



## Green Packaging as a Positive Catalyst for Green Environment: Implementation in Emerging Markets around the Globe

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### ABSTRACT

The fundamental definition of packaging is anything that prevents outer elements from penetrating the product and the product from leaving the packaging. Packing consists of wrapping a product to protect it from physical risks and delivering it to the customer without compromising its durability. An emerging issue across the globe today is environmental pollution, which influences mass product packaging for a variety of reasons, one of which is the rapid growth of the population, which stimulates the demand for products; as a result, companies develop products to meet these needs, which ultimately leads to the packaging of products for protection, handling, delivery, and preservation. Thus, high population expansion leads to massive consumption, which has detrimental environmental effects. As a consequence of these factors, packing contributes to soil contamination, environmental waste, an increase in carbon emissions, and the use of a vast array of other resources. Cumulatively, packaging has become a significant source of environmental footprints and damage to environmental sustainability. Businesses that are environmentally conscious and concerned with future generations and the environment are using flexible and long-lasting methods to meet the growing need for green packaging. Reducing carbon footprints, waste, pollution, energy consumption, cost savings, promoting CSR (corporate social responsibility), eco-friendly packaging, and increasing customer pleasure are the primary objectives of these businesses. There are very few companies that are adopting the 4 Rs (remove, reduce, reuse, and recycle) as a key facilitator of the current recycling strategy, with fast-moving consumer goods (FMCG) corporations leading the way.

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## 1. Introduction

Packaging serves users, customers, and producers in numerous ways. Globalization has increased worldwide firms because of free trade and open borders, which promote packaging development. Packaging is essential in modern culture. As the world's population grows and supply networks become more complicated, "The Future of Global Packaging to 2022" predicts that the worldwide packaging market will grow by 2.9 percent yearly and reach 980 billion US dollars in 2022, prompting a switch from non-green to green packaging. Smithers Pira, 2017. The aforementioned advancements are threatening the environment and causing harmful changes and environmental disturbances, which threaten environmental sustainability (Schaffartzik, Duro, & Krausmann, 2019). Orzan, Cruceru, Bălăceanu, and Chivu (2018) states that packaging is a major contributor to environmental deterioration; hence, the present call to action is to assess the social effect of non-green packaging and provide a roadmap for its replacement.

Green packaging reduces a product's manufacturing, usage, and disposal's environmental effect. This includes using recyclable or biodegradable packaging materials like paper, cardboard, and bamboo; using materials that can be reused or repurposed; and encouraging consumers to decrease their packing. Producing and transporting green packaging reduces emissions.

Green packaging is a form of packaging composed of recyclable and ecologically friendly materials. It contributes to the reduction of trash and may be reused, composted, or repurposed. This makes eco-friendly packaging a great option for businesses seeking to decrease their environmental impact without sacrificing product safety or transit efficiency. Green packaging is a form of packaging that uses eco-friendly materials and procedures. This involves the use of biodegradable, recyclable, or recycled materials in the packaging's construction as well as the reduction of energy and water use during manufacture. In addition, green packaging is often optimized for transport in order to save waste and transportation cost.

The notion of green packaging is to decrease the amount of trash generated by conventional packaging. It is centered on reducing, reusing, and recycling resources in order to produce sustainable solutions for both companies and consumers. Green packaging may be manufactured from paper, cardboard, jute, natural fibers, recycled plastics, and bioplastics, among other materials. As businesses increasingly shift away from single-use plastics, green packaging presents a realistic option that may help preserve the environment. Green packaging is an essential topic for businesses to consider in their attempts to become more sustainable. Green packaging emphasizes the use of renewable and recyclable materials, as well as the reduction of energy consumption during manufacture and distribution.

Many advantages are associated with green packaging. To begin with, it minimizes the amount of fresh materials used in the manufacturing process, which may help firms cut production costs and increase their profitability. In addition, green packaging may help minimize waste since recycled or reused materials do not need to be discarded or thrown away as often as new ones.

To reach the objective of a cleaner, greener supply chain network, it is crucial for all stakeholders to get proper training and instruction in green packaging methods, as well as to engage in research and development (R&D). This will help them see the significance of adopting environmentally friendly solutions across the board.

Design management is vital for the production of eco-friendly packaging. It takes a range of knowledge and abilities, such as a comprehension of material structure optimization, environmental awareness, knowledge of box structures, familiarity with material consumption, and printing processes. A designer should be able to utilize these concepts to produce eco-friendly packaging that meets the needs of the client. To be a successful designer of environmentally friendly packaging, one must prioritize the durability and recyclability of materials. They should also guarantee that the packaging meets the requirements established by regulatory authorities such as ISO. FMCG firms may eliminate waste and enhance their package designs to obtain a competitive advantage. The present state of the environment has grown more untenable and demands immediate care. Businesses are now under greater pressure to decrease their carbon footprint, manage waste effectively, and comply with governments' rigorous rules. This is especially true for businesses dependent on natural resources, such as manufacturing, energy generation, and transportation. In order to prevent environmental destruction, businesses must immediately minimize their carbon footprints. In recent years, businesses have sought out more sustainable packaging options in an effort to lessen their environmental impact. Sustainable packaging is created with a minimum effect on the environment. It may be readily reused, recycled, or composted and does not contain any harmful substances that might jeopardize human health or harm ecosystems. Green packaging is a powerful instrument for establishing a green environment. It facilitates the correct disposal of these items and contributes to the reduction of waste produced. This is particularly true for third-world nations, where environmental issues are many.

Governments throughout the globe are progressively emphasizing eco-friendly strategies to attain their goals. In an effort to acquire a competitive edge and decrease expenses, businesses have also started to implement environmentally friendly methods. Reducing waste,

lowering carbon emissions, enhancing corporate social responsibility, and therefore reducing costs all contribute to enhanced profitability and customer happiness.

The economic and environmental advantages of green packaging are many. While firms in affluent nations continue to implement green packaging techniques, comparable efforts are required in less developed countries. To adopt sustainable and environmentally friendly methods, more focus must be placed on eliminating waste, utilizing recyclable materials, reusing items wherever feasible, and decreasing quantity.

This research is to investigate the viability of green packaging in the FMCG sector as a means of enhancing corporate performance, profitability, customer happiness, and environmental protection. Specifically, this study seeks to determine whether customers in third-world nations value and favorably react to programs promoting environmentally friendly packaging important words.

Green packaging avoids the discharge of pollutants, consequently lowering global warming and the use of energy resources. It aids in the reduction of trash created by traditional techniques of packing, thereby avoiding land and water pollution. In addition, by using biodegradable materials like paper, fabric, and starch-based goods. Global warming, Rising sea levels, harsh weather, glacier melting, increased drought and flood risk, heat waves, and storms are among the phenomenon's most prominent effects. In addition, it impacts biodiversity by modifying the habitats of species, causing a rise in extinction rates worldwide.

Corporate Social Responsibility (CSR) is an ethical framework in which businesses seek to enhance their social and environmental impact while simultaneously creating economic benefits for both the firm and society. (Global Business Council)

## **Literature Review**

Global acceptance of the notion of green packaging has led to an increase in study in the sector. Green packaging encompasses a vast array of operations, including the sourcing and selection of ecologically friendly materials, manufacturing processes, printing techniques that minimize waste, shipping methods, and disposal strategies. As customers are now more concerned about the environment and green efforts, ensuring sustainability is the most crucial component.

According to our Conceptual Framework, green packaging is a globally recognized idea that is seen as essential to accomplishing long-term sustainability objectives. By using green packaging solutions, firms may minimize their carbon footprint, reduce trash creation, and promote corporate social responsibility (CSR). In addition to environmental benefits, decreasing environmental footprints provides organizations with financial advantages. The variables are given in further detail below.

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### **2.1. Carbon Footprint**

The carbon footprint is the amount of carbon dioxide and other greenhouse gases emitted into the atmosphere as a result of human activity. It takes into consideration all stages of production, from manufacturing and packaging raw materials using energy, burning fossil fuels,

and employing diverse carbon-emitting sources of power to transporting the item to its ultimate destination.

Based on Rouse (2016) An individual's or organization's carbon footprint may be computed by adding the total quantity of carbon dioxide and other greenhouse gases emitted. As a result, it is essential to comprehend and evaluate the main and secondary carbon footprints to have a full understanding of their environmental effect. The primary footprint refers to direct emissions from fossil fuel combustion and other sources.

According to Bhamra, in order to lower their carbon footprint, businesses are placing a greater emphasis on package design management. This involves investigating novel and innovative use of natural and recyclable materials such that packaging contributes less than fifty percent of total carbon emissions. Also, businesses are adopting more sustainable practices, such as reusing, reducing, and recycling resources wherever feasible. As the world population grows, so does the demand for consumer products, leading to an ever-growing amount of packaging trash. The environmental implications of this form of garbage are widely established and include climate change, pollution, and a decline in biodiversity. Since each stage of the value chain, from the production process to the disposal of packaging materials in landfills, rivers, or seas, may result in considerable carbon emissions, packaging waste is directly linked to carbon emissions. According to research conducted by Bhamra, 1.9 million metric tons of packaging trash produce the same amount of greenhouse gas emissions as 860,000 automobiles each year. This information demonstrates how detrimental packaging is in terms of environmental waste.

To lower their carbon footprint, businesses must implement efficient waste management procedures. This should include the safe storage and disposal of hazardous items, such as cardboard, paper, glass, aluminum, steel, and plastics, whose improper handling might result in environmental harm. To ensure these materials are correctly handled, firms should engage in dependable recycling systems and analyze the carbon impact of their goods using technologies such as life cycle assessment. In addition, businesses should collaborate with governments and communities to raise public awareness of the significance of decreasing carbon footprints. Through effective waste management methods, companies may decrease their environmental impact and contribute to a greener future.

### **Green Procurement**

According to Min and Galle (1997), "green procurement" is a method of acquiring items and services from vendors and suppliers that are in conformity with environmental rules. Businesses that use green procurement focus on environmental issues throughout the procurement process by picking goods and services with low carbon emissions and minimal resource usage. This reduces both the environmental effect of greenhouse emissions and the expenditures associated with energy and resources. Companies that use green procurement strategies prioritize the selection of suppliers that employ sustainable business procedures. Green procurement advocates the usage of green goods in order to fulfill the expectations of environmentally concerned customers. By choosing suppliers that supply eco-friendly items, businesses may both please their clients and reduce their own environmental impact. Min and Galle (1997) also suggest that organizations must match their environmental aims with their buying strategy in order to successfully execute green procurement methods. This entails evaluating the environmental performance of prospective vendors and suppliers and ensuring that they comply with environmental requirements. By verifying that the items acquired adhere to green standards, corporations may rest assured that their procurement methods are eco-friendly. Green procurement is an essential method for firms to decrease their environmental impact while simultaneously satisfying consumer needs.

The notion of green goods has acquired great appeal in recent years. By cooperating with green suppliers that adhere to practices with minimal environmental effect, businesses may lower their carbon footprint and save resources. This transition towards more sustainable and eco-friendly practices is beneficial not only for the environment but also for the financial health and productivity of enterprises. With technological advancements, it is now simpler than ever to make recyclable and reusable green items, reducing our total environmental impact. Using such environmentally friendly items may be an effective method for firms to show their commitment to sustainability while also getting a commercial advantage. Hence, adding green goods to

corporate operations is a wise and responsible move for every organization. The advantages of using green goods are evident; their usage may reduce energy consumption, lower pollution levels, and minimize waste production. In addition, it may result in long-term cost and resource savings. By investing in sustainable practices such as the use of green goods, businesses may raise their efficiency and enhance their reputation. This is ultimately helpful for the environment as well as for companies.

According to Hokey Min and Galle (1997), carbon labels are essential for environmentally concerned firms because they help them limit the amount of harmful waste created during production and raise customer awareness. This kind of labeling is an efficient manner of enhancing firms' goodwill, so encouraging current green consumers to stay loyal and recruiting new ones. In addition, carbon labels give visible proof that businesses are pursuing sustainability.

### **Remove, Reduce, Reuse and Recycle (4Rs)**

It might be advantageous for organizations to boost their financial and operational performance by analyzing the whole value chain at the upstream level. This may be accomplished by reducing unneeded layers of packing material or over packing product material, resulting in reduced energy consumption and the preservation of natural resources. These strategies may also result in a decrease in waste and savings on expenses. By comprehending the whole value chain, organizations are able to discover areas where they may decrease expenses and boost productivity. This allows the company to maximize its resources and take advantage of all opportunities. In addition, it will assist businesses to remain competitive in the market by ensuring that their goods are priced competitively, resulting in higher profits.

Nevertheless, lightweight packing provides several advantages. Its decreased weight decreases fuel consumption, leading to lower air pollution and fewer greenhouse gas (GHG) emissions. It also implies that more items may be carried in the same amount of space, resulting in enhanced productivity and cost savings. In addition, by promoting the reuse of packaging material, it promotes more environmentally responsible manufacturing and consumption practices. In addition, when firms begin to design their packaging with reusability in mind, the quantity of energy and power needed during the production process is substantially decreased. Thus, carbon emissions from fossil fuel combustion are reduced. Reusable packaging lowers the requirement for extra materials that would have been required for the creation of disposable packaging. As a result, this helps reduce the quantity of trash produced and its associated environmental impacts. Moreover, reuse facilitates reducing the total expenses involved with purchasing packing material regularly. So, while developing their product packaging, businesses must consider the possibility of reusability.

Recycling is one of the most efficient methods for minimizing carbon footprints and conserving resources. Recycling contributes to a sustainable environment by both conserving resources and creating profits. To guarantee that recyclable materials such as paper, cardboard, steel, plastic, and aluminum are recycled and not disposed of in landfills, governments should enact regulations. Using tools such as Unilever's Recycling and Recovery Index (RRI), which assesses the rate of recovery for key packaging types, companies may also take the initiative to contribute to the process. Recycling is a fantastic method for reducing carbon footprints and maintaining a healthy ecosystem.

In addition, it is vital to educate the general public about the importance of recycling. People will be encouraged to engage in more sustainable behaviors if they are educated on the necessity of responsible consumerism and environmental preservation. Governments should implement campaigns and initiatives to spread this information so that we may continue to lower our carbon footprints through recycling.

In conclusion, it is the duty of governments and companies to guarantee that materials are properly recycled, therefore decreasing our carbon footprints and conserving resources. Businesses may help achieve this objective by implementing regulations and using instruments such as the Recycling and Recovery Index (RRI). In order to achieve a greener future, it is also essential to educate the public about responsible consumption.

## **Role of Biodegradable Packaging**

Biodegradable packaging is an efficient method for minimizing waste, carbon footprint, and environmental harm. Using biodegradable materials, such as plastic and corrugated boxes and sacks, as opposed to hazardous virgin material, might be advantageous for businesses. Utilizing these materials in conjunction with new things increases sustainability, reduces costs, and lowers environmental risk.

According to recent research conducted by Engro Foods Ltd., the introduction of biodegradable packaging for its brand Olpers has not only benefited the environment but also the firm. By reducing unneeded layers of packaging, the company is able to cut manufacturing costs and increase its market competitiveness. EFL has also begun to offer innovative and inventive packaging forms for its 250-ml one-liter box. This has made them even more environmentally friendly and biodegradable than before. In addition to being a safer alternative for customers, its microwaveability makes it a microwaveable product. In addition, EFL is investigating new and inventive strategies to maintain its position as a market leader. In terms of innovation and sustainability, this has allowed them to remain one of the top corporations. Thus, it is clear that EFL's efforts to make their packaging eco-friendly and biodegradable are noteworthy. In conclusion, it can be said that Engro Foods Limited's use of biodegradable packaging has been a huge success and is expected to have a beneficial long-term influence on both the firm and the environment. All businesses should support this movement towards eco-friendly packaging to lessen their environmental impact.

The Life Cycle Assessment (LCA) is a crucial tool for businesses to evaluate and lower their environmental and social costs. PLCA can predict solid and liquid waste, air pollution, landfill disposal, and greenhouse gas emissions by analyzing energy use, gas usage, raw material consumption, and water consumption. Businesses may use this information to make data-driven choices on the best techniques for reducing their negative environmental impact and establishing themselves as eco-leaders.

In addition, life cycle assessment software is available to assist businesses in tracking and maintaining a database of their carbon footprints. This data may be used to assess progress towards sustainability goals over time and to influence future choices about where to allocate resources to reduce the environmental effect of their activities. By using these tools, organizations may make responsible choices that will assist them in reducing their negative environmental impact and becoming more environmentally aware leaders. Eventually, the PLCA will be an essential instrument for businesses to measure and reduce their environmental and social costs while enhancing their image as environmentally responsible leaders. With the current software solutions, businesses may make ethical choices and reduce their carbon footprints to contribute positively to a sustainable future.

Unilever has set an ambitious goal to cut manufacturing waste by 40% per ton by 2025. This is an important step in their commitment to sustainability and circular economy goals. Unilever will need to prioritize effective resource management and use new technologies and strategies in order to reach this objective.

To accomplish sustainable packaging objectives, design management is of the utmost significance. A designer should have an in-depth understanding and skill about optimum material structure, environmental consciousness, box structure knowledge, material utilisation, and the printing process. In addition, they must be able to develop novel solutions that are commercially feasible and minimize ecological impacts. In order to stay competitive, FMCG firms are more conscious of the need to decrease waste and enhance package design. Unilever has revamped its goods such as Twister, Paddle Pop, and Frutarre, as well as its beauty care line, in order to minimize the number of container layers. In industrialized nations, several corporations are getting attention for their efforts to minimize carbon emissions, resulting in savings on transportation and storage. Such actions go a long way towards minimizing the environmental impact of FMCG enterprises and therefore ensuring their long-term viability.

## **Supply Chain Logistic (Transport) and in Transit Packaging**

According to Sarah Dowdey, the use of lightweight and optimal structural materials may have a substantial effect on transportation costs and carbon footprints. These materials make it

possible to carry bulky items in a single shipment, resulting in higher space utilization. This leads to more CO<sub>2</sub> emissions are reduced by the use of fuel-efficient vehicles. By estimating the yearly fuel consumption of various modes of transportation, it is feasible to identify the most cost-effective and ecologically friendly alternative. This may assist companies in making educated decisions about their transportation requirements and eventually contribute to the reduction of their carbon footprints. In conclusion, the use of lightweight and optimal structural materials for transportation offers various advantages in terms of cost savings, fuel economy, and environmental impact.

### **Environmental Footprint, Wastage, Pollutants, and Pollution**

There is an obvious need in the FMCG industry to decrease packaging waste and its accompanying environmental effects. Businesses are responsible for manufacturing and distributing their goods in a manner that minimizes environmental impact. To overcome this issue, businesses must prioritize the reduction of packaging materials, the implementation of efficient recycling procedures, and the use of sustainable resources in manufacturing. To ensure that packaging has no detrimental effects on the environment or customers, businesses should carefully assess the materials used to package their goods. Recyclable and biodegradable materials are the best options since they can be readily reused or decomposed without causing more trash. Advantageous are packaging designs that employ less material while providing product protection. Also, businesses may minimize waste by introducing programs such as reusable containers and less packaging that is not recyclable. These activities may have positive effects on both the company's financial line and the environment. Following these measures will guarantee that packaging is not only safe for customers but also has minimal adverse effects on the environment.

According to a study done by De Canio, Martinelli, and Endrighi (2021) on the sustainability of packaged food goods, customers' purchasing intentions are impacted by the sustainability policies of manufacturers and merchants, and they also care about the welfare of society.

According to Lee (2014), green packaging and activities may promote green behavior across society, resulting in a green and clean environment. Environmental awareness and corporate social responsibility (CSR) initiatives impact mentality and, in turn, purchasing intent. (Salam, Smith, & Mehboob, 2022). Pandemics like COVID-19 have had a global influence and played a crucial part in shaping the paradigm and thinking style of individuals, who no longer use non-environmentally friendly items (Cachero-Martínez, 2020).

As stated by Sinclair (2000), display packaging is the third kind of packaging. This kind of packaging is used for retail presentation since it helps attract consumers and improve product sales. Display packaging may include features such as identifying tags or labels, promotional materials, shelf-ready packages that are meant to take up less space on shelves, and stackable or collapsible display containers. The designs, materials, and dimensions of display packaging vary from product to product based on the particular requirements of each item and the location where it will be sold.

Tertiary packing refers to the bigger containers or boxes that facilitate the transportation of numerous items. This sort of packaging reduces expenses for businesses by being recyclable and reusable. Due to the material's sturdiness, it also offers protection against transit-related damage. By employing stackable containers, this style of packing facilitates storage, making it simpler and more efficient to store items. Because of its cost-effectiveness, efficacy, and protection, tertiary packaging is gaining popularity among businesses. It may help prolong the shelf life of a product and eliminate the need for extra handling or repackaging while goods are in transit. As a result, tertiary packaging is a terrific way for businesses to minimize expenses while keeping their goods secure throughout transport. In Pakistan, for instance, "Pepsi" is shrink-wrapping six-packs of "Aquifina" spring water.

In accordance with the EPA (2009) For decades, the packaging sector has been one of the leading sources of pollution and waste. Every product needs packaging, which often consists of a mix of glass, paper, plastic, and metal. These materials are used for constraint, handling, protection, distribution, and marketing, all of which generate a variety of waste types. The bulk of this trash is generated during the packaging process, and businesses have struggled with this

environmental problem for decades. In order to lessen their environmental impact, many businesses are turning to more eco-friendly packaging options in response to increasing demand from customers and governments. Many programs are in place to promote sustainability, such as the use of recyclable materials and biodegradable packaging. These initiatives are essential for reducing the amount of waste created throughout the product packaging process, and they will contribute to a more sustainable future for everyone. Companies must take responsibility for the environmental consequences of their product packaging and implement initiatives to limit the quantity of related garbage.

The usage of packing materials is a significant contributor to environmental pollution and has serious effects on human health, including respiratory ailments, skin irritation, and allergies. As landfills are the most prevalent way to dispose of this garbage, they pose considerable environmental problems. These landfills release greenhouse gases and volatile organic compounds (VOCs), which contribute to global warming and climate change. Moreover, waste contaminants may infiltrate into local water systems, poisoning drinking water supplies and endangering human health. Hence, it is evident that the use of packaging materials has detrimental effects on the environment and human health, making the adoption of sustainable packaging strategies essential. One method to do this is by decreasing the amount of packaging used and opting for recyclable or compostable materials. For instance, paper-based packaging is more environmentally friendly than single-use plastic containers, and biodegradable and plant-based materials are also superior choices. In addition, firms might consider employing reusable packaging materials, such as sturdy containers and multiple-use bags. In this manner, companies may reduce their environmental impact while fostering long-term sustainability. Therefore, it is evident that sustainable packaging methods are required to limit the quantity of waste generated by packaging materials and their related negative environmental implications.

The packaging's hazardous pollutant has disastrous effects on human health and well-being. According to research, these contaminants may cause serious respiratory problems, such as asthma and cancer. The environmental hazards of packaging extend beyond its impact on human health, with studies indicating that it can cause resource scarcity, the depletion of nonrenewable resources, climate change, an increase in landfill space, groundwater pollution, methane gas emissions, greenhouse gas emissions, a reduction in biodiversity, and the emission of additional harmful pollutants. Ultimately, this may contribute to global warming. Thus, actions must be taken to decrease or eliminate the use of packaging that includes these harmful contaminants. It is evident that further study and action are required to safeguard the environment from the harms of packaging.

By concentrating on the design of the product and its packaging, upstream solutions may assist in the reduction of packaging waste. Consider design elements that need less material, fewer layers, less weight, and smaller packaging. In addition, they should use biodegradable or recycled materials to boost the sustainability of their packaging materials.

According to the EPA (1995), the buying department of State Farm Mutual Automobile Insurance Company discovered an opportunity to minimize waste output by making a simple adjustment to how they acquired paper. Working with one of their suppliers, they were able to arrange for paper to be sent in containers containing 2,500 sheets rather than individually wrapped reams of 500 pages. This modest improvement was sufficient to avoid the yearly production of six tons of garbage, demonstrating the beneficial environmental effect that may be accomplished with minor changes to purchasing and purchasing processes. These efforts indicate a commitment to sustainability and serve as a model for businesses in many sectors. State Farm Mutual Automobile Insurance Company's efforts convey a useful lesson: sustainable purchasing practices are achievable regardless of the size or breadth of a firm, and simple improvements may result in huge environmental advantages. In order to lessen their own environmental impact and build a more sustainable future, companies should seek out opportunities such as this one where they may make minor adjustments to their purchases and purchasing processes.

The main packaging strategy contributes to the reduction of packaging materials and the enhancement of the product's sustainability. Procter & Gamble altered the typical form of vegetable oil canisters into a rectangular shape to highlight this point. This simple design modification allowed them to reduce 30 percent of the plastic used, dramatically lowering the



total amount of garbage created by the product. This method was also advantageous in terms of cost savings, since it resulted in a decrease in the quantity of material utilized, reducing their expenditures.

### **Corporate Social Responsibility (CSR)**

Companies that practice corporate social responsibility (CSR) aim to influence the economic, social, and environmental conditions of their surroundings. The implementation of CSR initiatives is a direct outcome of legislative obligations imposed by governing authorities to guarantee that companies uphold ethical standards in their operations and dealings with the public.

By adopting several measures, the FMCG industry has made significant progress in decreasing packaging waste and its carbon footprint. Packaging reduction is one of the industry's most successful initiatives. Reducing packing may be accomplished via a variety of means, including the use of recyclable materials, the decrease of product size, and the development of more efficient package designs. Moreover, corporations might create campaigns to encourage consumers to reuse or recycle their packaging materials. These approaches aid in minimizing the environmental impact of packaging and encourage sustainability. Moreover, from a corporate social responsibility (CSR) standpoint, package reduction measures might be advantageous for FMCG firms.

By proving that they are working to reduce their carbon footprint, businesses may contribute to global sustainability initiatives while simultaneously earning a competitive edge. Additionally, because less material is needed during the packing process, minimizing packaging may help firms reduce their manufacturing and disposal expenses. Furthermore, by making deliberate choices to decrease packaging waste, businesses may improve their corporate social responsibility (CSR).

According to Carter and Ellram (1998), organizations throughout the globe are making substantial expenditures to implement environmentally and socially responsible policies. It has been observed that these techniques are closely related to a company's goodwill and stock.

According to Engle (2007); Welford and Frost (2006), corporate social responsibility (CSR) is an emerging term, and businesses are progressively embracing the notion of being more socially responsible. CSR requires proactive actions to ensure firms adhere to ethical principles and consider environmental, economic, and social concerns. This notion involves several elements, including applying sustainable practices in business operations, encouraging responsible consumption, lowering emissions, and contributing to the well-being of local people. In addition, it is essential for businesses to respect workers' rights and develop transparent supply chain networks. CSR projects often entail investments in education, research and development, healthcare, and other causes. By participating in such initiatives, companies may develop their connections with consumers, communities, and other stakeholders while also positively impacting society.

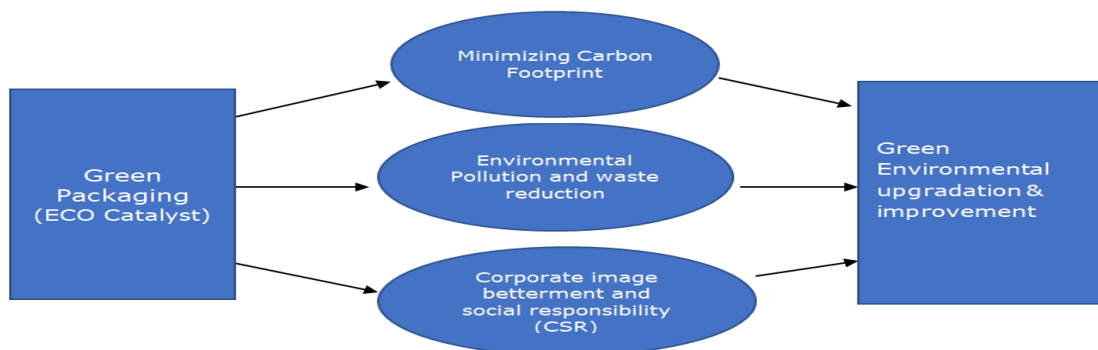
According to Sroufe (2003), businesses must now address the social responsibility concerns of their customers. As visibility and knowledge increase, consumers are increasingly inquiring about how supply chains and supply chain operations alter and affect the environment. From a marketing viewpoint, companies are addressing these topics as part of their CSR operations in order to establish long-term partnerships with their consumers.

CSR may be used efficiently when businesses evaluate their carbon footprint, greenhouse gas emissions, and the environmental impact of waste disposal, since CSR is contingent on a decrease in carbon footprint and environmental waste. The corporation began a social welfare initiative by assigning a set amount of money. Nowadays, businesses are initiating programs by allotting a limited budget for CSR and other initiatives.

This objective is attained through investing in training, education, and research and development (R&D) to encourage all players in the supply chain network, from suppliers to ultimate customers, to use environmentally friendly packaging.

### 3. Conceptual Framework

The proposed conceptual framework is designed to investigate the relationship between green packaging (independent) variable and its impact as a positive catalyst on three (dependent) variables and ultimately its impact on green environment



**Figure: 1**

After evaluating the aforementioned literature, three hypotheses were developed to establish the link between green packaging as a positive accelerator for green environment implementation in growing economies of the world, with particular reference to the FMCG industry. These are the hypotheses:

H1: Green packaging enables carbon footprint reduction for establishing a sustainable green environment.

H2: Green packaging plays a pivotal role in environmental waste reduction thus lead towards an ecofriendly environment.

H3: Green packaging portrays a positive social image of organizations with CSR labeling of firms.

### Research Methodology

The data collection method for this study is of a quantitative approach. Primary data was obtained from library, online and field sources. To ensure the reliability of the results, questionnaires were distributed to employees of Unilever Pakistan and Engro Foods Ltd to collect their opinions on the topic at hand. In addition, interviews were conducted with the employees of aforementioned organizations.

It involves both primary and secondary sources for the collection of data. Sources for secondary data are Research journals, Newspapers, Published papers, Books and, Scholarly websites.

Sources for primary comprises a 5-point Likert scale-based quiz (strongly disagree, disagree, neutral, agree, and strongly agree). Employee responses to a questionnaire administered by Unilever and Engro Foods were selected.

The gathered data will then be examined to determine the project's efficacy, leading to the formulation of important outcomes and recommendations. These conclusions and suggestions will be based on the collected data and an assessment of any possible underlying trends or patterns that may be discerned from this data. With this procedure, significant insights might also be gathered for future projects.

Considering this is a quantitative study with respondents from Unilever and Engro Foods Ltd. in Pakistan, we will adopt a stratified random sample approach in which all workers will be categorized into distinct strata, as will be detailed in further detail below. 100 surveys were

submitted by both Unilever Pakistan and Engro Foods Ltd, and the following categories were created based on the responses:

Director Stratum; Senior Manager Stratum; Manager Stratum  
 100 respondents from each company fell into the following categories:

- a) 60 from Unilever Pakistan
- b) 40 from Engro Foods Ltd

Directors = 1%, Senior Executives = 17%, Managers equal=22%  
 Assistant Managers=34%, Workers = 26%

**Reliability Analysis**

Questionnaire data was analyzed by reliability test and Cronbach's alpha was used to test the reliability of the instrument. The coefficient of reliability (alpha) which is 0.783 greater than alpha 0.7 exhibiting that the internal consistency of the variables are quite high.

Table 1: Reliability Statistics

Value of Cronbach's Alpha	N= no of Items
.783	28

H1: Green packaging enables carbon footprint reduction for establishing a sustainable green environment.

**5.1. Hypothesis (H1) testing**

Hypothesis model was developed between carbon footprint and green packaging. In this model, the green packaging practice adopted by the organization is the independent variable and the carbon footprint is the dependent variable. The relationship between the two variables found the desired result of a sustainable green environment. In addition, green companies by implementing practices such as 4Rs (Remove, Reduce, Reuse and Recycle), Life Cycle Assessment, Design Management, Biodegradability and Green Procurement. Mathematically: Carbon footprint reduction (CFR) =  $\alpha + \beta_1$  Via SPSS,

**Table: 2 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.535(a)	.287	.279	.27674

- a) Predictors: (Constant), Green Packaging
- b) Dependent Variable: Carbon footprint

As R square = 0.287

So it explains that, carbon footprint reduction = 28.7% described by green packaging.  
 Adjusted R square = 0.279 or 27.9% = a significant value .

**Table: 3 Coefficients**

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.121	.406		2.765	.007
	Green Packaging	.611	.097	.535	6.274	.000

- a) Dependent Variable: Carbon Foot Print reduction

Model Summary as below:

Carbon footprint reduction (CFR) = 1.121+ .611

Thus Green packaging strategies incremental gain by 1 % would reduce carbon footprint by a significant amount of 61.1% and leads ultimately towards green environment.

**5.2. t- Statistics**

Overall t statistics also suggests that carbon footprint reduction is dependent on green packaging strategies of firm.

**Table: 4 Anova**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.015	1	3.015	39.366	.000(a)
	Residual	7.505	98	.077		
	Total	10.520	99			

- a) Predictors: (Constant), Green Packaging  
 b) Dependent Variable: Carbon Footprints

Result = overall model is significant (the p-value of F-Test < .05).

Carbon footprint reduction is 28.7% by via applying green packaging strategies.

Hypotheses vetted. Green packaging strategies reduce carbon footprints and evolves green and clean environment.

H2:Green packaging plays a pivotal role in environmental waste reduction thus lead towards an ecofriendly environment.

### 5.3. Hypothesis (H2) Testing

H2 developed among environmental waste reduction and green packaging.

Mathematically model is shown as below:

$$\text{Environmental wastage reduction (EAWR)} = \alpha + \beta_1$$

By applying SPSS:

**Table: 5 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.519(a)	.270	.262	.26769

- a) Predictors: (Constant), Green Packaging  
 b) Dependent Variable: Environmental wastage reduction

As R square = 0.27

So it explains that, environmental waste reduction = 27% described via green packaging. Adjusted R square = 0.262 or 26.2% = a significant value.

**Table: 6 Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.777	.392		4.529	.000
	Green Packaging	.567	.094	.519	6.013	.000

- a) Dependent Variable: Environmental wastage reduction Pollution

Model Summary as

$$\text{Environmental wastage reduction (EAWR)} = 1.777 + 0.567$$

Thus H2 suggests that Green packaging strategies incremental gain by 1 % would reduce Environmental wastage by a significant amount of 56.7% and leads ultimately towards green environment.

**Table: 7 ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	2.591	1	2.591	36.161	.000(a)
	Residual	7.022	98	.072		
	Total	9.614	99			

- a) Predictors: (Constant), Green Packaging
- b) Dependent Variable: Environmental wastage reduction

Result = overall model is significant (the p-value of F-Test < .05).

Environmental footprint reduction is 27% by via applying green packaging strategies.

Hypotheses vetted. Green packaging strategies reduce environmental wastage and footprints and evolves green and clean environment.

H3: Green packaging portrays a positive social image of organizations with CSR labeling of firms.

### 5.4. Hypothesis (H3) Testing

H3 is showing a test between association of CSR and green packaging.

Mathematically:

$$SICSR = \alpha + \beta_1$$

By applying SPSS,

**Table: 8 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493(a)	.243	.235	.24396

- a) Predictors: (Constant), Green Packaging
- b) Dependent Variable: Social Image & CSR

As R square = 0.243

So it explains that, social image and CSR = 24.3% described via green packaging.

Adjusted R square = 0.235 or 23.5% = a significant value .

**Table: 9 Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	1.776	.358		4.969	.000
	Green Packaging	.482	.086	.493	5.610	.000

- a) Dependent Variable: Social Image & CSR

Model Summary as:

$$SICSR = 1.776 + 0.482$$

Thus H3 suggests that Green packaging strategies incremental gain by 1 % would promotes social image and CSR activities by a significant amount of 48% and leads ultimately towards green environment.

**Table: 10 ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
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1	Regression	1.873	1	1.873	31.474	.000(a)
	Residual	5.832	98	.060		
	Total	7.706	99			

- a) Predictors: (Constant), Green Packaging  
b) Dependent Variable: Social Image & CSR

Result = overall model is significant (the p-value of F-Test < .05).

Social image and CSR activities is 24.3% by via applying green packaging strategies.

Hypotheses vetted.

Green packaging strategies promotes and highlights social image and CSR activities of firms and evolves green and clean environment.

**Table: 11 Key Findings**

S.No	Hyp	Hypothesis	Findings
1	H1	Green packaging enables carbon footprint reduction for establishing a sustainable green environment	Vetted
2	H2	Green packaging plays a pivotal role in environmental waste reduction thus lead towards an ecofriendly environment.	Vetted
3	H3	Green packaging portrays a positive social image of organizations with CSR labeling of firms.	Vetted

By using SPSS and from an in-depth analysis of two organizations, Unilever and Engro Foods Ltd. We tested and proved all the hypotheses that role of Green Packaging as a positive catalyst for Green Environment implementation in emerging economies of the globe (A Case Study of FMCG sector operating in Pakistan) by taking into account increase market share, profitability and customer satisfaction as well.

## 5.5. Discussion

Reducing one's carbon footprint is an essential component of environmental protection. To reduce your carbon footprint, you can make changes in your daily life, such as using energy-efficient appliances and electronics, using renewable energy sources for power generation, reducing your car use in terms of public transportation, eating locally produced food with less packaging, and selecting green and disposable materials. By participating in sustainable activities such as recycling trash, reducing the use of new materials, and limiting pollution from factories, a corporation may reduce its carbon footprint. Yet, it is essential to emphasize that firms are also responsible for excessive packaging, which may be seen as an unneeded type of waste. Carbon labels are an essential tool for assessing the environmental effects of corporate activities. By analyzing the rate of carbon emissions, businesses may make educated choices about how to minimize consumption and waste generation. This allows them to become more efficient and save money by decreasing their transportation and storage expenses. Also, these carbon emission reductions reflect a company's dedication to environmental responsibility.

Green packaging aids businesses in establishing a good brand image with consumers and society. Moreover, it assures that its goods are of high quality and sustainable. This strengthens client loyalty and raises the comparative worth of their goods compared to those of their rivals. Additionally, environmentally responsible packaging may minimize manufacturing costs.

## 6. Conclusion

Even though the research was limited in some ways, the study of Pakistan's FMCG industry adds a lot of important information to what is already known. In addition to this, it highlights the link between green environmental activities and green packaging practices, as well as other factors whose synergistic effects make this association stronger.

The findings lead one to the conclusion that green packaging practices play an essential role, and our research theme, "Green Packaging as a Positive Catalyst for Green Environment Implementation in Emerging Economies of the Globe (A Case Study of the FMCG Sector Operating in Pakistan)," is evaluated using hypotheses and key variables such as carbon emission reduction, environmental footprint reduction, and social image and CSR initiatives as key enablers in this

regard. As a result, the findings of the research indicate that the FMCG industry can strengthen its competitiveness by implementing green packaging practices. These practices not only cut costs, but they also make customers happy and contribute to the creation and maintenance of a clean, green, and sustainable environment.

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