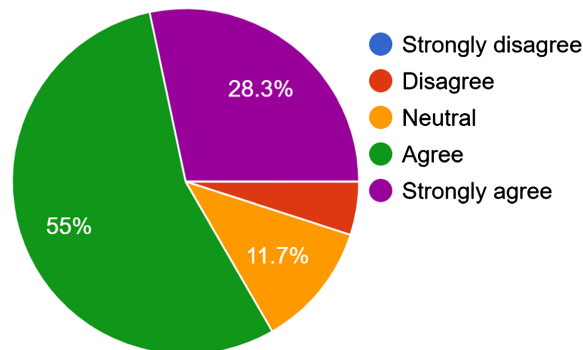
Figure 7. Organizational belief to strengthen the brand image by supply chain transparency.
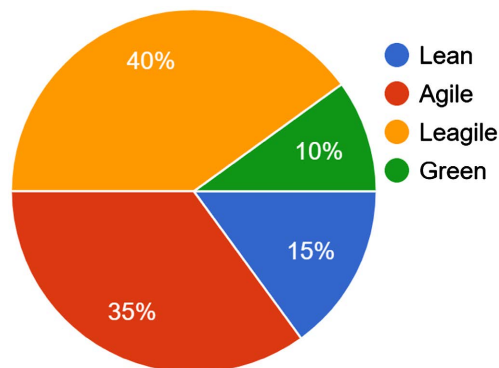
Figure 8. Type of supply chain system adopted by the organizational stakeholders.

small businesses.

From Figure 11, it is found that an equal proportion of respondents believe that the supply chain is burdening as well as not burdening for small businesses. Another same proportion feels it may be a burden.

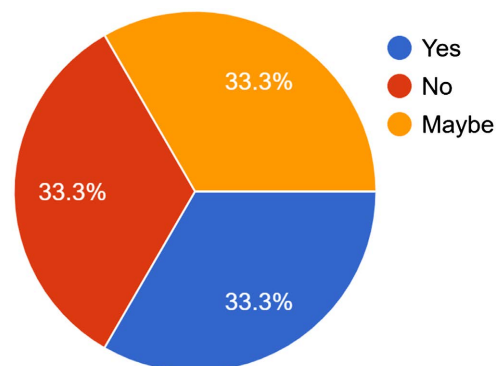Analysis 11: Options to consider the traceability of origin of the end products

The various options for considering the traceability of origin of the end products of the fashion supply chain organizations are shown in Figure 12, which shows that 26.7% of the stake holder organizations have their management information system accessible to the manufacturers and suppliers. Another 26.7%
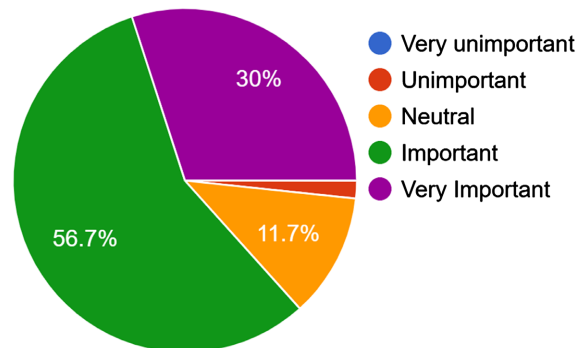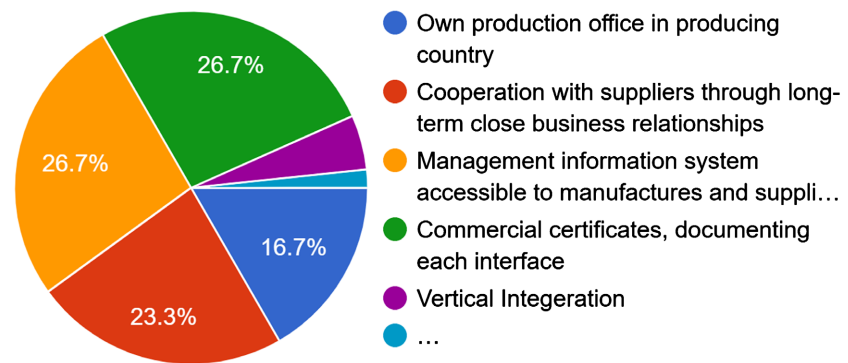
Figure 9. Importance to know the information on the supply chain process.
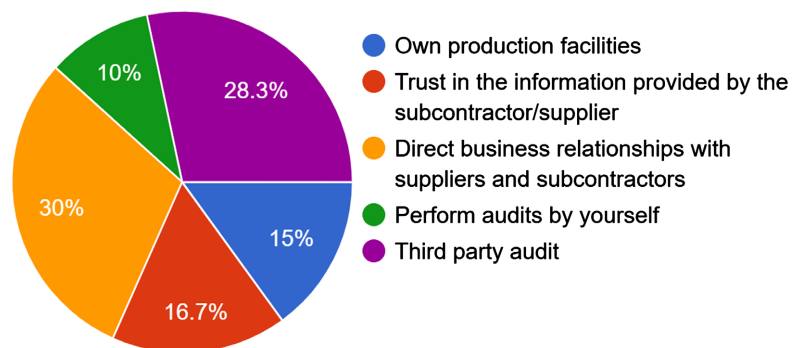
Figure 10. Organizational compliance of social and environmental standards with the suppliers or subcontractors.

Figure 11. Transparency and traceability in the supply chain is a burden for small businesses.

Figure 12. Options to consider the traceability of origin of the end products.

are having commercial certificates and documenting each interface. 23.3% are having cooperation with suppliers through long-term close relationships and 16.7% are having their own production office in producing countries.

6. Discussions

6.1. Awareness and Participation of Stakeholders in Fashion Supply Chain System

Data is collected particularly from the respondents working in the Fashion business. Among them, 51.6% of respondents are aware of transparency and traceability in the Fashion supply chain, only 11.7% are unfamiliar and the rest are somewhat familiar. 78.3% of organizations are aware of sustainability approaches in the supply chain. Among them only 11.7% of organizations have a dedicated team to look into the transparency and traceability of the fashion supply chain but a maximum of organizations are working towards the betterment of sustainable aspects. According to the survey results, only 23.5% of organizations are satisfied with the working strategies of the supply chain department. 83.3% of respondents believe that supply chain transparency can strengthen the brand image but very less organizations have green supply chains.

6.2. Practice and Significance of Transparency and Traceability in Fashion Supply Chain

The survey shows that 86.7% of respondents believe that it is important for them to get information about the supply chain process. Various methods are listed for organizations to check compliance with social and environmental standards by the suppliers or subcontractors among which 15% choose to have their own production facilities, 16.7% will trust the information provided by the subcontractors, 30% will build direct business relationship with suppliers and sub-contractors, 10% prefer doing audits by themselves and rest depend on third-party audits. There were an equal proportion of respondents who believe transparency and traceability in the supply chain can be burdensome for small-scale businesses.

Whereas 16.7% of industry professionals will have their own production office in producing country, 23.3% Cooperate with suppliers through long-term close

business relationships, 26.7% prefer management information systems accessible to manufacturers and suppliers, 26.7% prefer commercial certificates, documenting each interface, and rest opt for vertical integration for traceability of the origin of the end product

6.3. Reasons for Preferring Transparency and Traceability in Fashion Supply Chain

Some of the key reasons given by the respondents as to why they prefer transparency and traceability in fashion supply chain are presented in Table 2 as follows.

6.4. The Extent of Transparency Required in Fashion Supply Chain System

From the research outcome, the supply chain information that shall be shared with the customers and the key persons of the companies who shall be involved in the sharing process or maintaining the transparency, are as follows:

- A dedicated team to be employed to look into the actors and channel partners of the supply chain.
- Technological advancements to be done to reduce the complexity of the supply chain and its effective functioning.
- Strategical and tactical planning should be done for the proper execution of operations in the fashion supply chain.
- Retailers to be actively involved and provide suitable information to the customers which do not harm the brand functionality.

Table 2. Reasons for preferring transparency and traceability in fashion supply chain.

Reasons/Variables	Gender (%)		Profession (%)				Scale of the Company (%)				
	Male	Female	Employer	Employee	Consultant	Other	Micro	Small	Medium	Large	Other
Building brand image	33.4%	66.6%	16.66%	58.33%	8.33%	16.68%	16.66%		41.68%	25%	16.66%
Gaining customers loyalty	26.3%	73.7%	10.53%	89.47%				10.52%	15.78%	26.33%	47.36%
Monitoring ethical social and environmental practices	10%	90%	18.18%	81.82%				18.19%	45.45%	36.36%	
Building trustworthy relationships	25%	75%	6.25%	68.75%	12.5%	12.5%		25%	56.25%	18.75%	
Making the whole process easy to access	18.75%	81.25%	6.25%	81.25%	6.26%	6.25%	12.5%	18.75%	31.25%	37.5%	
Economic, social, and environmental benefits	15.38%	84.61%	30.76%	69.24%				7.69%	61.53%	23.09%	7.69%
Effective functioning of the brand	28.57%	71.42%	38%	52.38%	9.62%			14.28%	38%	47.72%	

- Not only downstream but upstream actors should also be actively involved.
- Inventory status, purchase, and sale, production cost, production process, future plan of the organization, working conditions of the organization.
- Process of building end product for customers and a dedicated team to take care of this flow.
- Information about transportation, place of origin, finishing process
- From procuring raw materials to its end product, whole supply chain actors to be involved.
- Information required by customers on the demand or on the basis of market baseline.
- Information that does not harm the business sale and a team should be developed to share such information.
- Most importantly production costs and working conditions of workers should be shared after the recent fall of Rana Plaza in Bangladesh. Retailers, producers, and manufacturers should actively participate.

Actors and channel partners of the supply chain system should be involved through technology.

7. Limitations and Scope for Future Studies

The review was limited to academic papers and reports from the time period of 2010-2022. The selection was limited to papers written in English focusing on transparency, traceability, and sustainability, which might have led to the omission of relevant papers that were not written in this language. These served as limiting factors for the study because they either fell outside its purview or did not specifically address issues related to corporate sustainability, stakeholder relations, regulations, ethics, strategies, consumption, and consumer behavior, as well as technology, marketing, and management. However, by offering a wider range of primary and secondary data and creating the foundations for a more thorough theoretical understanding of transparency, traceability, and supply chain sustainability these constraints serve as a foundation for future research. It would be fascinating to examine the industry's dualistic where it has negative environmental and social impacts, but at the same time promote sustainable practices.

Future research agendas include customer-purchasing behavior relating to fashion companies that have adopted transparency and traceability in their supply chain. An investigation is to be done on how technological advancements could reduce the complexity of the supply chain and make the working of the company smoother. Additional research could be done on workplace-related aspects as how the implementation of transparency and traceability improved the working condition of the firms. There is an urge for further research to call for more information on how transparency and traceability affect the production of fashion clothing in low-wage areas. There has to be more research done on the measures the government has taken to raise consumer awareness about supply transpa-

rency and traceability because many people are still unaware of it.

8. Implications

It is advised that businesses involved in supply chain transparency and traceability educate themselves about the categories/dimensions of transparency in the fashion supply chain. Companies should clearly understand the sustainable supply chain information they are required to publish or want to voluntarily disclose to certain stakeholders. Fashion brands must determine what information about the sustainable supply chain is already visible to stakeholders and what information is still needed. While it's critical to raise awareness of the sustainable supply chain and share information with others, it's equally crucial to use this data internally to create sustainable goals to reduce supply chain risks.

To effectively and strategically assist transformation in the fashion business, it is necessary to enforce regulations and regulate openness in SR.

9. Future Research

Future study can therefore take a particular stance by examining whether, how, and to what degree innovation such as blockchain technology can promote traceability and transparency in supply networks.

The darker side of the business reality in terms of contractual constraints, power imbalances, and information asymmetry should be captured by future research into lower tier supply chain stages, such as raw material processors in fashion supply chains. Interviews are needed with lower tier supply chain actors.

Alternatively, this study embedded in supply chain and sustainability literatures can benefit from other disciplines such as by exploring how design can influence supply chain transparency. This paper does not assert that greater information about whether increased disclosure led to substantial supply chain improvements.

10. Conclusion

This study reveals that the majority of fashion industry actors, still do not have enough information about supply chain transparency and traceability and if they have information then also, they hesitantly adopt it. Practices and systems need to be updated through collaboration, training, and digital technology enablement, to ensure that sustainability requirements are being met across the board.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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