"IMPACT OF GREEN PACKAGING ON SUSTAINABLE SUPPLY CHAIN WITH MEDIATING ROLE OF ENVIRONMENTAL AWARENESS IN THE E-COMMERCE INDUSTRY OF PAKISTAN"

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ABSTRACT

Purpose

This study has focused mainly on investigating the impact of green packaging on sustainable supply chain with mediating role of environmental awareness in e-commerce sector of Pakistan. This study has considered green packaging as independent variables. Whereas, sustainable supply chain as dependent variable along with the mediating role of Environmental awareness. However, this study has targeted the managers of e-commerce industry of Pakistan to testify the relationship between variables mentioned above.

Design and Methodology

To prove this relationship, a survey has been conducted through an adopted structured questionnaire regarding this literature, in which employees working in different cities of Pakistan, have been requested to share their experiences by filling the online questionnaires through google forms from 340 respondent's majority of them belongs to age group 18-25. Then, to identify the results on data gathered from the respondents, statistical instruments have been used. Some of the statistical instruments used in this study include descriptive frequencies, reliability, correlation, and regression and mediation analysis using SPSS etc.

Findings

Results derived through statistical instruments have shown that there exists a significant positive relationship between green packaging and sustainable supply chain management (SSCM) within the E-commerce industry in Pakistan. The adoption of eco-friendly packaging materials and practices by E-commerce companies positively influences various aspects of SSCM, including sourcing, transportation, and waste management. Moreover, the study identifies environmental awareness as a crucial mediating factor in this relationship, indicating that higher levels of environmental awareness among stakeholders lead to more effective implementation of green packaging and sustainable supply chain practices

It can be claimed that this research work is relevant to the future researchers and relevant to the real estate industry and for the firms that are already working in the market or planning to move in near future to the real estate market. It would be also useful for the firms who are struggling in

the market to thrive and bounce back with a roar and gain a competitive advantage over their competitors.

Key Words: Green Packaging, Sustainable Supply Chain, Environmental Awareness.

CHAPTER 1

1.1 Background of the study

A sustainable environment has become increasingly important in recent years. As the world changes, technology advances, but nature is unfamiliar with the new difficulties that are emerging. We have become so technologically advanced that we have lost our responsibility to humans, animals, and the natural world. Carbon and pollution emissions are created by the production of non-eco-friendly products, which have a negative impact on both human and environmental health. So, this is a major issue that must be addressed. The organization's purpose is to stop producing such damaging products and transition their business to green to protect the environment. The world is continually growing and moving towards technological advancement. Humans face many challenges as a result of pollution and improper waste (Mishra J. M).

Environmental sustainability has emerged as a major issue over the last two decades, and people are becoming more environmentally conscious. Many businesses operating in a growing economy are attempting to address the environmental concerns of their customers and authorities. In recent years, the environmental impact of packaging has received a lot of attention; it is now recognized as the leading cause of waste.

In 2016, Australia produced 50 million tonnes of trash, of which only 58% was recycled. Packaging has a negative impact on the environment in a variety of ways, including the generation of solid, liquid, and gaseous waste as well as pollution. Consumers are aware of and prefer green packaging that does not affect the environment. Many national and international authorities have implemented legislation to restrict and decrease packaging waste, as well as to increase recycling for a more sustainable environment (Singh, 2018).

The rapid rise of the express business, together with the growth of e-commerce and online shopping, has resulted in significant packaging waste and more worrying environmental issues. Nonetheless, the growth of the express shipping industry for e-commerce has had a significant positive impact on the packaging industry. However, little consideration has been given to it in e-commerce studies [Chen et al. 2019]. Products are managed or processed four times more in an e-commerce network than in a traditional retail supply chain (Fisher K. et al., 2017).

Green packaged products are preferred by consumers over non-green packaged goods. Businesses have recently begun to reduce packaging waste since ecological packaging is crucial for both development and economic growth, as well as for protecting the environment (Prakasha, 2019).

Packaging from companies like McDonald's and Walmart is environmentally friendly. These campaigns sway consumers' decisions on what to buy and which brand to choose. Non-green packaging reduces consumer preference for the product; packaging plays a key role in shaping consumer preference and the product's ecological perception Journal of Marketing Strategies, Volume 3, Issue 1, January 2021.

Businesses can also benefit financially from eco-friendly activities, which can demonstrate concern and awareness while saving money on shipping and material costs and enhancing brand image through the use of green packaging. According to Mkik (Green Packaging as a Novel Marketing Trend: an Empirical Investigation of Moroccans Consumer's Environment Friendly Attitude, 2019), businesses not only prioritise profitability but also accomplish their environmental aims. Both consumers and businesses are adopting green packaging more and more. Although eco-friendly packaging is more expensive than other options and may serve as a warning to businesses, consumers who are prepared to pay a premium for it can lower the risk of cost escalation and price competition (Mishra J. M., 2017).

Green Packaging

Globally, green economies, sustainability, green marketing, and the general "Green Concept" issue are becoming more and more well-known and gradually acknowledged. The adoption of green information causes a shift in consumer perception, which in turn affects consumer behavior and, ultimately, influences consumer purchasing decisions. Due to the willingness of many producers to meet these kinds of consumer demands, a large number of recently released items have been infused with the green concept; these products are referred to as "green products" since they are made in an environmentally friendly manner. Using environmentally safe packaging is the most practical approach used by producers. "Green package" is the common moniker for that item.

A few key components influence how consumers perceive green packaging and how they behave while making purchases. These include, for instance, beliefs about environmental concerns and familiarity with eco-friendly packaging. These elements may influence how consumers see buying and eating packaged green goods. When consumers see on the packaging of a product that it does not damage animals or the environment or that it lessens the effects of environmental issues, they choose those items with more awareness. Due to this circumstance, the purpose of this study is to determine how customers feel about green packaging and what factors affect their propensity to purchase green products.

Eco-friendly packaging is created with materials that are easy to use, recyclable, and don't hurt the environment. This is now an innovative plan for a sustainable environment; it benefits customers as well as paving the way for a brighter future (Kong et al., 2014). Journal of Marketing Strategies, January 2021, Volume 3, Issue 1. A poll indicates that consumers are happier when reusable packaging is used. Ten percent of all product purchasing goes towards packaging, which after usage turns into waste. Recycling rubbish costs thirty dollars per tonne.

In e-commerce, packaging is important for the possible promotion of consumption in addition to protecting goods during shipping. Consequently, it's critical to choose and employ environmentally friendly materials for online shopping packaging in order to safeguard goods, move them, and improve customer-product connection. In order to transition from express delivery to green logistics, it is vital to alter express packaging and encourage the use of green packaging [Russo & Comi 2016].

Carbon emissions from e-commerce enterprises can be significantly reduced by implementing green packaging methods. Up to 45% less carbon emissions could be produced by using biodegradable packing peanuts and recycled paper for shipping boxes rather than Styrofoam. Additionally, they pointed out that customers are becoming more and more prepared to spend more for environmentally friendly packaging solutions (Rasheed et al., 2019).

Sustainable Supply Chain

An environmentally and socially conscious supply chain incorporates sustainable practices into the flow management of materials, information, and capital. Because of growing customer

demand for sustainable products, regulatory demands, and environmental concerns, this notion has grown more and more relevant in today's corporate climate.

The e-commerce industry shows specific challenges as well as possibilities when it comes to implementing sustainable supply chain practices. E-commerce's reliance on shipping and packaging needs a focus on sustainable methods to lessen its environmental impact. According to Khan et al. (2021), incorporating sustainable practices into e-commerce supply chains entails using green logistics, conserving energy, and providing environmentally friendly packaging.

In Pakistan, the e-commerce business is quickly expanding, and there is an urgent need for sustainable supply chain strategies to address environmental and social issues. E-commerce enterprises in Pakistan must deal with difficulties such as trash management, energy use, and carbon emissions. (Rehman, Sial, & Anwar 2015).

Implementing SSCM in the e-commerce industry, particularly in developing nations such as Pakistan, has its own set of obstacles. These include high costs for sustainable products, a lack of infrastructure, and low business knowledge. Overcoming these obstacles necessitates collaboration among parties, including government agencies, non-governmental organizations, and enterprises. (Zhu, Sarkis, and Lai, 2008).

Environmental Awareness

Environmental awareness is critical in guiding customer behavior towards sustainable practices, including a desire for green packaging in the e-commerce business. Individuals with higher levels of environmental awareness are more likely to engage in pro-environmental behaviors, such as choosing products with eco-friendly packaging. This suggests that raising environmental awareness can increase demand for green packaging solutions in the e-commerce sector (Ahmed et al. 2020).

Environmental awareness involves understanding the harmful effects of one's actions and understanding the importance of sustainable measures to mitigate these effects. Environmental awareness includes both cognitive and affective components, in which people not only understand environmental challenges but also feel responsible for addressing them (Koll muss and Agyeman 2002).

Environmentally conscious stakeholder pressure can influence how businesses respond to the introduction of sustainable supply chain operations and green packaging. Environmental awareness can have a substantial impact on stakeholder demand, which influences organizational responses. (Sarkis et al.2017). Environmental awareness has a significant influence on consumer behavior. Environmentally conscious consumers are more inclined to support and engage in sustainable actions, such as purchasing eco-friendly items (Roberts, 1996).

Environmental awareness does not only apply to consumers; it also influences business behavior. Companies that are conscious of the environmental impact of their operations are more likely to apply sustainable practices throughout their supply chains. This includes implementing green packaging solutions, lowering waste, and increasing resource efficiency (Carter & Jennings, 2002).

In Pakistan, raising environmental awareness among businesses is critical to the widespread adoption of sustainable supply chain methods. According to studies, companies that prioritise environmental awareness outperform others in terms of sustainability. This is especially important in the e-commerce industry, where packaging waste is a major environmental issue.

Industry brief

Electronic commerce, or e-commerce, is the purchase and sale of physical products via the internet or online platforms. E-commerce is becoming increasingly popular as technology advances (Statista, 2021). Electronic commerce is the extensive use of digital technologies to support online commercial processes such as sales and transactions. Firms used telecommunications-based technology like the internet to carry out these operations (Kabugumila et al., 2016; Huang and Xu, 2013).

It has changed retail by providing consumers with the convenience of buying from anywhere at any time, typically with a wider assortment and more competitive pricing than traditional brick-and-mortar establishments. This industry's key players include big online marketplaces such as Amazon, Alibaba, and eBay, as well as numerous smaller online merchants. The industry is distinguished by rapid technical advances, complex logistics and supply chain operations, and a strong emphasis on customer satisfaction. E-commerce in Pakistan is fast expanding, owing to

rising internet penetration, smartphone usage, and a youthful, tech-savvy population, creating major prospects for both domestic and international business.

1.2 Research Problem

Considering an increasing emphasis on sustainability, Pakistan's e-commerce business confronts considerable obstacles in incorporating green packaging techniques into sustainable supply chain management. Previous research has underlined the importance of green packaging in decreasing environmental impact and improving supply chain sustainability (Rokka & Uusitalo, 2008). However, the adoption of these techniques is frequently hampered by stakeholders' lack of environmental knowledge, inconsistent regulatory frameworks, and the higher prices associated with eco-friendly products (Delmas & Toffel, 2008; Vachon & Klassen, 2006).

There is a lack of information about how environmental awareness among customers, suppliers, and companies influences the relationship between green packaging initiatives and sustainable supply chain results. According to studies, improved environmental awareness can considerably boost the adoption of green practices; however, this dynamic has not been completely investigated in Pakistan's E-commerce sector (Ramus & Steger, 2000). Furthermore, present research is primarily focused on developed countries, creating a knowledge gap about the specific difficulties and opportunities in emerging economies such as Pakistan (Khan, 2021).

1.3 Research Objectives

1. Examine the influence of green packaging on the sustainable supply chains.
2. Examine the influence of environmental awareness on green packaging
3. Examine the influence of environmental awareness on sustainable supply chain
4. Examine the mediating role of environmental awareness in the relationship between green packaging and sustainable supply chain practices.

1.4 Research Questions

1. What is the influence of green packaging on the sustainable supply chains?
2. What is the influence of environmental awareness on green packaging?
3. What is the influence of environmental awareness on sustainable supply chain?
4. Does environmental awareness mediate the relationship between green packaging and sustainable supply chain practices?

1.5 Research Contributions

The theoretical contributions in this area include green packaging, green manufacturing, green logistics, and green purchasing. Green packaging can affect consumers' brand attachment in e-commerce and improve their awareness of sustainable supply chain management. Environmental awareness is a key factor in influencing customer behavior towards environmentally friendly products and services. (Prakash, G. and Pathak, P. 2017).

Practical contributions may result in more sustainable packaging practices. This leads to more effective operations, lower costs, and alignment with consumer desires for environmentally friendly products and packaging. Managers can implement eco-friendly packaging and sustainable supply chain strategies, resulting in cost savings, increased operational efficiency, and more environmental responsibility. Furthermore, they can modify their marketing and communication strategies to emphasize their commitment to sustainability, attracting environmentally concerned customers and earning a competitive advantage.

Policymakers' contribution involves implementing standards and incentives that encourage sustainable behavior in the e-commerce sector. They can also offer cash incentives or tax advantages to enterprises who invest in environmentally friendly practices. This study is expected to contribute favorably to successfully identifying the influence of Green Packaging on overall sustainability in the E-commerce industry (Zailani et al., 2012).

1.6 Research Gap

The e-commerce market is highly dynamic and subject to constant change. Various studies in Pakistan's e-commerce industry lack a comprehensive examination of the impact of green packaging on sustainable supply chain management, with environmental awareness acting as a mediating element. During the COVID-19 outbreak, there is emerging evidence that consumers, particularly those who are environmentally conscious, are surrendering environmental sustainability for safety, convenience, and price (Baking Business, Citation 2020). According to a recent poll, 65% of buyers prefer to buy environmentally friendly products, but only about 26% do (White et al., Citation2019). Unfortunately, the current literature fails to address customers' environmental sustainability perspectives on e-commerce, and hence their intention to use e-commerce channels.

Many publications investigate green packaging challenges from the perspective of businesses. They cover a wide range of dimensions, including how technological, organizational, and human capabilities contribute to the implementation of eco-design innovation in packaging, and its benefits in terms of brand innovation and environmental protection (Sumrin, S.; Gupta, S.; Asaad, Y.; Wang, Y.; Bhattacharya, 2021).

1.7 Scope of the study

This study investigates the impact of green packaging on sustainable supply chain management, with environmental awareness serving as a mediating factor in Pakistan's e-commerce market. This study employs a unit analysis technique, with the individual E-commerce company serving as the unit of analysis in the Pakistani E-commerce industry. Each e-commerce company, regardless of size or structure, is regarded a separate unit of study. Researchers will gather information to examine the procedures, policies, and views of each E-commerce organization. This study is largely focused on the strategic and operational management levels inside each E-commerce organization.

Executives, managers, and employees are responsible for making decisions and executing green packaging practices, sustainable supply chain management methods, and raising environmental consciousness throughout the organization. This study focuses on the obstacles that organizations experience while implementing green packaging methods, as well as the variances and trends in Pakistan's e-commerce industry. Furthermore, this study investigates the function of environmental consciousness in sustaining or altering the relationship between green packaging and sustainable supply chain management.

1.8 Limitation of the study

The study intends to add useful insights to our understanding of the impact of green packaging on sustainable supply chain management, with environmental awareness serving as a mediating factor in Pakistan's e-commerce business. Some restrictions should be acknowledged. Collection of data in Pakistan, particularly from enterprises, can be difficult due to language hurdles, logistical issues, and cultural differences. These problems may have an impact on the quantity and quality of data collected. The availability of data on green packaging and sustainable supply chain management techniques in Pakistan's e-commerce industry may be restricted. This may restrict the scope and depth of the analysis. Limited resources, both in terms of time and funds,

may limit the breadth of the study and the ability to collect detailed data or perform extended fieldwork. Other characteristics or variables not included in the study may potentially have an impact on sustainable supply chain management and environmental awareness.

CHAPTER 2

LITERATURE REVIEW

The years 1960 to 1970 saw the rise of sustainability movements and increased environmental concerns, which gave rise to the idea of "green packaging." Initially, recycling and lowering the quantity of packaging trash were the main goals (Chung & Wee, 2008). The packaging industry started implementing techniques that reduced the use of non-renewable resources and included biodegradable materials as awareness of environmental degradation grew. In line with the larger objectives of sustainability, which include lowering carbon footprints, preserving resources, and fostering environmental responsibility, the term "green packaging" gained popularity by the 1990s (Lewis, 2005).

Early green packaging initiatives emphasized material reduction, recyclability, and biodegradability. Innovations in this field have since evolved to include the use of renewable resources, advanced packaging designs that require less material, and improved methods for end-of-life disposal (Linton, Klassen, & Jayaraman, 2007). These advancements have paved the way for more sustainable packaging solutions that not only reduce environmental impact but also enhance operational efficiency.

2.1 Green packaging

Green packaging is using sustainable materials for packaging purposes in order to reduce waste and promote sustainable development. It has gained increasing interest from both researchers and practitioners. Research on green packaging has significantly increased in recent years, indicating the growing importance of addressing climate change, environmental protection, and resource conservation. Decisions to purchase green-packaged products are influenced by multiple factors,

Companies are encouraged to incorporate sustainable packaging to comply with government regulations (Rashid, 2009).

Consumers are increasingly concerned about environmental issues. Research on green packaging has seen significant growth, indicating the increasing interest and importance of the topic. Green supplier selection is another area of focus for companies looking to gain a competitive edge and reduce food waste. Companies consider the costs and consumer preferences when choosing

green packaging. Packaging redesign and innovations in packaging machines aim to reduce costs and increase flexibility (Wandosell et al., 2021).

2.2 Sustainable supply chain

Sustainable supply chain management (SSCM) integrates environmental, social, and economic considerations into supply chain operations to achieve long-term sustainability. Green packaging is a critical component of SSCM as it helps reduce the environmental footprint of packaging activities (Srivastava, 2007).

By reducing the reliance on non-renewable resources and minimizing waste, green packaging contributes to resource efficiency and cost savings (Linton et al., 2007). Additionally, green packaging can improve a company's brand image and customer loyalty by demonstrating a commitment to environmental sustainability (Rao & Holt, 2005).

Lewis (2005) found that companies that adopted green packaging practices experienced a significant reduction in waste disposal costs and an increase in customer satisfaction. Similarly, a study by Chung and Wee (2008) indicated that green packaging initiatives led to improved resource utilization and operational efficiency in supply chains.

2.3 Environmental Awareness

The concept of environmental awareness refers to the understanding and concern about environmental issues among individuals, which includes emotional, attitude, and practice of sustainability awareness. Environmental awareness can be measured by evaluating the knowledge and understanding of environmental issues, their causes, and their impacts. However, it is important to note that having a high level of environmental awareness does not necessarily lead to greater environmental behavior. Environmental behavior is the observable actions taken by individuals in response to their comprehension of environmental issues. In the context of Malaysians, the study shows that they have a high level of awareness regarding water pollution, followed by air pollution and solid waste management. Malaysians are less aware of climate change, potentially due to the indirect and less visible effects in a country with a tropical rainforest climate. Environmental awareness is crucial for policy-making decisions as it helps policymakers understand what the public is doing to improve environmental behavior. In

Malaysia, there are numerous national environmental awareness programs initiated by the government and relevant ministries. (Mei et al., 2016)

Previous research has found that individuals with stronger environmental awareness are expected to engage in environmentally friendly actions. Environmental awareness plays a role in individuals' green purchase behavior, and eco-labels can serve as a tool to enhance consumers' environmental awareness by providing information about the environmental attributes of products. Research suggests that environmental awareness acts as an important factor between eco-labels and green purchase behavior. It is theorized that eco-labels inform environmental awareness and encourage sustainable consumption. The research argues that eco-labeling can boost consumers' perceptions of environmental attributes of products, ultimately influencing their environmental attitude and concern. (Song et al., 2019)

2.4 Relationship between Green Packaging and Sustainable Supply Chain:

Green packaging, which is distinguished by its environmentally friendly materials, low carbon footprint, and recyclability, is critical to promoting sustainable supply chain operations. Previous research has emphasized the complex effects of green packaging on different aspects of sustainable supply chains. Green packaging activities in the manufacturing sector, demonstrating considerable reductions in energy usage, waste creation, and greenhouse gas emissions throughout the supply chain (Smith and Lummus 2019).

Green packaging helps to optimize logistical operations and transportation networks, resulting in cost savings and increased supply chain efficiency (Brown et al., 2018). Including lightweight and space-efficient packaging materials reduces transportation-related emissions while simultaneously reducing packaging waste and increasing warehouse utilization rates (Christopher, 2016). Moreover, green packaging encourages product innovation and differentiation, allowing businesses to match changing customer desires for sustainable products while keeping a competitive advantage in the market (Hervani et al. 2018).

Green packaging significantly improves environmental sustainability. Using eco-friendly packaging materials such as biodegradable plastics and recyclable choices helps to lessen the environmental impact of packaging waste. Businesses that reduce their carbon footprint through

sustainable packaging match with changing environmental ideals and appeal to eco-conscious customers.

However, the relevance of environmental awareness as a mediating factor is unclear. One study discovered that customer environmental understanding did not moderate the relationship between green packaging, multisensory packaging, and ecological sustainability in Pakistan's FMCG industry. This implies that, while green packaging directly benefits sustainability, raising awareness alone may not be sufficient to encourage adoption.

Other factors like government regulations, globalization, and pressure from international buyers and competitors are key motives for Pakistani manufacturers to implement green practices. Effective knowledge sharing between suppliers also plays a role in promoting sustainability across supply chains.

H1: There is a positive relation between green packaging and sustainable supply chain.

2.5 Relationship between Green Packaging and Environmental Awareness:

Green packaging projects have received a lot of attention as a way to promote environmental sustainability in supply chains. Growing environmental awareness among stakeholders, such as consumers, businesses, and legislators, is critical to the implementation of green packaging methods. Previous research has clarified the complex relationship between green packaging and environmental consciousness, emphasizing the importance of awareness in promoting sustainable behaviors and creating organizational policies.

Lee et al. (2020) found that green packaging had a good impact on increasing customer knowledge of the environment. The study surveyed e-commerce users to determine their perspectives and preferences for sustainable packaging solutions. The findings found that customers who were exposed to green packaging materials demonstrated higher environmental awareness, as reflected by their enhanced recognition of environmental issues and readiness to support eco-friendly products. Furthermore, the study emphasized the importance of clear communication and labelling policies in increasing customer awareness and making educated purchasing decisions.

Similarly, Sharma and Iyer (2019) examined the effect of green packaging measures on environmental awareness in the industrial sector. Through interviews and case studies with industry specialists, the study revealed how organizations that used green packaging methods

saw increased environmental awareness among employees and stakeholders. The use of eco-friendly packaging materials sparked internal conversations and efforts centered on sustainability, resulting in larger organizational pledges to environmental responsibility.

Moreover, experimental evidence reveals that green packaging initiatives help to raise environmental awareness at the societal level, going beyond individual behaviors to catalyze collective action and policy lobbying. For example, Pujari et al. (2017) evaluated the effect of green packaging rules on raising environmental awareness and pushing systemic change in the packaging business. The study emphasized the importance of legislative frameworks in promoting eco-design principles, encouraging industry-wide collaboration, and instilling a sense of environmental responsibility among stakeholders.

The relationship between green packaging and environmental awareness is an important part of encouraging sustainability and eco-friendly practices in a variety of businesses, including e-commerce. Green packaging, defined by the use of eco-friendly materials and ways to lessen environmental effect, is consistent with the expanding global emphasis on sustainability. Businesses that use sustainable packaging strategies not only reduce their carbon footprint, but also appeal to environmentally concerned customers, demonstrating their dedication to eco-friendly efforts.

Environmental awareness has a significant impact on consumer behavior and attitudes towards green packaging. According to studies, environmentally conscious consumers are more inclined to value and prefer products that use sustainable packaging. This understanding influences customer views and purchase decisions, emphasizing the necessity of educating consumers about the advantages of environmentally friendly packaging materials and procedures.

According to studies, customers' environmental awareness can have a major impact on their willingness to pay for green items, even those packaged sustainably. This highlights the need of spreading awareness of green packaging's environmental benefits, as well as its role in decreasing plastic waste and supporting sustainability. Businesses that prioritize eco-friendly packaging not only help the environment, but also meet the needs of an increasingly eco-conscious consumer base.

H2: There is a positive relation between green packaging and Environmental awareness.

2.6 Relationship between Sustainable Supply Chain and Environmental Awareness:

The relationship between a sustainable supply chain and environmental awareness is critical for comprehending the overall influence of corporate activities on environmental conservation and resource management. Previous research has investigated how environmental awareness influences organizational strategies for developing sustainable supply chains, as well as vice versa, emphasizing the interconnectedness of environmental consciousness and supply chain sustainability.

The effect of environmental awareness in promoting the adoption of sustainable practices in supply chains (Seuring and Muller 2008). Through case studies and questionnaires in the manufacturing industry, the study discovered that organizations with higher levels of environmental awareness within their management teams were more inclined to prioritize sustainability measures throughout their supply chains. Environmental awareness acted as a catalyst for proactive environmental management, resulting in the adoption of eco-friendly procedures, material procurement, and waste reduction initiatives throughout supply chain networks.

In addition, sustainable supply chain activities have the ability to improve environmental consciousness among consumers and society in general. Sarkis et al. (2011) explored how company sustainability practices affected consumer perceptions and behaviors. The study discovered that organizations with transparent and socially responsible supply chains were seen more positively by consumers, resulting in increased awareness and demand for environmentally friendly products. This proposes a feedback loop in which sustainable supply chain practices not only reflect environmental knowledge, but also help to spread and reinforce it across society.

The connection between sustainable supply chains and environmental awareness is a critical component in promoting eco-friendly practices and driving sustainability initiatives throughout industries. Sustainable supply chains, which are distinguished by ethical and environmentally responsible activities, play a critical role in incorporating green concepts into operational models to achieve competitive success. End-to-end transparency in supply chains is critical, with sustainability activities ranging from raw material sourcing to last-mile logistics and product recycling. This all-encompassing approach guarantees that environmental considerations are integrated across the supply chain, demonstrating a commitment to reducing environmental effect and encouraging sustainable practices.

Environmental awareness is a major factor influencing the adoption and implementation of sustainable supply chain practices. According to studies, growing environmental awareness among stakeholders, such as consumers, corporations, and policymakers, leads to a greater demand for sustainable products and practices throughout supply chains. Consumers, in particular, are becoming more aware of the environmental impact of their purchase decisions, prompting firms to prioritize sustainability and eco-friendly activities throughout their supply chain operations. This increased awareness encourages businesses to incorporate green practices into their supply chains, coinciding with changing customer expectations and regulatory constraints.

Research has shown that linking supply chain strategies with environmental sustainability goals improves overall performance and competitiveness. By adding environmental considerations into supply chain management, firms can strike a balance between economic efficiency and environmental responsibility, resulting in increased operational efficiency and a smaller environmental footprint. Integrating environmental awareness into supply chain decision-making processes allows businesses to make educated decisions that benefit both the environment and their bottom line, establishing a culture of sustainability and ethical business practices.

H3: There is a positive relation between sustainable supply chain and environmental awareness.

2.7 Mediating Role of Environmental Awareness

The role of environmental awareness is important in promoting eco-friendly behaviors and protecting the environment. Studies have shown that environmental awareness positively influences pro-environmental behaviors. The positive impact of environmental awareness on environmental quality has been supported by empirical research. (Ahmad et al., 2020) Green product awareness acts as a mediating variable between green marketing and consumers' attitudes. The findings highlight the significance of green perceived value, environmental concerns, and green product awareness in shaping consumers' attitudes towards buying green buildings. The study found that green product awareness acts as a mediating variable between green marketing and consumers' attitudes. (Sahioun et al,2023). Hence the following hypothesis can be proposed.

H4: Environmental awareness mediates the relationship between green packaging and sustainable supply chain.

2.8 Theoretical framework

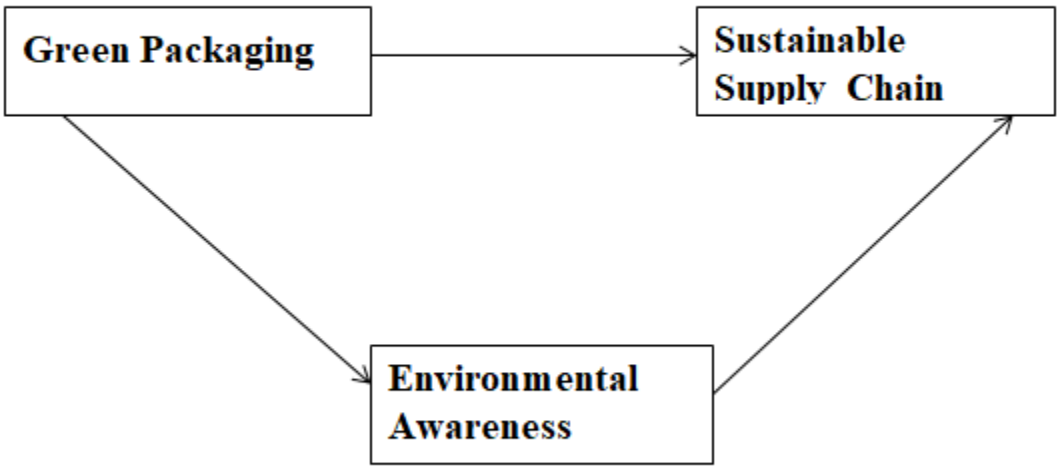
Stakeholder theory is a management and organizational theory that states that businesses and organizations should consider the interests of all stakeholders impacted by their actions, decisions, and operations. Stakeholder theory, developed by R. Edward Freeman in the 1980s, asserts that stakeholders such as customers, suppliers, employees, regulators, and the community are all critical to achieving long-term success in Pakistan's E-commerce industry through the implementation of green packaging and sustainable supply chain practices (Freeman, 1984).

Suppliers and business partners play an important role in encouraging sustainable packaging practices. Collaboration with environmentally conscious suppliers ensures that packaging materials satisfy environmental criteria, improving the overall sustainability of the supply chain (Vachon & Klassen, 2006). This joint effort promotes a culture of environmental awareness throughout the supply chain, which is critical for the successful implementation of sustainable practices.

Stakeholder theory provides a valuable framework for understanding the dynamics of green packaging within e-commerce supply chains. According to this theory, companies must address the interests and concerns of all stakeholders to achieve long-term success (Freeman, 1984). In the context of green packaging, this means considering the environmental impacts of packaging practices and actively involving stakeholders in the development and implementation of sustainable solutions.

By incorporating stakeholder perspectives, companies can identify and address potential challenges and opportunities related to green packaging. This approach not only enhances the credibility of sustainability initiatives but also builds stronger relationships with key stakeholders. For example, engaging with suppliers to source sustainable materials or collaborating with customers to promote recycling

2.9 Conceptual Framework



CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This section discusses the overall approach to analysis that would have been adopted for the study, as well as the research methodologies and data sources that would have been applied. This also specifies how data will be processed, interpreted, and communicated as part of the data collecting process. The strategies used to collect data and knowledge in order to attain research objectives are referred to as research methodology.

3.2 Research Approach

There are two basic research methodologies that we might employ for research: qualitative research and quantitative research. We have employed a quantitative data analysis methodology for our research. The quantitative technique in this study entails the statistical collecting of data, which is then applied to a detailed and analytical analysis of the data. In this study, quantitative research techniques are used to compare and objectively find the results regarding the "The impact of green packaging on sustainable supply chain with mediating role of environmental awareness in e-commerce industry".

The advantage of using a quantitative research methodology for this study is that we can reach a much larger sample group. In this quantitative investigation, systematic testing was used. In a quantitative method, the results can be digitized. The results and findings were acquired utilizing a quantitative research technique and closed ended survey-based questionnaire (Journal of Marketing Strategies, Volume 3, Issue 1, January 2021) with a 5-point Likert scale, which was distributed among the respondents via Google Forms.

Furthermore, the deductive method was applied in a recent study that aimed to answer our research questions. The deductive technique is the most common approach for proving an existing theory. After analyzing the problem statement, the answers to the identified problems are presented in the form of theory. The research topics for this study were also set out to investigate the "The impact of green packaging on sustainable supply chain with mediating role of environmental awareness in e-commerce industry". To get at the answer to the research question, the method went through the steps of data gathering and analysis.

3.3 Research Design

This study adopted the descriptive design for the research in obtaining the information of "The impact of green packaging on sustainable supply chain with mediating role of environmental awareness in e-commerce industry". This kind of research is recommended because it allows the researcher to collect data in order to answer questions about the status of the subject under investigation. As according to Karasti (2018), the goal of a descriptive research is to establish how things are now, this aids in determining the current nature of a subject under investigation.

The research design employed in this study serves to illustrate the research's intent. A research design refers to an organized approach for collecting and analyzing data, aiming to strike a balance between relevance to the research objectives and practical considerations in the industry. In this particular study cross-sectional research design is used to systematically explore the impact of green packaging on sustainable supply chains in the e-commerce industry of Pakistan, with a focus on the mediating role of environmental awareness. By employing a structured survey method and robust statistical analysis, it can provide valuable insights into how these variables interact and offer recommendations for businesses and policymakers.

3.4 Research Technique

Research technique is the method which tells how the data is collected for the research work while keeping the margin of error in mind. There are many methods which researchers make use of while collecting the data. Our questionnaire was consisted of different sections. First section deals with the demographics while others with the dependent and independent variables respectively. To improve the quality of the data, respondents were asked to rate the extent to which the statements indicating variables applied to their businesses using a Likert scale. The research questionnaire employed a five-point Likert scale. The structured questions were utilized to make the analyzing process easier. This allowed people to take a moment, think about it, and then respond in the most appropriate way. Respondents maintained their feelings, emotions, and thoughts confidential.

3.5 Population

Since this research is about the “impact of logistics practices on operational performance of FMCG sector” so, the population is the whole e-commerce sector of Pakistan. But the target population is the E-commerce industry of Pakistan.

The target population for this study was 340 people (E-commerce industry’s employees, and managers with references of friends, colleagues, and relatives). The data collection is focused on gathering information from employees within the E-commerce sector.

3.6 Sampling

Sampling the research is an important approach for gathering information in a population sample size. It defines the researcher's strategy or strategy for selecting the best sample items. In this study, we use convenience sampling for the selection of the participants because they are often easily and readily available. Convenience Sampling frequently helps to overcome many of the limitation linked with researcher’s i.e. using friends and family as apart of sample is easier than targeting unknown population. This type of sampling is least expensive, least time consuming and most convenient (Malhotra, 2009).

3.7 Sample Size

The sample size is determined using the provided formula and referring to Krejeie and Morgan's (1970) table. To select a sample of 340 Managers from E-commerce businesses in Pakistan who work in the supply chain and operational departments.

3.8 Sampling Technique

This study employed a convenient sampling technique. As the name implies, convenience sampling is based on the researcher's or the object's convenience (shaltoni, 2018). Samples are taken from a group of people who are easy to reach or contact in convenient sampling. This strategy relies on data collection from members of the public who are willing and able to participate in the study. Sounders, Lewis, & Thornhill (2016) define this sampling strategy as "gathering responders wherever you can get them at any time you want".

3.9 Data Analysis

To investigate the influence of factors on green supply chain practices, this study utilized quantitative data analysis methodologies. Descriptive statistics, such as percentages and means, were employed to characterize the effects. The data for the quantitative analysis was collected through questionnaires and analyzed using SPSS software version 23, with a specific emphasis on descriptive statistics such as percentages and means.

3.10 Research Instrument/Measurement/Scale Used

The study used a five-point Likert scale, which allows the researcher to clearly examine the data through comparisons and stating how negatively or positively a responder was disposed to a questionnaire part (Bista, 2017). A five-point Likert scale was used to assess each study variable. The range is 1 to 5. Where 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5=Strongly Agree. Questions regarding independent variables (green packaging) and dependent variable (sustainable supply chain) and mediating variable (environmental awareness) were adapted from S. Gitonga (2017).

CHAPTER 4

Data Collection and Data Analysis

4.1 Data Collection Procedure

After the adaptation of the questionnaires, they were further modified for respondents' convenience in order to obtain accurate and trustworthy responses. Data was collected by delivering structured questionnaires to respondents managers of e-commerce companies in Pakistan. The surveys were disseminated online via “Google Docs” by the researcher. The data acquired from the questionnaires has been appropriately synchronized to enhance the study's realistic results and conclusions. Over the course of ten days, 341 questionnaires were received. None of the responses were excluded, and all of the questionnaires received had complete results. In IBM SPSS statistics, valid replies were recorded and analyzed.

4.2 Analysis

The data for the study was collected using quantitative data processing methods via a questionnaire. With the help of SPSS software, statistical tools such as regression and correlation analysis were used to determine the extent and direction of the relationship between green packaging (independent variables) and sustainable supply chain (dependent variable)) and mediating variable (environmental awareness). Statistical tools (regression and correlation) are frequently utilized for data analysis around the world and have proven to be extremely accurate and valid.

This research aims to investigate the impact of green packaging on sustainable supply chain in e-commerce industry of Pakistan. This study is applied as providing the solution for the current problem. This is an exploratory type of research; data is gathered through distribution of structured questionnaire via social media and emails. Data is analyzed through the SPSS. The outcomes from SPSS include reliability testing, descriptive profile (demographic profile) for the respondents using frequency distribution and regression analysis (Rashid et al., 2019; Rashid et al., 2020).

4.2.1 Respondents Profile:

Table 1

Factors	Respondents	Category	Frequency	Percentage %
Gender	341	Male	228	67.1
		Female	112	32.9
Age	341	18-25	196	57.6
		26-35	128	37.6
		36-45	14	4.1
		46-55	2	0.6
Qualification	341	Metric	14	4.1
		Intermediate	49	14.4
		Bachelors	173	50.9
		Masters	104	30.6
Position in industry	341	Senior Manager	65	19.1
		Middle Manager	103	30.3
		Junior Manager	172	50.6

Demographic profile of our respondents is presented in table 1, as the data is gathered through online survey, 340 respondents related with the E-commerce industry participated in our survey, these includes both male and female. From 340 respondents 228 were male which represents 67.1% and female were 112 which represented 32.9% of total respondents.

196 participants were between the ages of 18 to 25 which represent the 57.6%, this indicates the youngsters are highly involved in E-commerce sector. 128 respondents were belonged to the age of 26 to 35 which represents the 37.6%. 14 participants were between the ages of 35 to 45 which represent the 4.1%. Only 2 respondents were belonging among the age 46 to 55 which represents 0.6% of total respondents.

14 respondents' education level was metric which includes 4.1%. 49 participants have Intermediate qualification or equivalent which belongs to the 14.4% of total sample. 173

respondents have a bachelor degree or were under graduation which was representing 50.9%. 104 participants on the master level of education which represented 30.6%.

According to the results 65 were senior managers which represent 19.1%. 103 respondents' were middle managers which indicate 30.3%. 172 respondents were junior managers which represented 50.6% of total sample.

4.2.2 Descriptive Statistics

Table 2

Variable	N	Mean	Standard Deviation
Green Packaging	341	26.35	5.354
Sustainable Supply Chain	341	18.65	3.987
Environmental Awareness	341	22.58	4.559

The table presents descriptive statistics for three variables including green packaging The average score for Green Packaging is approximately 26.35, with a standard deviation of about 5.354. This means that, on average, participants scored close to 16 in their understanding or engagement with green packaging practices. The standard deviation tells that there is some variability among participants' scores, indicating that some have higher or lower levels of understanding than others.

The mean score for Sustainable Supply Chain is around 18.65, with a standard deviation of approximately 3.987. This indicates that, on average, participants scored nearly 11 in their knowledge or competency regarding sustainable supply chain practices. The lower standard deviation suggests that there is less variability among participants' scores compared to Green Packaging, meaning most participants have similar levels of understanding in this area.

The average score for Environmental Awareness is roughly 22.58, with a standard deviation of about 22.58. This shows that, on average, participants scored close to 26.35 in their awareness or concern for environmental issues. Similar to Green Packaging, the standard deviation suggests

variability among participants' scores, indicating differing levels of environmental awareness among the group.

4.2.3 Construct Reliability

Reliability testing is carried out to determine the validity and consistency of the responses. The total number of observations/ responses collected is 340 responses, and all the responses are tested for 19 items (including 7 for Green packaging, 5 for sustainable supply chain, and 7 for environmental awareness). The results for Cronbach's Alpha are used/ interpreted to determine the reliability. The results derived from the reliability are based on the interpretation of Cronbach's Alpha. The value should exceed the standard limit of 0.70 to achieve reliable levels (Rashid et al., 2021; Agha et al., 2021; Haque et al., 2021; Das et al., 2021; Alrazehi et al., 2021). The “reliability statistics” table shows a value of 0.931 for 19 items, reflecting that the data collected for the research study are valid and reliable.

4.2.4 Reliability statistics

Table 3:

Variables	**Chronbach’s Alpha**	**No of items**
Green Packaging	.896	7
Sustainable supply chain	.878	5
Environmental Awareness	.898	7

Cronbach's alpha, known for its ability to assess internal consistency, is particularly well-suited for this review. The benefits of using Cronbach's alpha clearly demonstrate the high level of reliability and consistency achieved by the survey employed in the review. The calculated value of Cronbach's alpha is remarkably close to one, indicating the survey's strong reliability and the robust responses provided by the participants. This value falls within the recommended range of 0.7-0.9, confirming the consistency of the Likert scale and affirming the authentic and unambiguous nature of the survey utilized in this quantitative study.

4.2.5 Correlation Analysis

Table 4

	Green Packaging	**Sustainable supply chain**	**Environmental Awareness**
Green Packaging	1		
Sustainable supply chain	.752**	1	
Environmental Awareness	.757**	.862**	1

The correlation coefficient between Green Packaging and Environmental Awareness is r1 is 0.757. This strong positive correlation suggests that greater emphasis on green packaging practices is closely related to higher levels of environmental awareness. The correlation between Sustainable Supply Chain and Environmental Awareness is the highest; with a coefficient of r2 value is 0.862. This very strong positive relationship implies that an increase in sustainable supply chain practices is strongly associated with a heightened level of environmental awareness.

4.2.6 Regression analysis

Table 5

Model	**R**	**R-Square**	**Adjusted R-Square**	**Std. Error of the Estimate**
1	.851 [a]	.724	.723	2.402

a. Predictors: (Constant), SSC, GP

The table displayed illustrates the model summary for the regression analysis. The R2 value, which represents the "goodness of fit," indicates the proportion of the dependent variable's variance that can be explained by the independent variable. In this scenario, the independent variable accounts for 72.4% of the impact on the dependent variable, while the remaining 27.6% is influenced by other factors.

4.2.7 ANOVA

Table 6

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5117.592	2	2558.796	443.652	<.001 [b]
	Residual	1949.440	338	5.768		
Total		7067.032	340			

a. Dependent Variable: EA

b. Predictors: (Constant), SSC, GP

The table provided corresponds to the ANOVA test, which is used to analyze the variability in the dependent variable. In this instance, the p-value is less than 5%, demonstrating the significance of the model. The last column of the table, labeled "sig," shows a value of 0.000, indicating that the regression model accurately represents the data, as the value is below 0.05 at a 95% confidence level. Therefore, we can confidently conclude that the model is significantly well-fitted within the 95% confidence interval.

Table 7

Model		Unstandardized coefficient		Standardized coefficient		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	**Constant**	3.900	.717		5.436	<.001
	GP	.560	.027	.752	20.976	<.001

The constant value of 3.900 represents the expected value of the dependent variable when Green Packaging (GP) is zero. A p-value <.001 shows statistical significance. The unstandardized coefficient of 0.560 indicates that a one-unit increase in GP causes a 0.560 unit rise in the dependent variable. The standardized coefficient (Beta) of 0.752 indicates a substantial positive influence of GP, with a t-value of 20.976 and a p-value of <.001.

Table 8

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
1 Constant	5.604	.813		6.893	<.001
GP	.644	.030	.757	21.304	<.001

The constant value of 5.604 represents the predicted value of the dependent variable when Green Packaging (GP) is zero, which is statistically significant (p-value <.001). Each one-unit increase in GP causes a 0.644-unit rise in the dependent variable. The standardized coefficient (Beta) of 0.575 indicates a considerable positive effect of GP. The high t-value (21.304) with a p-value <.001 validates this association as highly statistically significant.

Table 9

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
1 (Constant)	4.978	.668		7.450	<.001
SSC	.944	.035	.826	26.936	<.001

The constant value of 4.978 represents the predicted value of the dependent variable when Sustainable Supply Chain (SSC) is zero, which is statistically significant (p-value <.001). Each one-unit rise in SSC causes a 0.944-unit increase in the dependent variable. The standardized coefficient (Beta) of 0.826 indicates a considerable positive effect of SSC, supported by a high t-value (26.936) and a highly significant p-value (<.001).

Table 10: **Meditation Analysis through PROCESS MACRO**

Indirect effect(s) of X on Y:

	Effect	**BootSE**	**BootLLCI**	**BootULCI**
EA	.3386	.0474	.2481	.4348

The estimated effect size of Environmental Awareness (EA) on the GP and SSC is 0.3386, implying a modest positive impact. The standard error (BootSE) of 0.0474 indicates a steady estimate. The 95% bootstrap confidence interval extends from 0.2481 (BootLLCI) to 0.4348 (BootULCI), indicating that the true effect size is most likely between these values, confirming the positive link with high confidence.

Table11

Model	**Unstandardized Coefficients**		**Standardized Coefficient**		
	B	**Std. Error**	**Beta**	**t**	**Sig.**
1 (Constant)	2.972	.682		4.357	<.001
Green Packaging	.266	.037	.313	7.224	<.001
Sustainable supply chain	.675	.050	.590	13.634	<.001

The constant term 2.972 denotes the expected value of the dependent variable when both Green Packaging and Sustainable Supply Chain are zero. This constant has statistical significance, showing its importance in the model. The dependent variable increases by 0.266 units for every one unit increase in Green Packaging, indicating a moderate positive effect (standardized coefficient (Beta) of 0.313. Similarly, each one-unit rise in Sustainable Supply Chain causes a 0.675-unit increase in the dependent variable, indicating a strong positive effect with a Beta value of 0.590. Both associations are extremely statistically significant, with large t-values and very low p-values (<.001).

4.2.8 Testing of Hypothesis

Table 12

Hypothesis	Significance Level	Impact	Accept/ Rejected
Impact of green Packaging on sustainable supply chain	.001	Positive	Hypothesis accepted
Effect of green packaging adoption on environmental awareness	.001	Positive	Hypothesis accepted
Impact of Environmental awareness on sustainable supply chain	.001	Positive	Hypothesis accepted
Mediating role of environmental awareness on green packaging and sustainable supply chain	.000	Partial mediation	Hypothesis accepted

CHAPTER 5

Discussion, Conclusion and Recommendation

5.1 Discussion

The study was aimed to research on the impact of green green packaging on sustainable supply chain with mediating role of environmental awareness. The objectives were studied in detail, four hypotheses were proposed, and literature support has been taken to support these hypotheses. The data was collected from managers by questionnaire. This study provides a comprehensive overview of how these variables interact and influence one another, offering valuable implications for businesses and policymakers aiming to foster environmentally responsible consumption patterns.

Demographically, the majority of respondents were young adults aged 18-25, primarily male, with a diverse range of educational backgrounds and work experiences. This demographic distribution indicates a significant interest and engagement in green marketing among younger consumers, suggesting a generational shift towards environmental consciousness. The high engagement from this demographic highlights the importance of targeting young adults in green marketing campaigns, as they are likely to be more receptive to environmentally friendly messages and practices. Descriptive analysis shows that overall perceptions of green packaging are generally positive, although there is some variability in specific items, highlighting areas for potential improvement. Green packaging, in particular, received varied responses, suggesting the need for more consistent and effective strategies in these areas. For instance, green packaging requires improvements in design and clarity to enhance its appeal and effectiveness.

Correlation analysis revealed strong positive correlations between all the constructs, indicating that effective green packaging and sustainable supply chain enhancing environmental awareness and influencing consumer behavior. Environmental awareness emerged as the most influential factor driving consumer behavior, underscoring the importance of educational initiatives in green marketing strategies. This finding suggests that companies should invest in campaigns that not only promote their green products but also educate consumers about environmental issues and the impact of their consumption choices.

Construct reliability and validity analyses showed strong internal consistency and good convergent validity for all constructs. This indicates that while the overall model is sound, the components of green advertising need to be revisited to ensure they are accurately capturing the intended constructs..

These findings have several practical implications. Businesses should adopt an integrated approach to green marketing, ensuring consistency and coherence across packaging, and advertising efforts to maximize their impact on consumer behavior. Given its significant influence, enhancing environmental awareness should be a key focus of marketing strategies. This can be achieved through educational campaigns and transparent communication about the environmental benefits of green products.

By focusing on these areas and continuously refining their strategies, businesses can play an important role in promoting sustainable consumption and contributing to environmental conservation.

5.2 Conclusion

The impact of green packaging on sustainable supply chains in the e-commerce industry is multifaceted and significant. As businesses and consumers alike become increasingly aware of environmental issues, the adoption of green packaging practices has emerged as a critical strategy for promoting sustainability. The historical evolution of green packaging highlights its roots in early environmental movements and its progressive integration into modern supply chain management.

Green packaging contributes to sustainable supply chains by enhancing resource efficiency, reducing waste, and decreasing greenhouse gas emissions. It also provides economic benefits through cost savings and improved brand reputation. These advantages underscore the necessity for businesses to integrate green packaging into their operations as a means of achieving long-term sustainability goals.

Environmental awareness serves as a vital mediating factor in this relationship. Consumers' growing environmental consciousness drives demand for sustainable products, compelling e-commerce companies to adopt green packaging practices. This, in turn, influences businesses to prioritize sustainability in their supply chain operations. Internally, fostering environmental

awareness among employees promotes a culture of sustainability, further supporting the implementation of green packaging strategies.

Stakeholder theory provides a valuable framework for understanding the importance of engaging with various stakeholders in the development and execution of green packaging initiatives. By addressing the interests and concerns of customers, employees, suppliers, and the broader community, companies can create more effective and widely accepted sustainable practices.

In conclusion, the interplay between green packaging, environmental awareness, and sustainable supply chains in the e-commerce industry highlights the dynamic and interconnected nature of these elements. As environmental concerns continue to shape consumer behavior and business practices, the adoption of green packaging will remain a critical component of sustainable supply chain management. Businesses that proactively embrace green packaging and foster environmental awareness are better positioned to meet the evolving demands of stakeholders, achieve sustainability objectives, and secure long-term success in the competitive e-commerce landscape.

5.3 Recommendation

The proposals aim to promote environmental sustainability in Pakistan's e-commerce industry by addressing the interconnected areas of green packaging, sustainable supply chain management, and environmental awareness. To begin, E-commerce enterprises are encouraged to implement green packaging practices by prioritizing the use of eco-friendly materials, eliminating waste, and optimizing packaging sizes to reduce environmental effect. Furthermore, sustainability is emphasized in the supply chain, with a focus on collaboration with suppliers who adhere to eco-friendly standards, optimizing transportation routes to reduce emissions, and guaranteeing ethical labor practices throughout the supply chain process.

Furthermore, the recommendations emphasize the importance of increasing environmental awareness among consumers and industry players. E-commerce enterprises can educate consumers about the environmental benefits of green packaging and sustainable supply chain practices through focused awareness campaigns. Businesses must also include environmental considerations into their overall plans, setting specific goals for lowering carbon footprints, increasing renewable energy usage, and implementing green initiatives throughout all operational areas. E-commerce companies can effectively contribute to reducing environmental

impact, improving supply chain efficiency, and cultivating a sustainable culture within the industry by investing in innovative technologies, collaborating with governmental and non-governmental organizations, and continuously monitoring and evaluating performance.

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Appendix

Email: _____

Gender: _____

Age: _____

Qualification: _____

Position in industry: _____

Scale:

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

		1	2	3	4	5
1. Green Packaging Green packaging uses environmentally friendly materials and practices to reduce waste and pollution. It seeks to protect both products and the environment by encouraging sustainable packaging design and production						
GP1	Our organization prioritizes to buy products that use biodegradable or recyclable materials for packaging.					
GP2	The company aims to buy product that are picked up and recycled for other use.					
GP3	Reducing the amount of packaging material used for shipping products is a priority.					
GP4	Educating customers about the benefits of green packaging is a key focus.					

GP5	The organization buys biodegradable products even if they belong to a less well known company.					
GP6	The preference is to invest in innovative packaging solutions to reduce the environmental impact.					
GP7	Implementation of a green packaging policy has been executed in our organization.					

2. Sustainable Supply Chain A sustainable supply chain guarantees that products are produced and delivered in ways that benefit the environment and treat workers fairly. It aims to reduce waste, pollution, and negative social consequences while encouraging long-term environmental and social responsibility		1	2	3	4	5
SSC1	The company collaborates with suppliers who follow sustainable practices.					
SSC2	Implementation of waste reduction practices across the supply chain is prioritized.					
SSC3	The company regularly reviews and improves its supply chain processes to enhance sustainability.					
SSC4	Integration of renewable energy sources is encouraged in supply chain operations.					
SSC5	The company has reduced its carbon footprint through the implementation of sustainable supply chain practices.					

3. Environmental Awareness Environmental awareness means understanding how our actions affect the Earth and making decisions that protect the environment for a sustainable future. It encourages people to think about their ecological impact and take action to protect the environment		1	2	3	4	5
EA1	Our organization regularly engages in environmental awareness campaigns					
EA2	Additional efforts are made by the organization to procure plastic and paper products crafted from recycled materials.					
EA3	The company has shifted to alternative products due to ecological concerns.					
EA4	When presented with two equal products, the organization chooses the one that is less harmful to people and the environment.					
EA5	The organization prefers to provide training on the importance of sustainability and environmental protection.					
EA6	Full awareness of environmental policies and practices is maintained within the company.					
EA7	Active monitoring and reporting on environmental performance indicators is a standard practice within our company.					

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