

From Compliance to Sustainability: Drivers and Barriers influencing the adoption of Waste Management Practices in Sri Lankan Textile and Apparel Industry

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ABSTRACT

Environmental sustainability represents a core dimension of the triple bottom line framework. As one of the largest and most rapidly expanding global industries, the apparel sector contributes substantially to economic growth, however, its intensive resource consumption and waste generation pose significant environmental challenges. Accordingly, industrial waste management is essential for sustainable development, environmental protection, and adherence to regulatory standards. Consequently, the adoption of environmentally sustainable waste management practices within the textile and apparel industry has become a critical and widely discussed issue worldwide. Accordingly, this study aims to study the key drivers and barriers influencing the

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adoption of waste management practices in Sri Lankan textile and apparel industry. The major underpinning theories of this study are Institutional and Stakeholder theories. Adoption of waste management practices (AD) has been used as the dependent variable, while Government Rules and Regulations (GRR), Public Pressure (PP), Competitor Pressure (CP), Consumer Behavior (CB), Top Management Support (TMS), and Cost of Initiation (CI) has been identified as the main drivers and barriers. The research model was developed by considering previous literature, which highlighted key drivers and barriers, and integrating these insights within the framework of Institutional and Stakeholder theories to assess their impact on the adoption of waste management practices. The study followed a quantitative approach and collected data through a structured questionnaire. The population for this study includes key decision-makers in sustainable practices at large textile and apparel manufacturing companies in Sri Lanka. Both purposive and judgmental sampling methods were used to select 114 executives and senior employees from Sri Lankan apparel manufacturing facilities, ensuring that all participants were involved in environmental sustainability decision-making. Multiple regression analysis and Factor analysis were used to analyze the collected data to derive conclusions. The study reveals that external factors such as government regulations, public pressure, and competitor pressure significantly impact on the adoption of waste management practices, highlighting the importance of regulatory and market forces in driving sustainability

Keywords: *Barriers, Drivers, Textile and apparel industry, Waste management practices*

INTRODUCTION

Given the global scale of industrial waste generation, the textile and apparel sector is frequently identified in the literature as one of the largest contributors to environmental pollution, ranking second only to the oil industry (Chen, et al., 2023). Waste is an unavoidable byproduct of society, and managing massive amounts of waste sustainably will be one of the most significant challenges for future generations (Dilshani, et al, 2019). Industrial waste is an all-encompassing term used to describe material considered to be no longer of use after a manufacturing process has been completed (Pathak & Bhardwaj, 2021). According to De Vroom (2023), many sectors of industrial manufacturing produce waste, including various types of factories, mining operations, textile mills, food manufacturing, consumer goods, and industrial chemicals. These wastes can be classified into hazardous and non-hazardous categories, each requiring different management practices due to their potential impact on human health and the environment (Misra & Pandey, 2005). Waste is a common barrier which is facing all the apparel industries caused to reduce the profit (Dilshani et al, 2019) therefore, proper management and disposal of industrial waste are crucial to prevent pollution and ensure environmental sustainability (Fadel, Zeinati, El-Jisr, & Jamali, 2001). The apparel business is a vibrant part of the global economy. In the garment business, Asia- Pacific countries such as China, India, Hong Kong, the Philippines, Indonesia, and Bangladesh have excelled. China is the world's largest garment maker and exporter. Apparel makers are implementing new business tactics to boost trade. From a worldwide viewpoint, the industry is predicted to grow by leaps and bounds, generating a significant amount of revenue and jobs. In recent years, countries including Pakistan, Sri Lanka, Samoa, Bangladesh, and several South American countries have witnessed

significant expansion in their textile markets (Overview of Global Textile Industry, 2023). Among the textile importers, Sri Lanka is recognized as a significant player in the industry, particularly in the production of high-quality and value-added garments. It has gained a reputation for its expertise in specialized segments, such as intimate wear, active wear, and children's wear. Sri Lankan manufacturers have built strong relationships with international brands and buyers, positioning themselves as reliable suppliers of premium garments.

The recognition gained by the Sri Lankan apparel sector today is purely based on its excellence in speedy delivery and reliability. Serving worldwide supply chains, the sector is also the main center of production for major brands such as Nike, Speedo, Victoria's Secret, Triumph, etc. There is a high demand for Sri Lankan apparel in European countries such as the United Kingdom, Italy, Germany, Belgium, and the Netherlands. It also enjoys similar demand from the United States, Canada, China, Japan, Hong Kong, and the United Arab Emirates (Export Development Board, 2025) Figure 1 shows the comparison of Export performance during the month of July 2024 and the period of January to July 2024 compared to 2023 and the figure 2 shows the comparison of Merchandise export performance of top 15 export markets during the month of July 2024 and the period of January to July 2024 compared to 2023.

Exports of Goods & Services	Jan-July 2023	Jan-July 2024	% Growth (23-24)	July 2023	July 2024	% Growth (23-24)
Apparel & Textile	2,880.61	2,846.90	-1.17	427.48	443.74	3.80
Tea	750.72	811.71	8.12	115.20	124.70	8.25
Rubber-based	529.09	575.65	8.80	79.31	76.80	-3.16
Coconut-based	402.80	475.58	18.07	63.34	75.00	18.41
Diamond, Gems & Jewellery	228.93	188.86	-17.50	27.09	20.96	-22.63
Electronics & Electronic Components	296.58	243.49	-17.90	40.82	38.44	-5.83
Spices and Concentrates	216.73	222.03	2.45	37.53	61.20	63.07
Processed Food & Beverages	245.69	274.98	11.92	36.21	37.04	2.29
Seafood	149.63	150.68	0.70	17.25	22.03	27.71
Ornamental Fish	14.89	14.84	-0.34	1.80	1.94	7.78
Vegetables	16.82	17.29	2.79	2.08	2.31	11.05
Fruits	25.22	23.23	-7.89	3.62	3.49	-3.59
Other Export Crops	50.29	40.9	-18.67	12.32	4.93	-59.98
Flowers & Foliage	8.93	8.26	-7.50	1.04	0.98	-5.77
Boat Building	12.72	24.59	93.32	0.11	12.22	11009.09
Petroleum Products	244.03	246.39	0.97	54.25	62.23	14.71
Others	817.82	1,066.56	30.42	100.95	99.59	-1.35
Total Merchandize Exports	6,891.50	7,231.94	4.94	1,020.40	1,087.60	6.58
ICT/ BPM	696.55	779.76	11.95	99.25	124.96	25.91
Construction	144.56	128.10	-11.39	21.56	18.80	-12.81
Financial Services	35.84	42.06	17.37	4.44	8.76	97.45
Transport & Logistics	864.73	957.64	10.74	126.62	140.74	11.16
Total Services Exports	1,741.67	1,907.56	9.52	251.86	293.26	16.44
Total Exports	8,633.17	9,139.50	5.86	1,272.26	1,380.84	8.53

Figure 1 : Comparison of Export performance during July 2024 and from January to July 2024 compared to 2023.

Source: CBSL, Sri Lanka Customs

Destination	Jan-July 2023	Jan-July 2024	% Growth (23-24)	July 2023	July 2024	% Growth (23-24)
United States	1,620.57	1,638.78	1.12	253.79	267.02	5.21
United Kingdom	498.25	527.01	5.77	73.42	74.40	1.33
India	493.87	491.68	-0.44	81.28	92.10	13.31
Italy	381.23	337.89	-11.37	59.02	40.26	-31.79
Germany	349.9	360.29	2.97	50.46	52.58	4.20
United Arab Emirates	221.57	206.38	-6.86	37.88	40.49	6.89
Netherlands	197.11	214.87	9.01	27.55	33.86	22.90
France	152.25	151.15	-0.72	25.03	20.68	-17.38
Canada	179.74	183.54	2.11	25.37	26.24	3.43
China	141.7	148.48	4.78	19.22	22.45	16.81
Australia	130.61	139.43	6.75	17.09	21.88	28.03
Belgium	132.51	130.73	-1.34	20.89	19.9	-4.74
Turkey	112.12	82.07	-26.80	19.44	15.02	-22.74
Japan	114.9	101.26	-11.87	13.97	14.09	0.86
Switzerland	112.87	100.98	-10.53	12.16	11.43	-6.00
Others	2052.30	2417.40	17.79	283.83	335.20	18.10
Total	6,891.50	7,231.94	4.94	1,020.40	1,087.60	6.58

Figure 2: Comparison of Merchandise export performance of top 15 export markets during the month of July 2024 and the period of January to July 2024 compared to 2023.

Source: CBSL, Sri Lanka Customs

The entire process of garment manufacturing can be categorized and summarized into two parts as the production of textile and fabric from raw materials and the transformation of this fabric into clothing and other accessories. Textile product mills convert raw textiles into finished products other than apparel. Some of the items made in this sector include household items, such as carpets and rugs, towels, curtains and sheets, cord and twine, furniture and automotive upholstery, and industrial belts and fire hoses. Because the process of converting raw fibers into finished textile products is complex, most textile mills specialize. The apparel manufacturing industry transforms fabrics produced by textile manufacturers into clothing and accessories. The apparel industry traditionally has consisted mostly of production workers who performed the cutting and sewing functions in an assembly line. This industry remains labor-intensive, despite advances in technology and workplace practices. The industry increasingly contracts out its production work to foreign suppliers to take advantage of lower labor costs in other countries. Textile waste can be defined as the material that becomes unusable or worthless after the end of the production process of any textile product. Wastage is produced in every stage of the textile manufacturing process such as spinning, weaving, knitting, dyeing, finishing, and clothing. Textile wastage is a great threat for any textile industry and the environment as well. When fiber bales are processed through the blow room section in a spinning mill a huge amount of cotton wastage produces. So, it is an economic threat. In a dyeing factory, tons of fabric dyed, and tons of wastewater is produced which is a great threat to the environment.

Problem Statement

Textile waste consists of various materials such as fabric scraps, production offcuts,

rejected garments, and post-consumer textiles. These waste materials end up in landfills, contributing to pollution, soil degradation, and the release of harmful chemicals into the environment. Additionally, the production and disposal of synthetic textiles can have detrimental effects on ecosystems and human health due to the persistence of non-biodegradable materials (Brown, 2021). Garment manufacturing in Sri Lanka generates approximately 30,000 tons of textile waste each year. Every year, more textile waste is generated, increasing the waste problem (Turning waste into high-value products in Sri Lanka, 2022). The composition of textile waste falls within the range of 0.5-1% of the total composition of municipal solid waste collection in Sri Lanka (Sinha, Dissanayake, Abeysooriya, & Bulathgama, 2022). The textile and apparel industry in Sri Lanka, as a prominent manufacturing hub, is confronted with a pressing environmental challenge due to the significant quantities of synthetic raw materials being used and the absence of proper waste management systems and practices (Dissanayake & Weerasinghe, 2021). The lack of effective measures to address textile waste in Sri Lanka poses a critical environmental threat and demands immediate attention and action.

The Sri Lankan textile and apparel industry faces challenges in adopting waste management practices, preventing the effective mitigation of the environmental impact caused by textile waste. The lack of comprehensive waste management strategies and systems, combined with various drivers and barriers, hinders the industry's transition towards sustainable waste management practices. While there is a growing awareness of the importance of waste management practices in the textile and apparel industry, there is a research gap regarding the specific drivers and barriers that influence the adoption of waste management practices in the Sri Lankan context. When considering the studies done during the researcher found only three studies on the adoption of waste

management practices in the Sri Lankan textile and apparel industry conducted over the past 10 years. Understanding these factors is crucial for developing effective strategies and policies to promote sustainable waste management in the Sri Lankan textile and apparel industry.

Therefore, comprehensive research is needed to explore the drivers and barriers specific to the Sri Lankan textile and apparel industry and their impact on the adoption of waste management practices. Although the environmental impacts of textile waste and the importance of effective waste management practices have been widely discussed in global literature, there remains a notable lack of empirical research focusing specifically on the adoption of such practices within the Sri Lankan textile and apparel industry. Existing studies largely emphasize the environmental consequences of textile waste, the scale of industrial waste generation, and general waste management strategies at a global or regional level. However, limited attention has been given to understanding the contextual factors that influence the implementation of waste management practices within individual industries and national contexts. In particular, the Sri Lankan textile and apparel sector, despite being a major contributor to the national economy and a key player in global apparel supply chains, has not been sufficiently examined in terms of the organizational, technological, regulatory, and economic factors that influence the adoption of sustainable waste management practices. The few studies conducted in Sri Lanka over the past decade provide only limited insights and do not comprehensively explore the drivers and barriers that affect firms' decisions to adopt or implement effective waste management systems. As a result, there is a clear empirical and literature gap regarding how industry-specific conditions, institutional pressures, and operational challenges shape waste management practices within the Sri Lankan textile and apparel sector. This gap limits the ability of

policymakers, industry leaders, and environmental stakeholders to design targeted strategies that effectively encourage sustainable waste management practices. Therefore, the research problem of this study arises from the insufficient empirical understanding of the key drivers and barriers influencing the adoption of waste management practices in the Sri Lankan textile and apparel industry. Addressing this gap is essential to provide evidence-based insights that can support the development of effective policies, industry strategies, and sustainable operational practices aimed at reducing textile waste and minimizing environmental impacts within the sector.

Significance of the Study

The findings of the study provided valuable insights for decision-makers to effectively leverage the key drivers of waste management practices. By identifying factors such as technological advancements, regulatory frameworks, public awareness, economic incentives, or social attitudes, the decision-makers can focus their efforts on leveraging them to drive positive change in waste management. Further, the findings can help decision-makers prioritize their actions and investments based on the identified drivers. Different drivers may have varying levels of influence in different contexts.

Furthermore, the study findings can help decision-makers understand which drivers are most relevant and effective in their specific region or sector. This knowledge can guide the development of tailored interventions that address the specific drivers at play, leading to more targeted and successful waste management practices. Moreover, the findings may highlight the need for collaboration and partnership to address certain drivers effectively. Decision-makers can use this information to forge alliances with relevant stakeholders, such as industry associations, environmental organizations, research institutions, or community groups. In this way, the study contributes to both

theoretical knowledge and practical applications and explain how complex dynamics that shape waste management practices in the industry, offering insights into how these factors can be leveraged or mitigated to enhance sustainability in the Sri Lankan textile and apparel sector.

LITERATURE REVIEW

Existing literature grounded in Institutional Theory and Stakeholder Theory suggests that organizational decisions to adopt and implement waste management practices are largely driven by external institutional pressures as well as the interests and expectations of various stakeholders. Institutional Theory underscores the impact of regulatory compliance, industry standards, and societal norms on waste management adoption (DiMaggio, et al., 1983; Gunarathne, 2014). Organizations are motivated to adhere to regulations to maintain legitimacy and avoid legal sanctions, while also conforming to industry norms and mimetic behavior.

Stakeholder Theory emphasizes the importance of addressing the concerns and expectations of various stakeholders, including customers, employees, communities, and investors. Stakeholders exert pressure on organizations to adopt sustainable waste management practices, driven by factors such as consumer preferences, employee advocacy, community expectations (Peters, et al., 2020). This research provides an interpretive approach through institutional theory and stakeholder theory for the adoption of waste management practices by organizations.

Institutional Theory

Institutional theory emphasizes the role of social and cultural pressure imposed on organizations that influence organizational practices and structures (Scott & Richard, 2008). This theory has frequently been used to describe the adoption of organizational practices. There are three isomorphic pressures that will compel an organization to adopt waste management practices. These are coercive, mimetic, and normative. (Gunaratne, 2014). DiMaggio's view and definition for the institutional theory is as society's institutions serve as a set of working rules and provide a decision-making framework for companies. Hence, managerial decisions are strongly influenced by three institutional mechanisms which are normative, coercive, and mimetic (DiMaggio, et al., 1983).

Normative elements include values, norms, and roles set by stakeholders that define the "rules of the game" (Muthuri, et al., 2011). Cognitive elements emphasize shared ideologies and cultural values that set the framework to form responsible corporate behavior (Muthuri, et al., 2011). Regulative elements are legal rules and regulations that influence corporate behavior (Muthuri, et al., 2011). All elements together provide stability and meaning to social life (Scott & Richard, 2008).

Jennings and Zandbergen (1995) were the first to apply institutional theory to explain firms' adoption of environmental management practices. They argue that because coercive forces, primarily in the form of regulations and regulatory enforcement have been the main impetus of environmental waste management practices. Institutional theory recognizes that formal regulations and standards, imposed by governmental bodies or international organizations, significantly shape waste management practices. These regulations may include requirements for waste separation, recycling, disposal methods, and emission limits. Institutional pressures compel organizations to conform

to these standards to avoid legal repercussions and maintain legitimacy within the industry (Simpson & Dayna, 2012; Gunarathne, 2014).

Furthermore, it is observed that conforming to the institutional environment results from a conscious decision process of the company. DiMaggio and Powell (1983) conclude that the net effect of institutional pressure is to increase the homogeneity of organizational structures in an institutional environment. In summary, Firms will adopt similar structures as a result of three types of pressures. Coercive pressures come from legal mandates or influence from organizations they are dependent upon. Mimetic pressures to copy successful forms arise during high uncertainty. Finally, normative pressures to homogeneity come from the similar attitudes and approaches of professional groups and associations brought into the firm through hiring practices. Linking these practices to the waste management hierarchy, it is clear that activities at the bottom of the hierarchy are more influenced by coercive pressures. Contrarily, the practices at the top of the hierarchy are more driven by normative and mimetic pressures. To be more effective in managing waste, there is a need to transform coercive pressures to more of normative and mimetic which has to be the responsibility of many social actors.

Stakeholder Theory

Stakeholder theory states that stakeholders are “any group of individuals who can affect or is affected by the achievement of a corporation purpose” (Freeman, 1984). Moreover, it states that most companies have set integrated stakeholders they are responsible and obliged to (Spence, et al., 2001). Freeman et al. (1984) further argue that values are an inevitable part of doing business, and value creation for these stakeholders is the main objective of a company. From a conceptual perspective, stakeholder theory posits that

various internal and external stakeholders put implicit and explicit pressure on organizations to act in certain expected ways. These groups of internal and external stakeholders pressure companies to reduce negative externalities and to increase positive ones (Sarkis, et al., 2010).

Orts and Studler (2009) indicate that previous literature identifies a “narrow” and “broad” definition of stakeholders. A “narrow” version of defining stakeholders encompasses specifically what groups of people are within the boundaries of the business. The “broad” version is used when researchers invoke stakeholder theory for a strategic purpose (Orts & Strudler, 2019). Freeman (1984) broadly defined the concept of stakeholders as “any individual or group who can affect the firm’s performance or who is affected by the achievements of the organization’s objective”. Among its most important contributions were the recognition and description of several interest groups, including employees, clients and customers, suppliers, shareholders, local communities, etc. The inclusion of so many disparate parties in the managerial decision-making process eventually brought about definitions, narrowing the scope of potential stakeholders. Mitchell et al. (2011) points out that stakeholders, who are considered important by managers because of their power, legitimacy, and urgency, influence a company’s strategy. Further, Frooman (1999) generated four types of stakeholder influence strategies, i.e., how stakeholders can directly or indirectly influence a company.

Some interpretations of stakeholder theory maintain that ethical business practices must incorporate the notion that stakeholders are ends rather than means. All corporate value-creation activity depends on the willing participation of stakeholders to enhance materials into products or services (Freeman, 1984). According to Cooper et al. (2001),

stakeholder theory, which is used as a managerial tool, is particularly concerned with detecting the kind of influence stakeholders exert on a company and identifying which stakeholders are more important and should receive more management attention. Clearly, different stakeholders can present different, and even conflicting, needs and interests (Neville et al., 2006). Conclusively, stakeholders can directly and indirectly influence the sustainability practices of a company to different extents (Sharma, et al., 2005). For example, consumer concerns about sustainable business practices have a significant impact on how businesses operate (Hopkins, et al., 2009). Stakeholder theory suggests that businesses and organizations should consider the interests and expectations of all their stakeholders, which include not only shareholders but also customers, employees, suppliers, communities, and other relevant parties. External stakeholders, unlike internal stakeholders, do not have control of critical organizational resources (Harma, et al., 2005). Rather, they have the capacity to regulate or mobilize public opinion in favor of, or opposition to, the organization's environmental practices (Freeman, 1984). Several external stakeholder groups exist, including customers (clients), government regulators, shareholders, and society in general represented by non- governmental organizations.

Overall, Waste management practices are mandatory requirements for every organization. Adopting those waste management practices, the organization ensures that it is considering the interests of all stakeholders, especially regulators, environmental pressure groups, etc. According to Park and Ghauri (2015), customers are important primary stakeholders that appear to be particularly influential for the firm in view of their corporate citizenship. Customers become aware of the ethical implications of its quality standards to enhance corporate reputation. Stakeholders have a legal or moral right to expect a firm to satisfy their interests (Lafreniere, et al., 2013).

Hence, broadly, stakeholder theory, with ethical and moral perspectives, is relevant to the study of the drastic development of waste management practices over time.

Adoption of Waste Management Practices

Textile waste management practices are essential for reducing the environmental impact of the fashion and textile industries, which are known for generating significant waste. These practices aim to minimize waste, promote recycling and reusing, and create a more sustainable and circular approach to textile production and consumption. Waste management is a set of activities, decisions, and measures for waste prevention, reduction of the volume of waste and harmful impact on the environment, collection, transportation, processing, and supervision of processing operations, and care for the places where the waste is disposed of. This is a complex process influenced by political, economic, and social factors (Srebrenkoska et al., 2013). The basic principle of modern waste management is based on the concept of sustainable development (Jordeva, et al., 2020).

Furthermore, waste management hierarchy classifies the various options from the “worst” to the “best” from the environmental perspective in the following order: disposal or combustion without energy utilization contained in waste, recycling or composting, reuse and prevention (Tammemagi, 2000; Srebrenkoska et al., 2013). Various researchers define different approaches to managing textile waste, which can be either an open-loop system (Figure 2.3) or a closed-loop system (Figure 2.4). According to (Birtwistle & Moore, 2007), 3R (reduce, reuse and recycle) is the most appropriate way of waste disposal, and Pui- Yan Hoand Choi in (2012) define it as 5R (reduce, reuse, recycle, redesign and reimagine). Landfilling and incineration remain the major methods used in developing countries to manage fashion waste (Fletcher,

2013).

Drivers for Adopting Waste Management Practices

Numerous studies have assessed the factors that encourage textile and apparel manufacturers to adopt waste management practices. According to these studies, the integration of waste management practices in the textile and apparel industry is primarily driven by a combination of environmental, economic, and regulatory factors. Increasing awareness of the detrimental environmental impacts of textile waste, including pollution and resource depletion, has pushed companies to adopt sustainable practices. Consumer demand for ethically produced and eco-friendly products has also incentivized businesses to implement waste reduction strategies to enhance their brand image and market competitiveness. From an economic perspective, waste reduction and recycling initiatives can lead to cost savings. This can be achieved primarily through improved resource efficiency, reduced landfill fees, and the potential for creating new revenue streams from recycled materials. Additionally, in response to the trend in international environmental protection, many countries including Sri Lanka and environmental protection groups have set environmental regulations or standards. These regulations or standards require textile and apparel manufacturers to refrain from the use of toxic materials or harmful processes and adopt waste management practices. Therefore, tightening regulations on waste disposal and emissions have necessitated the adoption of responsible waste management practices to avoid legal penalties.

Government Rules and Regulations

The textile industry faces new challenges with increasing government regulations, global and environmental regulations, influence from pressure groups, and especially

the interest of stakeholders (Gunasekara, et al., 2017). These regulations often require businesses to implement efficient collection, sorting, and processing systems for textile waste, enforce responsible disposal practices to minimize environmental impact, encourage the incorporation of recycled materials into production processes, and adhere to reporting and transparency requirements to ensure compliance with waste reduction goals and broader sustainability objectives. Such regulations serve to foster a circular economy approach, reduce landfill waste, mitigate pollution, and contribute to the overall conservation of resources while encouraging industry-wide adoption of eco-friendly practices.

In recent years, integrating sustainable waste management practices into business has become popular since an increasing amount of obligatory and voluntary standards, as well as new government regulations regarding sustainability, were introduced (Montabon et al., 2007). Under sustainable development, most textile industries pay attention to implementing a proper waste management system. The importance of reducing, reusing, recycling, and managing waste is motivated by the increasing cost and decreasing availability of dumping areas, and the diminishing of natural resources. The central government imposes several regulations, protocols, and structures aimed at guiding the textile industry towards being environmentally friendly. Many textile companies worldwide tend to establish a sustainable development department to implement and monitor the waste management process (Nadeera et al., 2022).

More and more governmental laws are approved to encourage companies to develop sustainable approaches and to support stakeholders in their evaluation of the sustainability performance of large companies. For instance, large European public interest companies with over 500 employees are now obliged to disclose nonfinancial

statements about their social and environmental impact in their annual reports (Eur). The rising penalties, fines, and legal costs for noncompliance with such governmental laws increase companies' focus on sustainability (Giunipero et al., 2012). As governments increasingly support sustainability, companies may also introduce sustainable business practices proactively in response to being less exposed to changes in the regulatory environment and market pressure (Hopkins et al., 2009). For instance, Li et al. (2020) found that government initiatives were among the most critical factors for the implementation of corporate social responsibility in the textile industry in China.

Public Pressure

Public pressure is a significant driver for the adoption of waste management practices, including those related to textile waste. As public awareness of environmental issues grows, individuals and communities exert pressure on businesses, governments, and industries to adopt more sustainable and responsible waste management practices. In O'Neill's study (2001), due to the pressure from the public and media, companies have been forced to adopt waste management concepts. In response to public pressure, a "critical mass" of firms in the industry, at least in the UK, are seeking certification under-recognized environmental management systems, such as ISO14001 or the EU's Environmental Management and Auditing Scheme (EMAS) (O'Neill, 2001). Therefore, the survival of the business organizations depends on their approach to managing waste and treating the environment (Gunasekara, et al., 2017).

Consumers are increasingly favoring products from companies that demonstrate a commitment to sustainable and eco-friendly practices, including waste reduction and recycling. Moreover, Consumers may boycott companies that are perceived as not taking sufficient action on waste management or environmental issues. Further,

shareholders and investors increasingly consider a company's environmental practices when making investment decisions, putting pressure on businesses to adopt more sustainable waste management practices (Bostrom & Micheletti, 2016).

According to Reichel and Mortensen (2014), public pressure on waste management can be intensified by fostering awareness and encouraging responsible consumer behavior. European citizens can play a crucial role by advocating for sustainable practices in the fashion industry. By leveraging social media, organizing awareness campaigns, and supporting initiatives promoting eco-friendly alternatives, the public can pressurize both businesses and policymakers to adopt and enforce stringent waste management regulations. Consumer choices can shift towards sustainable fashion, exerting economic pressure on companies to adopt ethical and environmentally friendly practices. This collective effort can drive systemic change, urging businesses to prioritize waste reduction, recycling, and circular economy models, ultimately influencing the entire clothing production lifecycle.

Competitor Pressure

In the context of waste management practices, competitor pressure refers to the influence and impact of rival firms or entities within the textile and apparel manufacturing industry on each other's strategies, innovations, and overall performance. Competitor pressure can drive companies in the textile and apparel manufacturing industry to invest in and develop new technologies related to waste management. This includes advancements in recycling, waste-to-energy processes, waste sorting, and treatment methods. The need to stay ahead or keep pace with rivals encourages firms to innovate, resulting in improved and more efficient waste management solutions. The advancements in technology and innovation driven by

competitor pressure play a crucial role in establishing a competitive advantage for companies. It is concerned with the improvement of organizational ability to get betterment in production quality, reduction in its cost of production or getting more market share (Bansal & Song, 2017). From another point of view, it is the organizational growth which is combined with two things: cost reduction or product differentiation or only one of them (Leibowitz, 2019).

According to Christmann and Taylor (2001) competitive pressure made companies learn from and emulate competitors' environmental management practices to yield mimetic isomorphism. Under highly competitive pressure, companies were inclined to imitate the competitor's business model. For example, companies could understand the industrial trend through benchmarking the company's business model and strategy (John et al., 2001). Further, competitive pressure could make companies use organizational internal resources more efficiently to strengthen the company's competitive advantage and improve its performance (O'Cass & Weerawardena, 2010).

Competitor pressure directly affects the extent to which an organization explores available choices and exploits opportunities. This pressure compels firms to minimize threats, production costs, and establish differentiation from competitors, as highlighted by (Dyllick & Muff, 2016). Amidst the competitive landscape, organizations are pushed to continuously innovate, reduce risks, and create distinct value propositions that set them apart. The pressure from competitors drives the quest to do better than rivals in serving customer needs and maintaining strong relationships with stakeholders, as noted by Brundtland & Harlem (1987). Each organization's competitive advantage is intricately tied to its ability to effectively respond to these competitive pressures, leveraging diverse resources and points of differentiation to adapt, excel, and stand out

within the market. Essentially, competitive advantage is shaped and honed through the constant pressures and challenges posed by competitors in the business environment.

Barriers to Adopting Waste Management Practices

The integration of waste management practices in the textile and apparel industry faces several barriers that impede progress. These include the complex and fragmented nature of the supply chain, where multiple stakeholders with varying priorities must align their efforts. High upfront costs associated with adopting sustainable technologies and infrastructure upgrades act as a deterrent for many businesses, especially smaller ones with limited resources.

Moreover, the fast-paced nature of fashion trends can hinder the implementation of long-term waste reduction strategies, as quick turnovers and rapid production cycles often take precedence. Additionally, a lack of consumer awareness and willingness to pay a premium for sustainable products can limit the market demand for such initiatives.

Consumer Behavior

Consumer behavior presents a significant barrier to the adoption of waste management practices in textile manufacturing, as the demand for fast fashion and disposable clothing often perpetuates a culture of overconsumption and short product lifecycles, hindering the industry's shift towards more sustainable and responsible production methods.

In the life cycle of any textile product, consumer behavior and awareness about the environment play a crucial role in reducing waste. At the end-of-life stage, instead of

sending it to landfill, if consumers become more open to reusing the product and forwarding the product for recycling rather than to landfill, it will certainly reduce textile waste to an appreciable level (Aishwariya & Jasiri, 2020). Textile and clothing industry is strongly driven by consumer behavior, awareness, knowledge, values and perceptions. Accordingly, the demand for products and services is immensely influenced by consumers (Dickson & Marsha, 2000). A prevailing inclination towards fast fashion, characterized by the rapid production and consumption of inexpensive clothing, has engendered a culture of disposability that undermines sustainable efforts. The allure of affordable, trend-driven garments encourages frequent purchases, contributing to shortened product lifecycles and an increased volume of discarded textiles. Therefore, increasing demand from fashion consumers and the trend of fast fashion have radically increased the production and consumption of apparel (Sobuj, et al., 2021), which generates a substantial amount of waste in every stage of manufacturing, including spinning, knitting/weaving, dyeing, apparel making, and finishing (Koszevska & gorzata, 2019).

This inclination is fortified by a lack of awareness among consumers about the ecological consequences of their choices. The intricate supply chain and often opaque production processes obscure the environmental toll of fast fashion. Consumer decisions are frequently swayed by price and immediate gratification, with little consideration given to the environmental implications of their choices. Furthermore, marketing strategies that emphasize fleeting trends and seasonal styles reinforce the notion that clothing is ephemeral, discouraging the adoption of durable, longer-lasting products. The psychological satisfaction derived from constantly acquiring new items further reinforces the cycle of overconsumption, thereby discouraging investment in higher quality, more sustainably produced garments (Yadav & Majumdar, 2023).

Top Management Support

The phrase “top management” refers to the executives at the very top of an organization who work together to make important decisions and improve the bottom line of a business (Sandberg & Abrahamsson, 2010). This group includes executives with titles such as chief executive officer (CEO), director, partner, president, and manager. The goal of top managers is to provide all company employees with the tools and direction they require to realize their full potential in terms of their unique identities, levels of agency, levels of self- confidence, and levels of professional performance (Ryan and Tipu, 2013). The managers at the very top of the corporation are the ones who are responsible for the success or failure of the business (Hadli, 2017).

Kumar et al. (2019) indicated that the dedication of senior management is the most significant component among causative soft factors, influencing the effective adoption of green supply chain management, which is one of the waste management practices. The top management has substantial competence to upkeep the actual formulation and deployment of environmental initiatives throughout the organization. Once top management recognizes the latent benefits that might result from certain environmental initiatives, they will be encouraged to obligate to environmental sustainability. For example, top management commitment directly impacts how organizations respond to environmental issues and formulate strategies (Wehrmeyer, 2017). Similarly, top management commitment has been proven to motivate positivity in environmental structures (Spencer et al., 2010). When top management’s commitment to the environment is high, the relationship between institutional pressure and corporate environmental responsiveness to the pressure is enhanced (Dixon-Fowler et al., 2017).

Even though top management support plays a crucial role in the successful adoption of

waste management practices and implementation of any new practice or initiative within an organization, it can sometimes present a barrier for various reasons. Lack of awareness or understanding can be considered as one of those reasons Masi et al. (2018). Top management may not fully comprehend the importance or benefits of implementing textile waste management practices. They might underestimate the environmental and social impacts or the potential cost savings associated with such initiatives. Further, initial investments required for setting up waste management systems might deter top management if they focus solely on short-term financial gains rather than long-term benefits. They might be hesitant to allocate funds for these initiatives without seeing immediate returns (Alam, et al., 2023).

Cost of Initiation

The textile and apparel industry, known for its dynamic nature and widespread consumer appeal, plays a significant role in the global economy. However, this industry is also associated with substantial environmental challenges, particularly in terms of waste generation. As concerns about environmental sustainability grow, there is a growing impetus for textile and apparel companies to adopt effective waste management practices. While the benefits of responsible waste management are evident, a critical factor that often poses a significant challenge is the associated cost. Integrating comprehensive waste reduction, recycling, and disposal strategies in the textile and apparel sector demands financial investments that can be substantial, particularly for businesses operating on tight budgets.

According to Nidumolu, et al. (2009), it is a common perception by companies that the process of becoming sustainable will deteriorate their competitiveness by creating high costs and no immediate financial advantages. Companies confirm that integrating

sustainability can be expensive and even cause negative competitiveness in the industry in the short term (Renukappa, et al., 2013). Initial setup costs for waste management infrastructure can be high, particularly for smaller businesses or those operating on tight budgets. Investments in specialized machinery for sorting, recycling, or converting waste materials into usable products can strain financial resources, especially if the anticipated returns are not immediate. According to Luthra (2011), initial investments that are required to, e.g., adopt the latest technology, train employees in sustainability, implement green design, develop an IT infrastructure, and recycle inside the company, as well as direct and transaction costs for managing and maintaining sustainability issues are the main financial pressures hindering a company from integrating sustainability (Nidumolu, et al., 2009; Renukappa, et al., 2013; Luthra, et al., 2011). Further, based on the study done by Zhang (2019) Cost and financial challenges are prominent barriers to adopting smart waste management practices, and they are significant in cause-and-effect analysis.

Conceptual Framework

The aim of this study is to identify the drivers and barriers to the adoption of waste management practices in the textile and apparel manufacturing industry in Sri Lanka. Hence, as explained in previous literature, the adoption of waste management practices is used as the dependent variable.

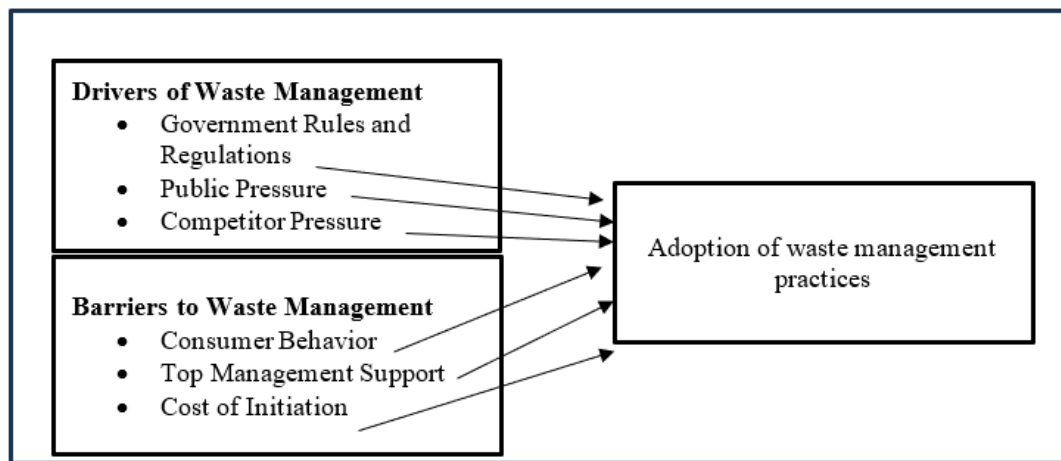


Figure 3: Conceptual framework

Source: Developed by the researchers

Furthermore, Government Rules and Regulations, Public Pressure, and Competitor pressure were identified as drivers, while Consumer Behavior, Top Management Support, Competency of Top Management, and Cost of Initiation were identified as barriers through the literature review, which are used as independent variables.

To achieve research objects, researchers have developed six hypotheses as follow as;

H1: Adoption of waste management practices significantly affected by Government rules and regulations.

H2: Adoption of waste management practices significantly affected by public pressure.

H3: Adoption of waste management practices significantly affected by competitor pressure.

H4: Adoption of waste management practices significantly affected by consumer behavior.

H5: Adoption of waste management practices significantly affected by lack of top management support.

H6: Adoption of waste management practices significantly affected by cost of initiation.

METHODS

This study employed a quantitative, deductive research approach under a positivist paradigm to identify the drivers and barriers to the adoption of waste management practices in the textile and apparel manufacturing industry in Sri Lanka. The population for this research study comprises individuals who hold significant decision-making roles in the field of sustainable practices within large scale textile and apparel manufacturing companies in Sri Lanka. These professionals, play a pivotal role in shaping the waste management landscape of their organizations. Armed with advanced degrees in fields like environmental science, industrial engineering, or business management, they formulate and implement comprehensive waste management policies.

Their responsibilities range from policy creation to overseeing implementation, ensuring compliance with stringent environmental regulations, and managing

collaborations both internally with various departments and externally with governmental bodies and local communities. Navigating economic pressures, technological challenges, and evolving regulations, these decision makers drive innovation in waste management, exploring cutting-edge solutions such as recycling technologies and eco-friendly materials. Their decisions directly impact the company's environmental footprint, corporate sustainability profile, and overall contribution to responsible waste management practices within the industry. Understanding their roles and challenges is fundamental to devising effective strategies for sustainable waste management in the textile and apparel sector in Sri Lanka.

Selected sample consists of 114 executives and above employees (Executives, senior executives, Assistant managers, Managers, and General Managers) who have participated in environmental sustainability related decision making from Sri Lankan apparel manufacturing facilities. The sample size of the study ($N = 114$) is believed to be adequate. The reliability and the power of analysis are further ensured when tested with Green's (1991) recommendations on sample size. He recommended using one of two formulas: $N \geq 50 + 8m$ or $N \geq 104 + m$ (where m = number of independent variables). Given the six independent variables in this study, the required sample size according to first formula is 98 ($N = 50 + 8 \times 6$) and according to second formula is 110 ($N = 104 + 6$). Accordingly, the sample size 114 is considered more than adequate for hypothesis testing.

RESULTS

The study first conducted a factor analysis to identify the underlying structure of the

data, reducing its dimensionality and explaining the variance in terms of fewer underlying factors or components. Following this, hypotheses were tested using multiple regression analysis, a parametric statistical test. The results indicated that five hypotheses of this research study could be accepted except the hypothesis related to the cost of Initiation, which was rejected as the large-scale manufacturing facility does not see the cost of initiation as a challenge. Additionally, regression analysis was performed to assess the impact of each independent variable on the dependent variable, providing further insights into the relationships within the data.

The dataset was coded replacing the responses with numerical values in preparation for statistical analysis and then loaded to SPSS. Responses for questions related to variables of “Barriers” (CB, TMS and CI) were reverse coded since the questions were negatively worded. Table 1 explains the results of the reliability and validity tests carried out on the responses. Reliability indicates the degree to which you receive the same results upon repeating the test with the same questionnaire. Validity indicates how successfully a questionnaire captures the intended data.

Table 1: *Summary of the Reliability Test*

Reliability		Validity	
Internal Consistency		Convergent Validity	
Variable	Cronbach's Alpha (Should be > 0.7)	KMO (Should be > 0.5)	Bartlett's Test (Should be <0.05)

Adoption of waste management Practices (AD)	0.789	0.732	0.000
Government Rules and Regulations (GRR)	0.704	0.632	0.000
Public Pressure (PP)	0.734	0.732	0.000
Competitor pressure (CP)	0.825	0.675	0.000
Consumer Behavior (CB)	0.701	0.654	0.000
Top Management Support (TMS)	0.706	0.570	0.000
Cost of Initiation (CI)	0.882	0.824	0.000

Source: Survey data 2024

According to Table 1, the reliability and validity of the factors influencing the adoption of waste management practices exhibit acceptable to excellent internal consistency, with Cronbach's Alpha values above 0.7, indicating good reliability. The KMO measures range from 0.570 to 0.820, signifying adequate to very good sample adequacy for factor analysis. Bartlett's Test of Sphericity is significant for all variables ($p < 0.05$), confirming that the data is suitable for factor analysis. Table 2 summarizes the statistics for data related to Adoption of Waste Management Practices (AD).

Table 2: *Statistics- Adoption of Waste Management Practices, Government Rules and Regulations, Public Pressure, Competitor Pressure, Consumer Behavior, Top Management Support. Cost of Initiation*

Statistic	<i>Adoption of Waste Management Practices</i>	<i>Government Rules and Regulations</i>	<i>Public Pressure</i>	<i>Competitor Pressure</i>	<i>Consumer Behavior</i>	<i>Top Management Support</i>	<i>Cost of Initiation</i>
Mean	4.1671	4.0673	4.1000	4.1082	1.9912	1.9181	2.2127
Median	4.1579	4	4.0000	4.0000	2.0000	2.0000	2.0000
Mode	4.21	4	4.00	4.00	2.00	2.00	2.00
Standard Deviation	0.3144	0.4862	0.4806	0.4401	0.43100	0.45346	0.76586
Variance	0.099	0.236	0.231	0.194	0.186	0.206	0.587
Skewness	0.173	-0.376	-0.183	-0.175	-0.025	-0.025	0.813
Kurtosis	0.455	0.265	-0.278	0.927	0.790	0.371	0.212
Minimum	3.26	2.67	2.80	3.00	1.00	1.00	1.00
Maximum	5	5	5	5	3.00	3.67	4.25
Range	1.74	2.33	2.20	2.00	2.00	2.67	3.25

Source: Survey data 2024

The reported mean (4.1671), median (4.1579) and mode (4.21) values are close to each other which suggests that the data has a distribution which is close to a normal distribution. However, the skewness (0.173) and the kurtosis (0.455) values are not equal to zero which means the data set is slightly deviated from a normal distribution. Table 2, Government summarizes the statistics for data related Rules and Regulations (GRR). The reported mean (4.0673), median (4.0) and mode (4.0) values are approximately equal which suggests that the data has a normal distribution (Laerd Statistics). However, the skewness (-0.376) and the kurtosis (0.265) values are not equal to zero which means the data set is slightly deviated from a normal distribution. Table 2 summarizes the statistics for data related to Public Pressure (PP). The reported mean (4.1), median (4.0) and mode (4.0) values are close to each other which suggests that the data has a distribution which is close to a normal distribution. However, it has a slight skewness (-0.183) which means the data set is deviated from a normal distribution. Table 2 summarizes the statistics for data related to Competitor Pressure (CP). The reported mean (4.1082), median (4.0) and mode (4.0) values are close to each other suggesting the data are normally distributed. Table 2, summarizes the statistics for data related to Consumer Behavior (CB). The reported mean (1.9912), median (2.0) and mode (2.0) values are approximately equal. Table 2, summarizes the statistics for data related to Top Management Support (TMS). The reported mean (1.9181), median (2.0) and mode (2.0) values are approximately equal. Table 2 summarizes the statistics for data related to Cost of Initiation (CI). There is a gap between the reported mean (2.2127), median (2.0) and mode (2.0) values. Hence, it can be considered that the data related to SN variable are not normally distributed. Among all variables, the dataset of CI has the highest skewness value which is 0.813. Since it is greater than zero it implies that the data set is positively skewed (right skewed). Also, the kurtosis value of this

dataset (0.212) is greater than zero. It suggests that there are more extreme outliers in the data than in a normal distribution (IBM 2022). Furthermore, compared with other variables, the standard deviation (0.76586) of this data set is high. This suggests that the data are more spread out which is evident by the high Range value of 3.25.

Consequently, as the summary shown in Table 2 factor analysis indicates that the Adoption of Waste Management Practices (AD) is influenced by six distinct factors, each corresponding to different waste management practices, reflecting the complexity of their adoption.

Table 03: *Summary of Factor Analysis Results*

Variable	Number of Factors	Variance Explained
Adoption of waste management practices	6	61.60%
Government Rules and Regulations	1	62.90%
Public Pressure	2	70.30%
Competitor Pressure	1	74.11%
Consumer behavior	1	63.12%
Top Management Support	1	63.18%
Cost of Initiation	1	74.41%

Source: Survey data 2024

Furthermore, Government Rules and Regulations (GRR), Competitor Pressure (CP), Consumer Behavior (CB), Top Management Support (TMS), and Cost of Initiation (CI) each load on a single factor, suggesting that these variables are clear and represent unique dimensions influencing waste management strategies. Importantly, all these factors significantly influence the adoption of waste management practices. In contrast, Public Pressure (PP) loads on two factors, indicating its influence stems from multiple underlying dimensions, highlighting the need for organizations to address various aspects of public perception in their waste management efforts. Further, the researcher employs a multiple regression analysis to identify the effect of each variable on the dependent variable and to test the hypotheses statistically. Multiple regression models are a robust analytical technique that provides insights into complex relationships between variables. By considering multiple predictors simultaneously, these models offer a comprehensive understanding of the factors driving or hindering outcomes of interest, making them indispensable in research and practical decision-making.

According to Table 04 the regression model, with predictors Government Rules and Regulations (GRR), Competitor Pressure (CP), and Public Pressure (PP).

Table 04: Model Summary of Multiple Regression Analysis - Drivers

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.272 ^a	.074	.049	.30666

a. Predictors: (Constant), CP, GRR, PP

Source: Survey data 2024

The R value is 0.272, indicating a moderate relationship between these predictors and the dependent variable. The R Square value of 0.074 means that 7.4% of the variance in the dependent variable is explained by these predictors. The Adjusted R Square is 0.049, which adjusts for the number of predictors and shows that 4.9% of the variance is explained. The standard error of 0.30666 indicates the average distance between the observed values and the predicted values.

According to Table 04, the regression results show that all three predictors, Government Rules and Regulations (GRR), Public Pressure (PP), and Competitor Pressure (CP) have significant positive effects on the adoption of waste management practices (AD). Each predictor's significance is supported by low p-values (all below 0.05), and the VIF values indicate no serious multicollinearity among the predictors. This suggests that stronger government regulations, increased public pressure, and higher competitor pressure each independently contribute to greater adoption of waste management practices.

Table 05: Coefficients of the Regression Model for Drivers

Coefficients ^a								
Model	Unstandardized Coefficients			Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error		Beta			Tolerance	VIF
1	(Constant)	3.678	.599		6.146	.000		
	GRR	.150	.059	.232	2.519	.013	.640	1.562
	PP	.148	.060	.227	2.465	.015	.582	1.718
	CP	.147	.066	.206	2.227	.028	.728	1.374

a. Dependent Variable: AD

Source: Survey data 2024

According to Table 05, the coefficient for Government Rules and Regulations (GRR) is 0.150, indicating that for every one-unit increase in GRR, the adoption of waste management practices (AD) increases by 0.150 units, assuming other variables remain constant. The t-value for GRR is 2.519, which measures the ratio of the coefficient to its standard error, demonstrating that the coefficient is significantly different from zero. The p-value associated with this t-value is 0.013, which is less than the conventional significance threshold of 0.05. Instead, we accept the alternative hypothesis (H1), confirming that government regulations play a significant role in promoting the adoption of waste management practices. The results of the multiple regression analysis provide strong support for the hypothesis (H2) that the adoption of waste management practices is significantly affected by public pressure. Specifically, the unstandardized coefficient (B) of 0.148 indicates that a one-unit increase in public pressure (PP) results in a 0.148 unit increase in the adoption of waste management practices (AD). The standardized coefficient (Beta) of 0.227 highlights the relative importance of public pressure compared to other factors in the model. With a t-value of 2.465 and a p-value of 0.015, the relationship between public pressure and the adoption of waste management practices is statistically significant at the 0.05 level. Additionally, the tolerance value of 0.582 and VIF of 1.718 suggest that there is no serious multicollinearity problem, further validating the significance of public pressure as an independent predictor. Thus, the evidence strongly indicates that public pressure plays a crucial role in encouraging the adoption of waste management practices. According to Table 05, the multiple regression analysis provides substantial support for the hypothesis (H3) that the adoption of waste management practices is significantly affected by competitor pressure. Specifically, the unstandardized coefficient (B) of

0.147 indicates that a one-unit increase in competitor pressure (CP) results in a 0.147 unit increase in the adoption of waste management practices (AD). The standardized coefficient (Beta) of 0.206 indicates the relative impact of competitor pressure compared to other variables in the model. The standard error of 0.066 reflects the variability of this estimate, and the t- value of 2.227, combined with a p-value of 0.028, confirms that this effect is statistically significant at the 0.05 level. Furthermore, the tolerance value of 0.728 and VIF of 1.374 suggest there is no serious multicollinearity issue, ensuring the reliability of competitor pressure as an independent predictor. Therefore, the evidence clearly indicates that competitor pressure plays a crucial role in promoting the adoption of waste management practices within the industry.

According to Table 06, the model summary indicates that the predictors (CB, TMS, CI) have a moderate linear relationship with the adoption of waste management practices, collectively explaining 8.6% of its variance.

Table 06: *Model Summary of Multiple Regression Analysis - Barriers*

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.293 ^a	.086	.061	.30464

a. Predictors: (Constant), C, CB, TMS

Source: Survey data 2024

The adjusted R Square value of 6.1% accounts for the number of predictors, reflecting a modest explanatory power. The standard error of the estimate (0.30464) shows the model's average prediction error. According to Table 06, the regression results show

that Consumer Behavior (CB) and Top Management Support (TMS) have significant negative effects on the adoption of waste management practices (AD). Specifically, negative consumer behavior and lack of top management support decrease the adoption of waste management practices, with both relationships being statistically significant. However, the Cost of Initiation (CI) does not have a significant impact on the adoption of these practices. The collinearity statistics indicate that there is no serious multicollinearity among the predictors, ensuring the reliability of the regression analysis. Table 06, shows the multiple regression analysis provide clear evidence in support of the hypothesis (H4) that the adoption of waste management practices is significantly affected by consumer behavior. Specifically, the unstandardized coefficient (B) of -0.159 indicates that a one-unit increase in Consumer Behavior (CB), when measured negatively, results in a 0.159 unit decrease in the adoption of waste management practices (AD). The standardized coefficient (Beta) of -0.218 highlights the relative impact of consumer behavior compared to other factors in the model. The standard error of 0.072 indicates the precision of this estimate, and the t-value of -2.204, along with the p-value of 0.030, confirms that this negative relationship is statistically significant at the 0.05 level. Thus, we reject the null hypothesis (H40) that consumer behavior does not significantly affect the adoption of waste management practices. Furthermore, the tolerance value of 0.846 and the Variance Inflation Factor (VIF) of 1.182 suggest that there is no serious multicollinearity issue, ensuring the reliability of consumer behavior as an independent predictor. Therefore, the evidence strongly indicates that unfavorable consumer behavior significantly decreases the adoption of waste management practices.

Table 07: Coefficients of the Regression Model for Barriers

Coefficients ^a								
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	4.643	.159	29.289	.000			
	CB	-.159	.072	-.218	.030	.846	1.182	
	TMS	-.148	.064	-.214	.023	.779	1.283	
	CI	.019	.041	.045	.649	.840	1.191	

a. Dependent Variable: AD

Source: Survey data 2024

According to Table 07, the regression analysis supports hypothesis H5, affirming that a lack of top management support significantly influences the adoption of waste management practices. The unstandardized coefficient (B) of -0.148 indicates that an increase in the indicator for lack of top management support (TMS) results in a decrease of 0.148 units in the adoption of waste management practices (AD), showcasing a negative effect. The statistical significance of this relationship is confirmed by a p-value of 0.023, thus rejecting the null hypothesis (H50) that top management support does not affect waste management practices. Additionally, the standardized coefficient (Beta) of -0.214 emphasizes the strength of this negative relationship. The results are reliable as indicated by the Variance Inflation Factor (VIF) of 1.283, which points to negligible multicollinearity concerns. Therefore, the findings clearly highlight the critical role of top management support in facilitating the implementation of effective waste management practices, demonstrating that its absence can hinder organizational environmental efforts. Further, Table 07, indicates that the cost of initiation (C) has a very minimal and statistically insignificant effect on the adoption of waste management practices (AD), with an unstandardized coefficient (B) of 0.019. The p-value of 0.649

far exceeds the typical threshold of 0.05, leading to the acceptance of the null hypothesis H60, which states that the cost of initiation does not significantly affect the adoption of waste management practices. This suggests that financial barriers related to initial investments do not play a critical role in decisions regarding the implementation of waste management strategies. The Variance Inflation Factor (VIF) of 1.191 and a tolerance of 0.840 also indicate that there is no concern of multicollinearity affecting this result. Table 08, provides a summary of the hypotheses testing.

Table 08: *Summary of Hypothesis Testing*

Hypothesis	Correlation Coefficient	p-value	Accepted/Rejected
H1	0.232	<0.05	Accepted
H2	0.227	<0.05	Accepted
H3	0.206	<0.05	Accepted
H4	-0.218	<0.05	Accepted
H5	-0.214	<0.05	Accepted
H6	0.045	>0.05	Rejected

Source: Survey data 2024

Overall, the regression results indicate that both external and internal factors influence the adoption of waste management practices within organizations. Among the external pressures, government rules and regulations, public pressure, and competitor pressure significantly and positively affect the adoption of waste management practices, suggesting that institutional and market forces play an important role in encouraging

environmentally responsible behavior among firms. Conversely, internal organizational factors such as unfavorable consumer behavior and lack of top management support demonstrate significant negative effects, highlighting that organizational commitment and stakeholder attitudes are crucial for successful implementation. Interestingly, the cost of initiation does not significantly influence adoption, indicating that financial considerations may not be the primary barrier to implementing waste management practices in this context. Furthermore, the relatively modest explanatory power of the model suggests that additional factors may also contribute to the adoption of such practices. Overall, the findings emphasize that regulatory pressure, stakeholder expectations, and managerial commitment are key drivers shaping organizations' engagement in waste management initiatives.

DISCUSSION

There are many previous studies on the impact of government rules and regulations on adoption of waste management practices in the textile and apparel industry of various other countries. Li (2020) discusses impact of government rules and regulations on the Chinese textile industry,

Casadei & Iammarino (2023) discusses the UK apparel industry while Sharma & Narula (2020) discusses the Indian apparel industry. However, empirical studies focusing on the effect of government rules and regulations in the context of Sri Lankan textile and apparel manufacturing companies is very limited. Therefore, this finding enriches the literature in the context of Sri Lankan textile and apparel manufacturing companies. There are few limitations of this study. First, the study only considered the large-scale textile and manufacturing companies in Sri Lanka considering the number

of employees and the revenue. Small and medium scale manufacturing companies were not considered. Second, this research only considers drivers and barriers which were commonly considered in previous studies which are related to institutional and stakeholder theory that were done in other countries. However, the results of the study showed that GRR, PP, CP, CB, TMS and CTM factors have a weak relationship and Cost factor does not have a relationship with the dependent variable AD. Hence, there can be other prominent drivers and barriers applicable in the context of Sri Lankan textile and apparel industry.

CONCLUSION

Based on this finding, in order to motivate textile and apparel companies to adopt waste management practices, competitor pressure act as a driver. When one company in the industry begins implementing sustainable waste management strategies, it gains a competitive advantage by enhancing its brand image, reducing operational costs, and attracting environmentally conscious consumers. In response, competitors are compelled to follow suit to remain relevant and competitive in the market. This creates a ripple effect, where companies continuously innovate and adopt better waste management practices to outpace their rivals. As businesses strive to outperform one another, the entire industry moves towards more sustainable practices, driven by the need to maintain market position and customer loyalty.

Furthermore, consumers need to be aware of the long-term benefits of sustainable textile production to encourage textile and apparel companies to adopt waste management practices. When consumers understand that sustainable production not

only reduces environmental harm but also leads to higher quality, longer-lasting products, they are more likely to prioritize purchasing from companies that follow eco-friendly practices. This growing demand for sustainability pushes businesses to adopt waste management practices as part of their overall strategy to meet consumer expectations, improve their market reputation, and contribute to a healthier planet.

Consequently, leadership commitment is critical in allocating resources, setting clear sustainability goals, and integrating waste management into the company's core strategies. By fostering a culture that values environmental responsibility, companies can encourage employee engagement, innovation, and collaboration around sustainable practices. Moreover, Strategies like investing in research and development of innovative recycling technologies, promoting sustainable fashion initiatives and encouraging consumers to purchase eco-friendly products, collaborating with industry partners and leveraging economies of scale can reduce the cost of implementing waste management solutions can overcome the cost barrier in initiating waste management practices in textile and apparel industry. Future research should aim to conduct a comprehensive study that covers small, medium, and large-scale textile and apparel manufacturing companies in Sri Lanka. This approach can provide more understanding of the drivers and barriers to waste management practices across different scales of operations.

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