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*Factors Affecting Consumers' Purchase Intentions  
Towards Recycled Products*

A THESIS SUBMITTED BY

Sherine Ahmed Esmat

TO THE

*School of Sciences and Engineering*

*in partial fulfillment of the requirements for the degree of  
Master of Science in Sustainable Development*

UNDER THE SUPERVISION OF

Dr. Mohamed Nagib AbouZeid  
Professor of Construction Engineering, AUC

Fall 2022

# Declaration of Authorship

I, Sherine Esmat declare that this thesis titled, "Consumers' Purchase Intentions Towards Recycled Products" and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:



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Date:

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# Disclaimer

This study involves a survey which, similar to other conventional work, bears statistical errors and confidence thresholds. Any brand names mentioned herein were only meant to provide valid examples for key aspects of the work in an attempt to reach valid end results.

# Abstract

The work executed addresses the status of recycling industry in Egypt and its relation to the current sustainability trends as well as climate change issues. It also identifies the main concerns of consumers when purchasing recycled products. Consequently, identifies the key pillars that need to be applied or communicated with the target consumers to enhance the concept of selling recycled products and increase its market share. Since this industry is significantly broad, the focus of the study was only on recycled PET plastic bottles (rPET), this is to ensure attaining accurate and reliable results.

An interview and a site visit were conducted with the main and only producer of rPET in Egypt and MENA region, BariQ. Unveiling the recycling industry's details starting from the primary source, revealing its struggles and benefits. Another two interviews were conducted with two selected secondary producers, the first is L'Oreal, focusing on their recycled shampoo bottles. The second is Nestle, focusing on their recycled water bottles. This is to get an overview on their market performance besides spotting their challenges and needs. After that, an online survey was constructed, targeting potential consumers of the mentioned brands to pinpoint the main factors affecting their purchase actions towards recycled products. Mainly questioning if the main factors were the brand, price, quality, an unknown feeling or other factors.

The results showed that the producers are exerting huge efforts to improve the market of recycling, but are not receiving enough support from their consumers. They seek to have an identified system and clear frameworks to work with, in order to gain control on the whole process.

Regarding the consumers insights, the survey results showed significant low awareness on Nestle's water bottle to be only 24%, even though they created an online campaign. While L'Oreal got a mere 8.5% for awareness, which was due to not advertising for it, it was only claimed on the bottle. Even though the awareness is low, but supporting the idea of having recycled products in the market reached 75%, which is significantly high, specifically with a greater support for the recycled shampoo bottles. Consumers' main concerns when purchasing Nestle's recycled bottles were: 1. Quality, 2 & 3 Price and Brand. While the main concerns for L'Oreal's recycled bottles were: 1. Effectiveness of shampoo, 2. Brand and 3. Price. Noting that the "Brand" of the product is in the top three requirements needed for making a purchase decision. This supports the stated hypothesis.

Innovative marketing methods are recommended to ensure eliminating all the negative perceptions of consumers. Mainly by raising awareness on the recycled products, through discussing the key messages generated from the survey reflecting the consumer's priorities, expectations and main concerns towards each specific recycled product. Execution can be through a mix of offline and online marketing channels. Eventually, the consumer should feel that purchasing recycled products is an action that creates a shared value and positively contributes to the development of the economy, environment and society.

**Keywords:** Sustainability - Recycling - Branding - Purchase Intentions - Market Value

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# List of Abbreviations

|               |  |
|---------------|--|
| <b>B2B</b>    | <b>Business-To-Business</b>                          |
| <b>CE</b>     | <b>Circular Economy</b>                              |
| <b>EPR</b>    | <b>Extended Producer Responsibility</b>              |
| <b>ESG</b>    | <b>Environment, Social, Governance</b>               |
| <b>EU</b>     | <b>European Union</b>                                |
| <b>GHG</b>    | <b>Greenhouse Gas</b>                                |
| <b>MRF</b>    | <b>Materials Recovery Facility</b>                   |
| <b>PE</b>     | <b>Polyethylene</b>                                  |
| <b>PET</b>    | <b>Polyethylene Terephthalate</b>                    |
| <b>PP</b>     | <b>Polypropylene</b>                                 |
| <b>PPM</b>    | <b>Parts Per Million</b>                             |
| <b>PVC</b>    | <b>Polyvinyl Chloride</b>                            |
| <b>RVM</b>    | <b>Reverse Vending Machine</b>                       |
| <b>SDGs</b>   | <b>Sustainable Development Goals</b>                 |
| <b>SDS</b>    | <b>Sustainable Development Strategy</b>              |
| <b>UN</b>     | <b>United Nations</b>                                |
| <b>US EPA</b> | <b>United States Environmental Protection Agency</b> |
| <b>WTP</b>    | <b>Willingness-To-Pay</b>                            |

# Chapter 1

## Introduction

### 1.1 The Market of Recycled Products

This study portrays the significance of creating a successful market for recycled products. Guagnano (2001) stated that *“Consumers may participate in the sorting and collection of household materials for recycling, but unless the materials are then converted into recycled products and purchased by consumers, there is not environmental benefit”*. Highlighting the vitality of having interested consumers who are willing to purchase recycled products, and not just support the idea verbally, as this is the final step that validates the success of recycled products’ business model.

High rate of waste generation is a major issue in Egypt, in parallel to the vast increase in population. It is crucial to start using the resources *Sustainably*, by reusing or recycling them. As well as encouraging sustainable consumption and production for producers and consumers. When a product is being recycled, it means that the concept of sustainability is considered. Where instead of dumping unused products, these products or materials get a second chance to be reused in the same or a different form. This occurs after going through a certain recycling process that ensures hygiene and applicability of the final product. Recycled products are spreading in the markets in many different forms, they can be found as bags, cases, bottles and clothes or bigger scale objects as machinery, tires and even walls. There are two main stages for producing recycled products, the first is collecting them and transforming them into new raw

materials, and the second stage is taking the recycled raw materials and transforming them to final recycled products that go into the market to be sold to target consumers. Some examples of Egyptian companies that work on the first stage are Zebala Store, Bekia, Go Clean, Green Pan and EverGreen, RecycloBekia and BariQ (Conti et al., 2020). Examples for companies working on the second stage are, ReTyre, Up-Fuse, Mobikya and Reform Studio (Writer, 2017). These examples portray the efforts of the Egyptian entrepreneurs towards efficiently exploiting the waste, visualizing them as valuable resources and giving them a second chance to achieve a profitable circular economy. Multinational companies operating in Egypt also show significant contribution towards recycling, for instance, Adidas, Coca-cola, Pepsi, L'Oreal and Nestle. They all have quantitative targets towards recycling their products. For instance, Nestle is aiming to reach 100% recycled or recyclable products by 2030 (Nestle, 2022).

When recycled products enter the market, they may be in high or low demand, this depends on several aspects that may differ from one product to another, which are all under the umbrella of the product's Market Value. Nevertheless, according to Biddle (2022), there are three major recycling myths that require consideration when introducing a new recycled product in the market, meaning that they are still in the initial phase of getting consumers' acceptance and willingness to pay. These three myths are, recycling products cost too much, the quality of recycled products is low and recycled products are not available when you need them (Biddle, 2022). Proving that these myths are not reflecting reality will be the main support for successfully marketing for recycled products to the target consumers.

## 1.2 Supporting the recycling industry

It is crucial first to understand the reasons behind supporting the recycling industry. According to the World Bank's new published book *What a Waste 2.0*, it has been found that, if no serious action was taken towards waste management, global waste will increase by 70% in 2050 compared to the current levels, and will reach more than triple the current levels in the MENA region (Kaza et al, 2018). This will lead to emitting an abundant amount of methane, which is a toxic greenhouse gas that disrupts the climate and has extremely harmful health effects on the human's respiratory system. According to the UN calculations, greenhouse gas concentrations are at their highest levels in 2 million years (UN Climate Action, 2022).

*"Mismanagement of waste is harming human health and local environments while adding to the climate challenge," said Laura Tuck, Vice President for Sustainable Development, World Bank. "Unfortunately, it is often the poorest in society who are adversely impacted by inadequate waste management. It doesn't have to be this way. Our resources need to be used and then reused continuously so that they don't end up in landfills." (World Bank Report, 2018)*

On the other hand, a myriad of benefits can be gained from recycling. According to the United States Environmental Protection Agency (US EPA), implementing recycling means that the amount of waste going to landfills will significantly decrease, this will lead to reducing the methane released to the atmosphere which is a toxic greenhouse gas affects climate change and leads to increasing the global warming (US EPA, 2021). Recycling aids in conserving natural resources through reducing the rate of virgin

material consumption. It saves energy and reduces the release of toxic gases to the atmosphere. The amount of energy saved differs depending on each material's properties. All of these aspects make business sense and lead to a positive economic impact (US EPA, 2021). The table below clarifies in numbers the energy saved, oil barrels saved, emissions reduced, water saved and the amount of landfill that will not be used for each material's recycling scenario.

*Table 1: Savings from recycling (How does recycling save energy? 2018)*

| <b>Materials recycled per one ton</b> | <b>Energy saved in kWh</b> | <b>Oil saved in barrels</b> | <b>Omitted air pollutants in pounds</b> | <b>Water saved in gallons</b> | <b>Landfill space not used in cubic yards</b> | <b>Other resources saved</b>    |
|---------------------------------------|----------------------------|-----------------------------|---|-------------------------------|---|---------------------------------|
| Paper                                 | 4,100                      | 11                          | 60                                      | 7,000                         | 3   | 17 trees                        |
| Plastic                               | 5,774                      | 16                          | -                                       | -                             | 30.4  | 1,000-2,000 gallons of gasoline |
| Glass                                 | 42                         | 0.12                        | 70                                      | -                             | 2   | -                               |
| Aluminum                              | 14,000                     | 40                          | -                                       | -                             | 10  | -                               |

Climate change is another trigger for focusing on recycling and ensuring the successful penetration of recycled products in the market. Climate change is one of the consequences of high-rate waste disposal and untreated landfills. It is defined as the unprecedented alterations in temperature and weather patterns, occurring on the long-term (UN Climate Action, 2022). These shifts may be natural, such as through variations in the solar cycle, or unnatural, meaning that it was resulted from human actions, this was detected since

the 1800s. Which led to currently experiencing the warmest decade on record (2022 -2020) (UN Climate Action, 2022). It might be misunderstood that climate change is just a change in temperature, however, it is more than that. This change leads to larger consequences, as the Earth is an interconnected system, and a change in temperature may lead to several catastrophes as droughts, serious fires, floods, melting of the ice in the polar area, enormous storms and accelerate the rate of animal extinction (UN Climate Action, 2022).

### **1.3 Egypt's status and actions towards climate change**

Egypt has a role towards combatting climate change and mitigating its negative impacts. Even though Egypt's share of global emissions is only 0.6%, it is officially listed as one of the highly vulnerable countries towards climate change's negative consequences, which clarifies the necessity to make action (Samir, 2022). These consequences will mainly impact the coastal areas, agricultural lands and water resources (Samir, 2022). As a consequence, there is a clear governmental interest towards identifying climate risks and searching for possible solutions. In May 2022, Egypt has launched the National Strategy for Climate Change *"Climate change is one of the most important issues facing people as its impacts pose threats to sustainable development plans, food security and water availability, and thus will affect the national security,"* said Egyptian Prime Minister Moustafa Madbouli in his speech at launching the national strategy for climate change, he also stated that an amount of \$750 million were spent for issuing green bonds to achieve the green economy goals (Samir, 2022).



This strategy will support creating a sustainable living where natural resources get preserved and the financial status evolves. It will be interpreted through an interactive map that will assist in identifying the severity of climate change impacts on different areas and locate the most vulnerable areas to be prioritized for mitigation actions (Samir, 2022). Yasmine Fouad, Egyptian Minister of Environment, clarified that the vision of the Climate Change Strategy is extracted from Egypt's Sustainable Development Strategy (SDS) 2030 (Samir, 2022) where SDS focuses on the larger scope of development including all the fields and sectors, not only the climate related topics. Since all developmental actions require an initial investment, the Minister has stated that a budget of \$211 billion has been allocated for mitigation projects and \$113 billion for adaptation projects until 2050, to be implemented in different sectors as energy, transportation, agriculture, water and irrigation (Samir, 2022). Furthermore, she added that they will focus on sustainable consumption and production as a sub-objective of the strategy (Samir, 2022), this can be taken as an opportunity for all recycling industries to prove their positive impacts towards this objective and seek governmental funds and support. Another opportunity is, that the Egyptian Minister of Planning, Hala el Saeid, stated that *"By this June, 30 percent of the state's projects would be green and the percentage would be 40% by the next year,"* (Samir, 2022). Which displays how different ministries share common targets and have a clear direction towards sustainability, which includes environmental, social and economic growth.

The National Climate Change Strategy was released before a major event, which is the 27<sup>th</sup> session of the Conference of the Parties (COP27). The COP is a global annual

conference that mainly focuses on assessing and evaluating the progress of all the countries, who are signed to be part of the convention, regarding their emissions and climate actions then promote effective ideas that can be implemented for each party (Conference of the Parties, 2022). This year's conference (COP27) will be held at Sharm El Sheikh in November 2022. Which means that Egypt will be under the spotlight (Abu Zaid, 2022), expected to showcase its achievements and projects done by its public and private sectors to mitigate the negative impacts of climate change, then demonstrating the national scheme for adapting with climate change.

The aim of this research is to demonstrate the indispensability of recycling with a concentrated focus on marketing for it to change the consumer's behavior and mindset in order to guarantee a real change in the market of recycled products. It highlights the multiple impacts of successful recycling on the environment and society and identifies the reasons behind different consumers' behaviors towards specific recycled products in the Egyptian market. Hence, identify the key aspects that can possibly lead to reaching greater acceptance from the target consumers and enhance the market value of recycled products. The topics that will be discussed in this study in order to reach the main aim are Market Value, Branding and Recycling process, identifying the relation between sustainability and recycling, identifying the consumer's preferences and concerns and eventually getting an overview of the overall situation of recycling in the Egyptian market

## 1.4 Research Problem

Producers of recycled products are on the increase but the main problem they face is creating a product that succeeds in the market and becomes chosen by their target consumers, and even preferred more than a similar product made of virgin materials. A product that is not being accepted by the consumers, will lead to the failure of the whole concept and discourage the recycling industries from developing or even continuing. This creates the need to look for strategies that would affect the consumers purchase intentions to be more in support of the idea of purchasing recycled products. This requires understanding their needs, concerns and expectations. Additionally, looking for gaps in the whole industry to be able to enhance the process starting from the collection reaching the end user. The figure below highlights the stage of the research problem.

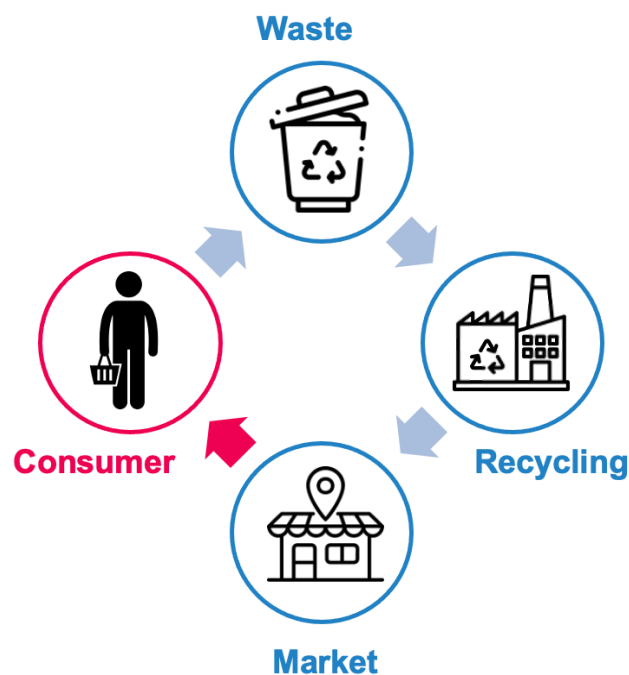


Figure 1: Recycled Products Cycle, focusing on the consumer stage (Author'22)

The amount of current key consumers purchasing recycled products are still considered a mere percentage from the total number of consumers in Egypt. This creates a gap in finding convenient tools or key messages that can affect the mindsets of consumers and convince them to purchase recycled products. This study focuses on key topics to be used for spotting the gaps and highlighting the requirements needed for achieving the main aim based on past studies and experiences.

### **1.5 Scope of Work**

Investigating the recycling industry, to understand its benefits and risks on the society, as well as the environment. Then, find the gaps and challenges of this industry starting from the primary source which is the collection, then the manufacturing, reaching the market and the end user.

The main focus is on the end users and analyzing their preferences and ideologies when having the option to purchase a recycled product. Identify the main factors that affect their purchase intentions and what can be achieved to influence their mindsets.

Reliable tools are used (interviews, surveys and field visits) to aid in getting the desired results of this study. They were used to get the point of view of the consumers and the point of view of the producers to generate a final realistic image analyzing the whole business model. Eventually, to be able to highlight the main pillars that affect the consumer's purchase intentions, then suggest solutions and strategies that would be done

by the producers to correct the wrong ideologies of the consumers towards purchasing recycled products, leading to enhancing their market value and market presence.

## **1.6 Research Questions**

Since the principle of sustainability encourages saving natural resources through reducing and recycling the materials, a multitude of companies are adopting this approach. This leads to generating some questions that are expected to be answered by the end of this research:

- Why is recycling becoming the new direction?
- What are the challenges faced by the recycling industry?
- Why consumers might have different perceptions?
- How do consumers perceive recycled products?
- What affects the purchase intentions of consumers?
- To what extent do plastics contribute towards the greenhouse gas emissions?

## Chapter 2

# Literature Review

### 2.1 Market Value

Different types of products sold in the market have different market values, this value can be same as the price, less than or more than the price, depending on their performance and demand by consumers. Products in the market are sold at many prices that differ depending on the value of each product, which is called the “Market value”. It is essential to fully understand this term in order to be able to create successful products in the market.

Market value is the price an asset would fetch in the marketplace, which is an indication of the consumers’ perceptions. These values are dynamic in nature because they depend on miscellaneous aspects from physical operating conditions to economic climate to the dynamics of demand and supply ("Market Value Definition", 2021). Any product has a “Base Cost”, which is the minimum cost needed for production, it includes a variety of expenses, such as labor, raw materials, consumable manufacturing supplies, and general overhead ("What Are Production Costs?", 2021). Since the market value depends on the perception of the consumers, it may be either lower or higher than the base cost, but it is essential to work on creating a value that is higher than the base cost in order to be able to generate enough profits that can run a successful business.

## 2.2 Recycling

Any product has influences on the surroundings, which can be either positive or negative. One of the main aspects that should be taken into consideration is being aware of the types of impacts a product may create. One way where this can be identified, is by comparing the amount of time needed for using the product versus its real lifetime, or the time needed to degrade. For instance, when you get a plastic water bottle, it takes you a few hours or maybe few days to finish drinking it, after that you throw the bottle, but it stays as it is for hundreds of years. If it was not properly discarded, it will alter the life on land or sea, along with the many other water bottles thrown every day. Plastics, glass, aluminium and paper take hundreds of years to biodegrade, however, there are actions that can be encouraged to mitigate the impacts of these materials through waste management. There are several options, starting with Prevention, Re-using, Recycling, Recovery and ending with disposal. Prevention is the most sustainable option and Disposal is the least sustainable option, as shown in figure (1). Prevention and Re-using take place before throwing the product into the trash, then Recycling is the most preferred technique after throwing a product in trash.

Focusing on recycling, it is a method for material recovery which can be achieved through several techniques that differ according to the nature of each material, as well as the tools and expertise available. A recycled product may be categorized as a sustainable product, since it is a way for achieving raw materials conservation. However, it has to be done under certain directions in order to be successful.

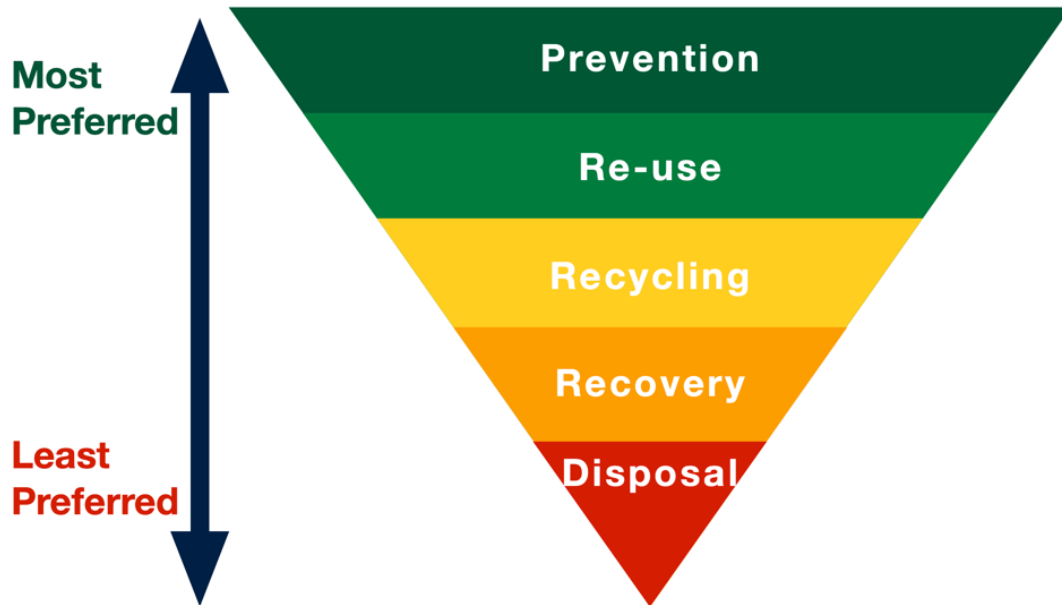


Figure 2: Waste Hierarchy (*Waste is waste Hierarchy? | ISM Waste & Recycling", 2021*)

From the very beginning, products should be made of materials that are recyclable, as some materials are too complex and create harmful impacts if reused or recycled. Then when those products become waste, they should get collected by specialized vehicles that are suitable with the nature of the area. After that, the waste gets sorted in an MRF (Materials Recovery Facility) to be ready for manufacturing and becoming a new product again, this process requires up to date technologies and trained employees to be highly efficient. Then when the new products get created, it gets released to the market to be sold. In this phase, there must be data showing that there is a demand for this specific product in the market and there must be marketing research made for anticipating the volume needed and the accepted range of prices. A recycled product theoretically has a better value than the products made of raw materials if it is viewed from the



environmental perspective. Nevertheless, if the economic perspective was taken into consideration, in most cases recycling will require higher operational costs resulting in creating more expensive end product, and this creates a difficulty with the consumers who do not perceive recycled products as being more expensive.

### **2.3 Sustainability and Recycling**

Sustainable development is well known by “Meeting the needs of the present without compromising the ability of future generations to meet their own needs”. The United Nations adopted the 2030 agenda for Sustainable Development in 2015, focusing on 17 Sustainable Development Goals (SDGs) that are aimed to be implemented by all the countries (Developed and Developing) ("THE 17 GOALS | Sustainable Development", 2021). These goals focus on substantial fields that improve the quality of life for all of the living organisms while preserving natural resources and maintaining all human rights achieving economic development. Sustainability is a concept that can be measured through three main things: economic, environmental and social impacts, as shown in figure (2). To make sure that recycling is a sustainable practice, we will find that it creates economic benefits as creating new jobs that generate more income, also getting the opportunity for business expansion. Then this will lead to creating better living standards and forming self-sufficient communities which impacts the social aspect. In addition, natural resources will be less exploited and wastes dumped in landfills will decrease, this will reduce the pollution and reduce the harmful greenhouse gas emissions. As a result, creating a positive impact on the environment.

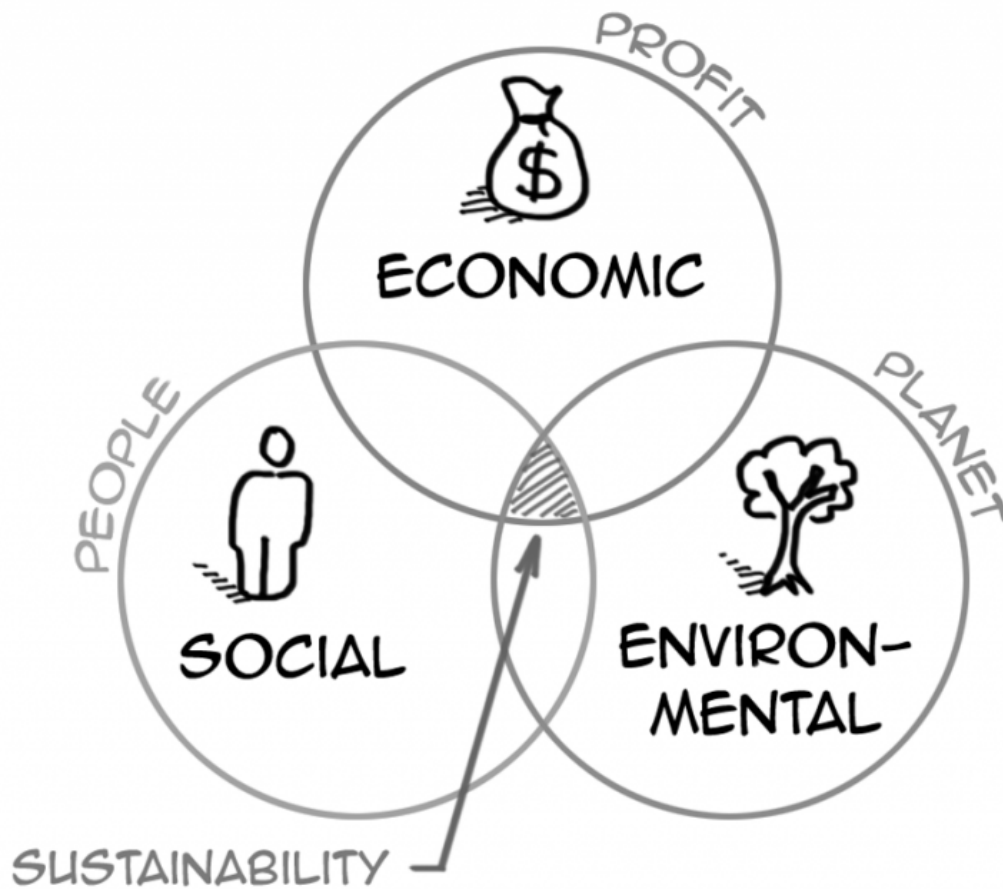


Figure 3: The Three Pillars of Sustainability ("Sustainability Illustrated: engaging videos to learn & teach", 2021)

In order to achieve this, one must have the willingness to change. According to (Lewin K., 1952), there are three stages that should be passed first, then change will occur. These stages are, Unfreezing, Movement and Refreezing (Lewin K., 1952). Unfreezing is when one realizes that there is a need for something to be changed or developed. Then, Movement is when new possibilities are learnt or deciding to develop certain behaviors, there are two main players in this stage, the Driving Force and the Restraining Force. It

is preferred to have a driving force that is stronger than the restraining force to reach the aimed development faster. Eventually, comes the Refreezing stage where the change or development that was achieved continues and becomes the new normal (Lewin K., 1952). These stages can be applied on individuals, business owners or groups of people having the same aim. Additionally, any change can encounter barriers, and there are six barriers related to promoting environmental behavior which are, agreement (being aware that there is a problem existing), knowledge (of the reasons behind the problems and what they may cause and how to possibly overcome it); social (the ethics that should be considered); technological (to be available and utilized); economic (financial aspects) and political (final agreement and assigning the implementors) (Trudgill, 1990).

## **2.4 Sustainable Products**

The European Union prioritized sustainability to be considered in all future legislation (American Chamber of Commerce of Europe, 2004). Promoting sustainable products is one of the crucial aspects for guaranteeing a better future with better utilization of resources. Consequently, it is essential to know the characteristics that indicate to what extent is each product sustainable and what should be changed or developed. There are four main metrics for measuring the sustainability of a product design, they are, material, production, use and end of life. In addition to 15 attributes measuring sustainability in more concise steps, as shown in figure (3) (Han, Jiang & Childs, 2021).

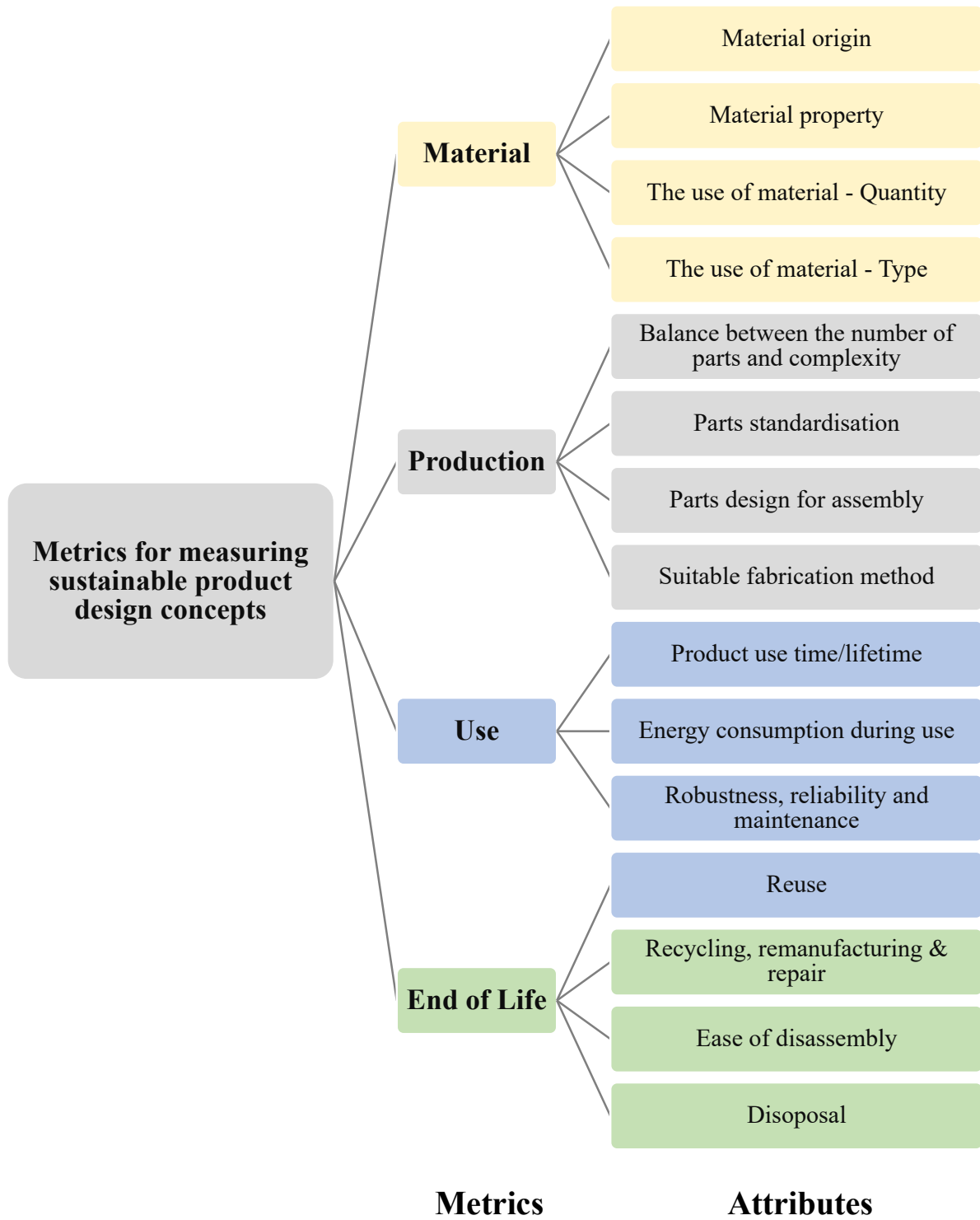


Figure 4: Metrics and attributes for measuring sustainable product design concepts  
(Han, Jiang & Childs, 2021)

Figure (3) clarifies that regarding the material, things to be considered are its origin, its physical properties, the amount of material needed and the specific type, all needed to assess the impacts of the material. Regarding the production, it is important to consider the relation between the number of parts and the complexity of the form, the creation of standard parts, also parts that can be easily assembled, and if it can be fabricated. For the use, calculating the ratio between the time needed for using the product in ratio with it's the real lifetime, the energy required for operating, and the reliability, cost and availability of maintenance and robustness. After that, in the end of life, see if it can be reused, recycled, remanufactured or repaired, if it can be easily disassembled and identifying the possible methods for disposal. These metrics can be used individually or considered all together. Moreover, studies have shown that 80% of sustainability impacts can be anticipated at the design stage, and the positive impact of a decision decreases at the later stages after design, which are the production, use and end of life as shown in figure (4) (Han, Jiang & Childs, 2021).

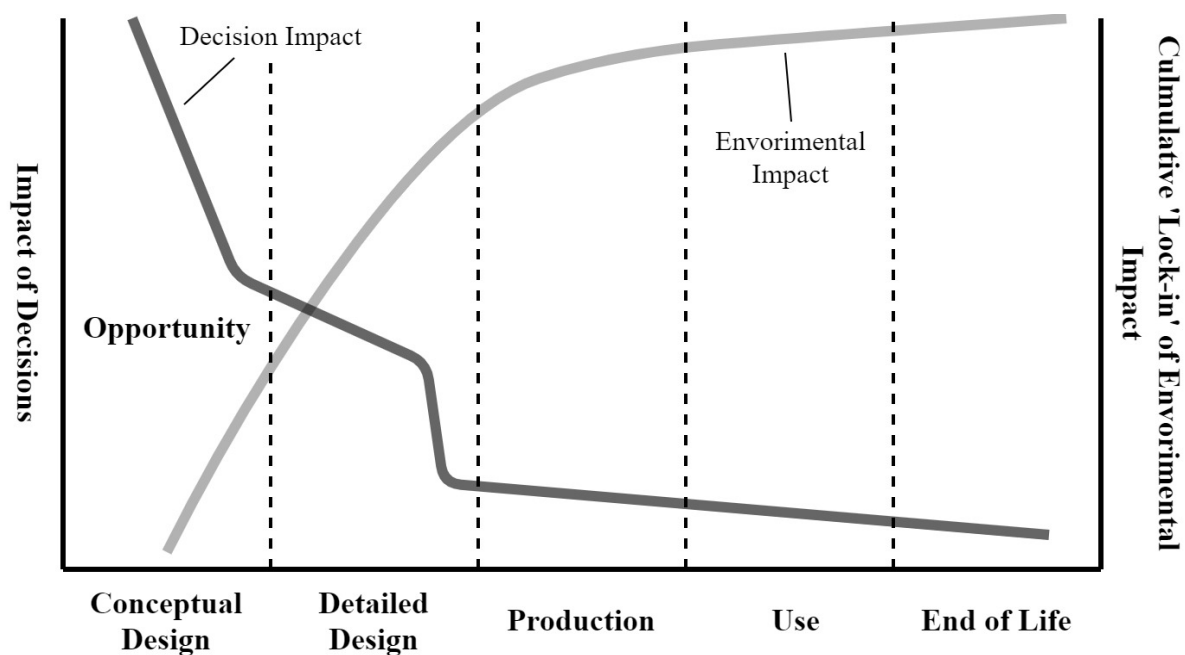


Figure 5: Environmental impacts are affected by the decisions taken at different phases (Han, Jiang & Childs, 2021)

Consequently, a global policy has been created, targeting the producers to consider the whole lifecycle of their products and not only the impacts of the production phase. This is called the Extended Producer Responsibility (EPR), “An environmental policy approach in which a producer’s responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product’s life cycle” (Tasaki, Tojo & Lindhqvist, 2018). This policy was created by Organization for Economic Co-operation and Development (OECD 2001), and what makes it very effective is its positive impacts on both producers and consumers and promoting the idea of saving the environment

from irresponsible actions. In addition to, easing the recycling process and the creation of a circular loop (Tasaki, Tojo & Lindhqvist, 2018).

## **2.5 Recycled Products and Circular Economy**

Creating a product from recycled materials promotes the idea of sustainability due to saving natural resources, creating jobs and reducing pollution that results from greenhouse gas emissions produced when waste is left in landfills. This also supports the concept of Circular Economy (CE), “A circular economy describes an economic system that is based on business models which replace the ‘end-of-life’ concept with reducing, alternatively reusing, recycling, and recovering materials in production/distribution and consumption processes, thus operating at the micro level (products, companies, consumers), meso level (eco-industrial parks) and macro level (city, region, nation, and beyond), with the aim to accomplish sustainable development, which implies creating environmental quality, economic prosperity, and social equity, to the benefit of current and future generations” (Mangers, Minoufekar, Plapper & Kolla, 2021). It mainly focuses on closing the loops or slowing them down, and reducing the waste. Figure (5) clarifies the idea of circular economy within the technical and biological cycle.

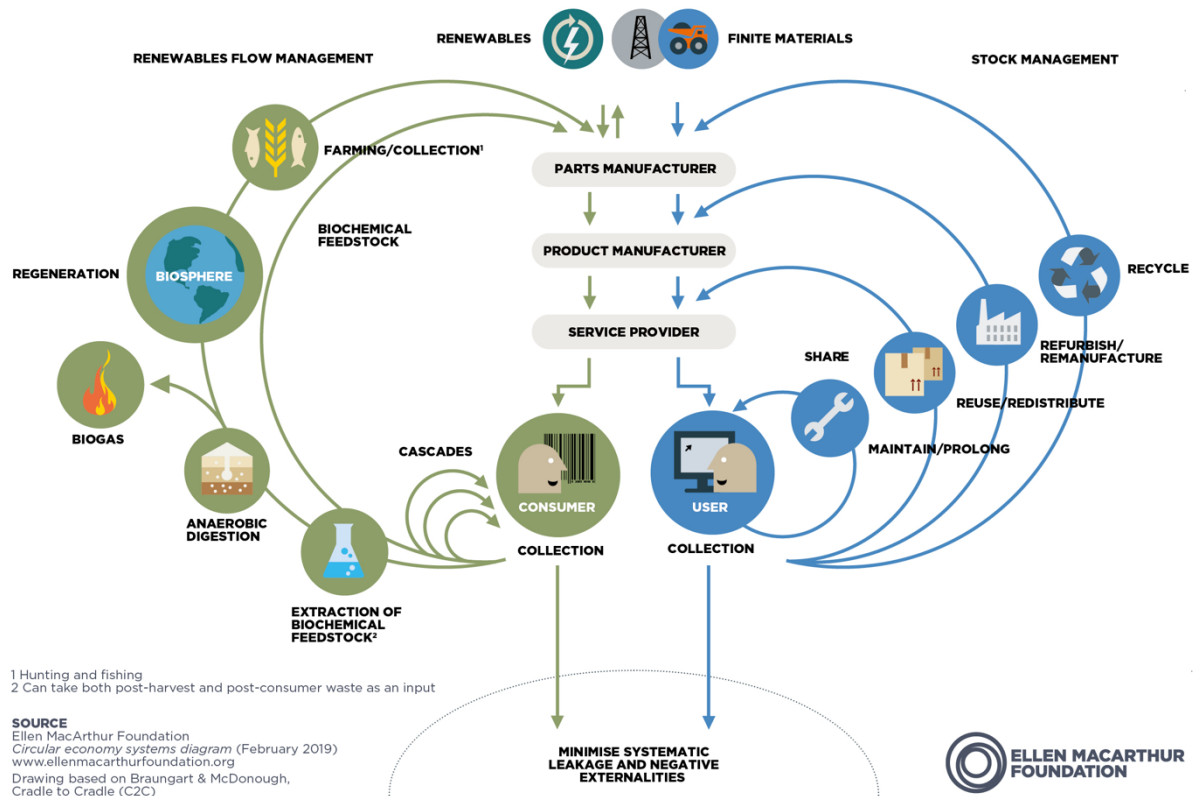


Figure 6: Outline of a circular economy technical and biological cycle  
(Mangers, Minoufekar, Plapper & Kolla, 2021)

A study in Jordan stated that environmental concerns are increasing due to the global media coverage and spreading stories about major negative impacts resulted from industrial incidents, which created higher awareness among the public (Alsamdi, 2008; Finisterra do Pac o et al., 2009). People are starting to become more cautious towards the environment, realizing that there may be negative effects that result in degrading the quality of the environment, including the atmosphere, the biodiversity and all the



resources that are extracted from nature. They are showing extra interest in products with less toxic components, more durable, and made of reusable materials (Lamb et al., 1994).

However, being cautious or showing more concern does not guarantee real actions, as buying recycled products and preferring them more than the traditional ones. The purchase behaviour of people interested in the environment is dependent on the income, quality of education and gender (Dabija, Chebeň & Lančarič, 2017) as it has been proven that even though more men know about the environmental impacts, women care more about keeping the environment healthy (Dabija, Chebeň & Lančarič, 2017). It is a real challenge for companies to be able to create a balance between the environmental precautions with the profitability, in addition to, winning over the competitors in the market (Dabija, Chebeň & Lančarič, 2017).

## **2.6 Challenges of Selling Recycled Products**

Recycled products in the market are going through some challenges in order to be perceived equally as the conventional products. One of the very first and popular challenges is the price, as recycled products are in most cases more expensive or have the same price as other products. This is mainly because consumers are the ones who end up covering all the costs that are needed for recycling which are costs of disposing, collecting, transporting and finally producing (Conke, 2018). However, due to being recycled, they are perceived to have lower price since they are not made of raw materials, as raw materials are perceived to be cleaner or have higher quality. One of the possible

solutions for reducing the price of recycled products is to move closer to the consumers' price perception. This will require getting support from the government, by reducing the taxes on these products specifically, and generating laws that encourage investing in the recycling businesses to enhance the possible opportunities and innovations in this industry (Conke, 2018). Consumers also consider the safety risk of buying a recycled product, they ask if anything went wrong with it, how harmful will it be. Moreover, the risk can be psychological, which is feeling anxious or concerned of using this product. More risks can be financial, performance, physical and social (Hamzaoui Essoussi & Linton, 2010). Reducing risks can be through creating a well-known brand name, or giving a warranty (Hamzaoui Essoussi & Linton, 2010) And this is how a brand name creates power and positive influence on the society.

On the other hand, some companies use term "green" or "environmental" in order to give a positive image to their industry, but in reality, their products may not be actually reflecting their claims which results in building up more doubts towards recycled products (Cason & Gangadharan, 2002). Consequently, there are certifications that verify the honesty of a company that produces green products (Cason & Gangadharan, 2002). However, certifications are expensive so this creates an additional issue with the price and requires having a well-established brand to handle price increases. Lastly, many challenges exist in many markets but the first step needed for fixing any problem is creating high awareness among the right target groups.

## **2.7 Consumers' Attitudes and Awareness on Green Branding**

There are various factors affecting the attitudes of consumers, they can be grouped under three main factors which are, External as culture, education, family or media, Internal as attitudes, awareness, knowledge or involvement and Situational as economic rewards and legislation (Dabija, Chebeň & Lančarič, 2017).

The first aspect that distinguishes two similar products from each other having the same function and purpose, is the branding of each product. Consequently, "Brand Equity" is the starting point that should be developed for each product to be selected by the target consumers. Brand Equity can be defined as the added value that each brand uniquely provides for its consumers (De Toni, Tormen, Milan, Eberle & Lazzari, 2021), and to achieve this, there must be a clear brand knowledge existing in the consumers' mindsets. Brand knowledge can be divided into two dimensions, which are brand awareness, or how well-known is the brand, and brand image which is the way a brand is perceived and categorized by the target consumer (De Toni, Tormen, Milan, Eberle & Lazzari, 2021). After that, comes the Brand Name, which also has a direct effect on the brand status, it can be assessed from two dimensions, which are the degree of easiness by which the name can be pronounced and remembered, and the effect of the name on the positioning of the product (Dabija, Chebeň & Lančarič, 2017). Additionally, the pronouncing or spelling of a brand name is one of the aspects that influence the attitude and perceptions of the consumers, especially when it's foreign, the influence can be positive or negative depending on the language used and the possible messages

associated with it. For instance, German names as Klarbrunn can be associated with high-quality products, and Italian names as Giorgio di St. Angelo can be associated with stylish Italian fashion (Leclerc, Schmitt & Dube, 1994). Even if they are tougher to pronounce, in this case, their hidden messages are more effective than being correctly memorized. This is known as Cultural Stereotypes, which are shared beliefs and judgments that are related to a country, its citizens and their culture, which is a purely psychological aspect (Leclerc, Schmitt & Dube, 1994).

According to an experiment done by Leclerc, Schmitt & Dube (1994), it has been proven that French names are preferred and expected to be linked with hedonic products, while if they were linked with utilitarian products it will have a poorer impact and will lead to confusing the consumers, and English names were preferred in this case. Not only this, but also they discovered that the pronunciation is more powerful than the actual country of origin, meaning that if a brand has a French name but was originally made in the US, still the French name will be more impactful and give a hedonic perception on the product (Leclerc, Schmitt & Dube, 1994). Nevertheless, this theory still cannot be applied on all products but can be reliable when applied on experiential products as mineral water, apparel and ice cream (Leclerc, Schmitt & Dube, 1994).

Green marketing strategies, to empower the branding, are becoming more known and are used as ways to become differentiated from the other competitors in the market, leading to having a stronger brand equity (Dabija, Chebeň & Lančarič, 2017), this is

mainly in developed countries. However, in developing countries it exists only within a minority. More changes in consumers' mindsets are their demands of having products that are healthy, functional, organic and fair trade (Dabija, Chebeň & Lančarič, 2017), which is all within the concept of sustainability. Popular business publications as Fortune, Business Week, Wall Street Journal etc. support the concept of green business models, they publish articles to spread awareness within their large audience and focus on the pros of having an environmental oriented business model, also emphasizing the right consumption patterns and stating the updated perceptions and expectations of consumers within different generations in developed countries (Dabija, Chebeň & Lančarič, 2017). However, interests and expectations of consumers are not standardized, they differ according to several aspects as the variant cultures, mentalities and experiences (Dabija, Chebeň & Lančarič, 2017). Eventually, purchasing green products depend on their availability in the market and the consumers' willingness to pay a premium to contribute in preserving the finite resources of the environment (Dabija, Chebeň & Lančarič, 2017).

When a brand gets associated with having positive impacts on the environment, this means that the branding process was effective in delivering compatible emotions and message that lead to shifting the consumers' attitudes towards more sustainable actions as purchasing green products (Pickett-Baker and Ozaki, 2008). Nevertheless, there is a difference between supporting environmental actions and actually practicing them. A study in Romania done by Crumpei et al. (2014), showed that a myriad of Romanians

were supporting the idea of becoming environmentally oriented. However, when they got inside a situation where they can choose their own actions only two thirds of them actually chose the environmental option.

Customer behavior, perception and purchase journey is mainly influenced by the price, brand knowledge and brand image (Zielke, 2010). Consequently, these pillars are prioritized while building a marketing strategy (De Toni & Mazzon, 2014). A study done by De Toni, Tormen, Milan, Eberle & Lazzari (2021), aimed to find the relation between price level (High and Low) vs brand level (Known and Unknown) and its effect on the consumer's behavior, observing how it will affect a consumer's perception towards the quality, fairness, symbolism and purchase intention. The study showed that it will be reliable to invest in brand knowledge as it has the ability to create better position for the product in the market, which will create higher purchase intentions. Moreover, enhance the revenue, market share and profitability.

Brand knowledge is translated through customers' experiences, if customers get contentment experiences with some products, they will trust the brand in other products as well (Chung & Lee, 2017). Price level perception and branding is an indication for how the consumer perceives the quality and value of a product (Zielke, 2010). For instance, a low-price perception may indicate a product with a poor quality and low symbolic value. The brand's role is to interfere in the consumer's emotional and rational sides to give the

brand a room for raising the price while staying within the consumer's perception to avoid having a sensitive profit margin (De Toni, Tormen, Milan, Eberle & Lazzari, 2021). Brand quality is assessed by several aspects, tangible as performance and durability, and intangible as post purchasing services and perceived risk. Quality can be ranked as the first pillar to be looked at for guaranteeing brand success, even more than the price (Sheau-Fen, Sun-Way, & Yu-Ghee, 2012). As a consequence, well-known brands with premium price and excellent quality attract consumers who believe in the fairness of all the specifications of the brand and show loyalty to it (De Toni, Tormen, Milan, Eberle & Lazzari, 2021).

Green advertising and green knowledge are ways to spread awareness on environmentally friendly products in the market and increase the motivation towards supporting and purchasing them. A movement called Green Consumerism was launched globally aiming to promote green products which will eventually prevent consumers from using unsustainable products, it promotes consumers' rights for having biodegradable and eco-friendly products that do not damage the environment or exploit its finite resources or produce a high amount of waste (Sachdeva et al., 2015).

Research done by Herman et al. (2021) aimed to form an eco-friendly model for examining the effect of green advertising, green knowledge and eco-label information on green purchase intentions and green attitudes. This study was carried out on a young generation in Indonesia, which is a developing country. Herman was aware that to guarantee creating a purchase intention in the target group, it is essential for them to fully

understand how a recycled product is created. Purchase intention is the phase right before doing the purchasing action, it is dependent on the feelings, thoughts and motivation towards having a desired product. Those thoughts are based on information collected by the consumer from personal experiences and information from the society or other people's experiences. After experimenting, the results showed that green advertising and green knowledge created awareness on what is environmentally friendly actions. However, eco-label information did not add to the awareness, but it created a green purchase intention directly (Herman et al., 2021).



## **2.8 Forming the Research Hypothesis**

Based on research and literature review, it was found that several factors are considered when buying a product. These factors differ according to the type and function of a product, as well as the mindset of the consumer, which is shaped by the culture, traditions and beliefs. As a consequent, products with functions that align with the consumer's mindset and needs, will be the most likely to be purchased.

After exploring different studies, the most common factor that was linked with affecting the purchase intentions of consumers, is the Branding of a product. Which includes the Brand name (tone and pronunciation), Brand knowledge (purpose and values), Brand positioning (status of the product in the mind of the consumer) and Brand image (visual identity). However, there is lack of literature proving that this applies to recycled products in the market. Therefore, the generated hypothesis was as follows.

### **Proposed Hypothesis**

**Branding is one of the main factors that impact a consumer's purchase intentions towards recycled products**

## Chapter 3

# Research Methodology

### 3.1 The Chosen Products and Brands

Online research was carried out to explore all the brands that produce recycled products, and specifically identify the ones operating in Egypt. Table 2 below acts as a database showing most of the local brands and global brands operating in Egypt and producing recycled products. As well as a brief description on each brand's type of product and a link for reference to prove its recycling activity. It showed that currently, the large-scale multinational companies are the ones leading this new trend in Egypt.

Therefore, two multinational brands were selected for further investigation and carrying out the study. One company was Nestle, for their production of recycled plastic water bottles. The other company was L'Oreal, for their production of recycled plastic shampoo bottles. Those two products and brands were chosen since they have similar recycled products which are recycled plastic bottles, a strong branding portfolio and similar production scale. Nevertheless, with a slight difference, where one bottle is for water and the other is for shampoo, which will allow generating different insights regarding the function of the bottle in relation to its material. This study assesses both brands status in the Egyptian market and identifies how they are perceived by their consumers after they started shifting towards recycling, to eventually compare between their results.

Table 2: Compiling a group of Local & Global brands that produce recycled products in Egypt  
(Author,2022)

| Local companies producing sustainable products                      |  |   |
|---|--|---|
| Name  | About  | Social media page/ Website  |
| 1 MùBun Sustainable Furniture                                       | Custom made luxury furniture made of discarded scrap waste from wood, palm, plastic, marble and tiles.   | <a href="https://www.facebook.com/Mubun.Ecofurniture/">https://www.facebook.com/Mubun.Ecofurniture/</a>   |
| 2 Buttonup  | A social enterprise seeks to achieve economic empowerment of youth and women in Cairo's most impoverished areas through lines of Eco-friendly products.  | <a href="https://www.facebook.com/Buttonup100/@buttonup100">https://www.facebook.com/Buttonup100/@buttonup100</a>   |
| 3 Banlastic Egypt   | Awareness & making green products as biodegradable plates (Alex)   | <a href="https://www.banlasticegypt.com/">https://www.banlasticegypt.com/</a>   |
| 4 Re-fabric   | Egyptian brand that offers various upcycled products out of polyester waste fabrics.   | <a href="https://www.facebook.com/Refabricceg/">https://www.facebook.com/Refabricceg/</a>   |
| 5 El Nafeza   | Handmade paper from agricultural waste, which is a lot, especially rice straw. Producing all sizes and colors of paper for drawing for printing for decoration   | <a href="https://www.facebook.com/el.nafeza.2005">https://www.facebook.com/el.nafeza.2005</a>   |
| 6 Agab Studio   | Recycled paper products  | <a href="https://www.facebook.com/agabstudio/">https://www.facebook.com/agabstudio/</a>   |
| 7 Artizan   | Home decorations by recycled paper, mostly of old newspapers and magazines   | <a href="https://www.facebook.com/artizan.handmade">https://www.facebook.com/artizan.handmade</a>   |
| 8 Konoz luxor   | Bags made of palm trees, an alternative to plastic bags, made by women from Luxor  | <a href="https://www.facebook.com/Konoz-luxor-">https://www.facebook.com/Konoz-luxor-</a>   |
| 9 earthly_eg  | Straws made from locally grown Reed known as "بوص" in Arabic. The stems of the reed are naturally slender, tough and can be hollowed out- the perfect combination for a straw. After several processes of treatment and disinfection, the reed morphs into an Earthly Straw. | <a href="https://www.instagram.com/earthly_eg/">https://www.instagram.com/earthly_eg/</a>   |
| 10 Up Fuse  | Upcycling plastic bags to products as passport holders, back packs, laptop cases, waist bags   | <a href="https://www.facebook.com/pg/UpFuse">https://www.facebook.com/pg/UpFuse</a>   |
| 11 Mobikya  | Tire based furniture made with zero Emissions'   | <a href="https://www.instagram.com/mobikya/">https://www.instagram.com/mobikya/</a>   |
| 12 Naseeg   | Creates Eco friendly products from fabric's waste. Create products like " Shopping bags, kitchen towels, Pan's holder and Toys".   | <a href="https://www.facebook.com/Nassegstore">https://www.facebook.com/Nassegstore</a><br><a href="https://instagram.com/nasseg.store">https://instagram.com/nasseg.store</a>  |
| 14 Kendaka  | Glass cups   | <a href="https://kendaka.co/">https://kendaka.co/</a>   |
| Global companies producing sustainable products, operating in Egypt |  |   |
| Name  | About  | Website   |
| 15 Nestle   | Produce recycled plastic water bottles   | <a href="https://www.nestle.com/">https://www.nestle.com/</a>   |
| 16 L'Oreal  | Produce recycled plastic shampoo bottles   | <a href="https://www.loreal.com/en/">https://www.loreal.com/en/</a>   |
| 17 H&M  | Produce clothes from recycled fabrics  | <a href="https://www.hm.com/">https://www.hm.com/</a>   |
| 18 Zara   | Produce clothes from recycled fabrics  | <a href="https://www.zara.com/">https://www.zara.com/</a>   |
| 19 Adidas   | shoes made of recycled plastic   | <a href="https://www.businessinsider.com/adidas-sneakers-plastic-bottles-ocean-waste-recycle-pollution-2019-8?IR=T">https://www.businessinsider.com/adidas-sneakers-plastic-bottles-ocean-waste-recycle-pollution-2019-8?IR=T</a>               |
| 20 Coca-cola  | Produce recycled plastic water & soda bottles  | <a href="https://profayly.com/en/the-coca-cola-company-launches-sprite-clear-bottle/">https://profayly.com/en/the-coca-cola-company-launches-sprite-clear-bottle/</a>   |
| 21 Pepsi  | Produce recycled plastic water bottles   | <a href="https://dailynewsegypt.com/2021/04/01/pepsico-egypt-launches-recycle-for-tomorrow-platform-for-waste-management/">https://dailynewsegypt.com/2021/04/01/pepsico-egypt-launches-recycle-for-tomorrow-platform-for-waste-management/</a> |

Further research was done on the chosen brands to have a deeper overview on the general objectives and performance of each company and be able to construct interviews using the right questions.

**About Nestle:** The world's largest food and beverages company

With a focus on, **Nestle Pure Life:** Producing bottled mineral water

<https://www.nestlepurelife.com/eg/en-eg/sustainability>



Figure 7: Nestle 100% Recycled Plastic Water Bottle  
(<https://www.nestlepurelife.com/eg/en-eg/sustainability>)

- Nestlé® Pure Life® is guaranteed by a specific production process carried out under strict hygiene conditions, which ensures that the quality of the water is preserved right up to the place where you buy it.

- Nestle has a long-standing commitment to sustainability, to reduce their impact on the environment and accelerate achieving a circular economy
- Since 2015 they've reduced the amount of plastic in their products by an average of 15%. Moreover, they were the first movers to remove the neck sleeve from all our PET bottles, which was made of a non-recyclable material
- All Nestlé Pure Life bottles are designed to be 100% recyclable - they're easy to crush and drop into the recycling bin
- In 2021, they produced the first 100% recycled bottle produced in the region
- Like all Nestlé products, this bottle undergoes a rigorous quality process that consists of 10 steps to ensure the quality standards of it are as good as the whole Nestlé Pure Life portfolio.
- They believe that all new bottles should be made from other bottles
- They have an ambition to help collect as many bottles as we produce by 2030.
- Another ambition is to have 100% of our packaging recyclable or reusable by 2023 and none of their packaging to end up in landfill or as litter.

**About L'Oreal:**

<https://www.loreal.com/en/commitments-and-responsibilities/for-the-planet/preserving-natural-resources/>



*Figure 8: Elvive L'Oréal Recycled Plastic Shampoo Bottle  
(<https://www.loreal.com/en/>)*

- For more than 110 years, they have devoted their energy and competencies solely to one business: beauty.
- They have chosen to offer their expertise in the service of women and men worldwide, meeting the infinite diversity of their beauty desires.
- They are committed to fulfilling this mission ethically and responsibly.
- Shampoo and conditioner bottles of their brands Elvive and Garnier are made of 100% recycled plastic
- By 2025, 100% of their plastic packaging will be refillable, reusable, recyclable or compostable.
- By 2030, 100% of the plastics used in their packaging will be either from recycled or bio-based sources (we will achieve 50% by 2025).
- By 2030, they will reduce by 20% in intensity the quantity of packaging used in their products, compared to 2019.

### **3.2 Objectives of the study**

1. The main focus is on recycled Plastic bottles in the Egyptian market
2. Understanding the process from the producer's point of view and identify the efforts done by them to enter the market
3. Identify the consumers' needs in the Egyptian market
4. Identify the consumers' perceptions towards the value of a recycled product vs the value of conventional products
5. Compare between the factors required to encourage purchasing recycled products vs the factors required for purchasing conventional products
6. Identify the relation between branding and the performance of recycled products in the market
7. Identify if the branding of a product is the main factor that motivates the purchase of a recycled product

### **3.3 Methodology Overview**

This study requires analysis from different perspectives and several stakeholders to facilitate gaining an inclusive and accurate overall view which aids in identifying the main challenges, in addition to, the key factors for overcoming them. Methods used in similar research topics were, mainly surveys for measuring different aspects, as the WTP (Willingness-To-Pay) of consumers when purchasing recycled products (Hamzaoui

Essoussi & Linton, 2010), or measuring the awareness and its effect on actually doing a real action, using drop-off method (Alsmadi, 2007).

The main strategy used for constructing this research is the Deductive Approach, which is starting with finding a theory and a related problem, then building on it a hypothesis that can be either accepted or rejected at the end of the research (Streefkerk, 2022). Then the data needed is collected using compatible methods to prove the hypothesis, this data is then analyzed and is used as indicators to actually decide if the results and analysis support the hypothesis or reject it (Streefkerk, 2022). This process is clarified in figure (8).

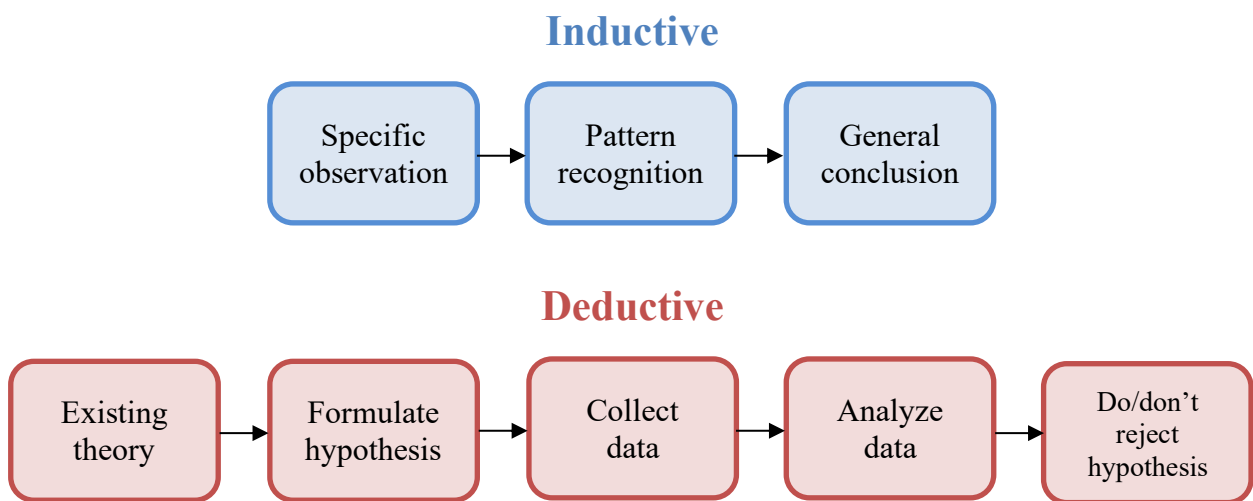


Figure 9: Diagram displaying inductive vs deductive reasoning (Streefkerk, 2022)

The type of methodology used for data collection in this research is the mixed method, both Quantitative (Survey) and Qualitative (Online Research and Interviews) methods. This facilitated covering the whole process and analyzing the situation from the perspective of the primary producer (the factory that produces recycled raw material),



then the secondary producer (the factory that takes the recycled raw material to produce the final branded product) and finally, the consumer (the user of the product).

### **3.4 Qualitative Approach: Interviews**

The interviews were implemented through two methods, the first is phone interviews and the other was a combination between a field visit and face to face interview. These approaches aided in finding the gaps, identify the patterns and form distinctions, as well as identifying the common goals and challenges. Additionally, it was the main tool for decoding the phenomena and enhancing the peripheral vision that is essential to gain at the starting point of the research journey (SOFAER, 2002). It reduces uncertainty about the research topic owing to enriching the level of knowledge when interacting with the field experts. Additionally, it gives room for discussions and forming explanations, as well as refining theories and conceptual frameworks (SOFAER, 2002). An indispensable aspect for this step, is the initial background research that aids in preparing the right questions that will lead to getting the needed answers which fulfills the research aim.

The interviews were created to communicate with the producers of the recycling industry. They were partially structured and there was room for the interviewee to express even if diverted from the planned questions. The structure was divided into three main parts, the first was about the background of the company and its activities, the second was on the details of the business operations and activities, the third was on the vision they have and aspirations for the company's future performance including their challenges the possible ways to overcome them.

The following were the questions used for the interviews

### **Targeting Producers of the recycling industry**

#### A. Background

1. When did you start operating?
2. Why did you start this business?
3. What's your vision?
4. What are your targets and what did you achieve so far?
5. How did you start operating?

#### B. Business Details

6. How much do you recycle per month/year (output)?
7. Who are your clients?
8. What's your source of funding?
9. Who gives you support?
10. What's the type of relationship between you and the government?
11. Describe and explain the flow of your operations?
12. Do you generate profits on regular basis?
13. Is your business considered on a risk or is it stable? Explain why?

#### C. The Future

14. What are your biggest challenges and fears?
15. What do you wish/plan to achieve for the future?
16. How do you ensure the continuity & success of your business?

## **3.5 Quantitative Approach: Survey**

### **Targeting Consumers**

This method was used through constructing an online survey created on google forms consisting of mostly close ended questions and a few open-ended questions, to facilitate

emphasizing the reason behind the results. It displays precise information and measurements (Woodward, 2015) that can be presented in graphs and charts, it also indicates the level of the current situation which can be easily compared cumulatively within the next periods if the same survey was re-sent, which will lead to reliably tracking the progress and measuring the impact of the actions done previously to solve the research problem.

There were two phases for constructing and developing the survey, first one was a draft survey that was tested on a small sample of 20 people, whose feedback was taken into consideration for further development. The draft was constructed to have general questions on recycling, followed by questions on specific recycled products, it also contained a series of short questions (as multiple choice, Yes or No, ranking), followed by open ended questions, which were to be utilized for identifying the reasons behind choosing each answer to be considered for analyzing the different perceptions. However, after testing it the feedback received aided in identifying the weak points that need to be reconsidered. The main complains were on having too many open-ended questions, which led them to lose interest in completing the survey as this kind of questions might not be well understood or confusing. Then when analyzing the results, it was found that a couple of questions regarding the profile were missing, which were the income and education. As these two pillars are factors that can be linked to purchase intentions.

The second phase of the survey was focusing on reconstructing the long answer questions

to be multiple choice. Giving different options was better, as well as adding “Other” as an option guaranteed having accurate answers, in case the right answer was not in the suggested choices. Only one open ended question was asked at the end to ensure that the people answering were aware of the topic. Also to get a general idea on the most popular and accepted recycled products known by the consumers, to spot the differences and similarities between the stated products and the two tested products (recycled water and shampoo bottles).

The survey targeted consumers who are considered as the target group of Nestle and L’Oreal’s recycled products. It consisted of four main parts the first is a general check on the definition of recycling, the second part is focusing on recycled plastic water bottles (taking Nestle as an example), the third part is focusing on recycled plastic shampoo bottles (taking L’Oreal as an example), and the fourth part focused on gathering personal information to assess the background of the consumers filling the survey and identifying their living conditions and stage of life.

The survey was user-friendly, it was constructed in a non-complicated language, and the vital topic-related terms were stated and defined in the description. The questions were mostly multiple choice, and a few questions required short paragraphs. This is to ensure that the person doing the survey does not get bored or get lost from the large amount of information, while on the other side, find the survey interesting through finding pictures in the questions and receiving new interesting information they might have not known

before. Additionally, give them the space to write and express their opinions freely in the few open-ended questions provided.

### **3.6 Sample selected**

This study required interaction with the relevant stakeholders, for gathering new information and exploring new insights. Choosing the right stakeholders was the key to getting reliable results and forming effective analysis.

The target sample for the interviews was divided into two categories. First, the primary producers, who are responsible for launching the recycling process starting from collecting the plastic waste till producing recycled raw materials (rPET) as their end product, the only company in Egypt that recycles bottle-to-bottle PET plastics is BariQ, this is why they were chosen to be interviewed, the person interviewed was the sustainability commercial director, who is fully aware of the core purpose of their scope of work and their environmental impacts, as well as the challenges and recommendations for developing the industry.

The second category of interviews was targeting the secondary producers, the ones who take the rPET in the form of a raw material and reshape it in the desired form to reach a final product that can be displayed in the market and used by the consumers. In this study, the produced products are plastic bottles. At this stage, Nestle and L'Oreal were

chosen to be interviewed for their strong branding portfolio and for testing two different functions used for recycled plastic bottles (water and shampoo) to see how their effects vary on the target consumers. The interviewees were involved in the product development and corporate shared value activities which made them compatible with the interview requirements and they were able to provide vital information on their main activities and core sustainability actions, with a significant focus on their recycled plastic bottles explaining their situations in the Egyptian market. Eventually mentioning their challenges and future recommendations for the recycling industry.

The target sample for the survey was the target group for Nestle and L'Oreal's water bottles and shampoo bottles respectively. The age range was 18 - 60 years old, who are considered to be A-class or B-class, completed at least a bachelor's degree and understand English, which is why the survey was prepared only in the English language. Both genders were equally encouraged to contribute in filling the survey to avoid any gender bias. Approaching target consumers for filling the survey, was through miscellaneous channels as phone calls, face-to-face discussions and through social media platforms as What's App, Facebook and Instagram.

## Chapter 4

# Results and Discussion

### 4.1 Interview Results

Following the online research, it was evident that recycling plastics require experiencing several phases and meeting with multiple manufacturers. Therefore, three interviews were conducted. The first two interviews were with the chosen brands, Nestle and L'Oreal, they purchase recycled plastics (rPET) in the form of a raw material, from a PET recycling factory to use for their own products, this categorizes them as secondary producers.

Then there was a need to contact primary producers, the ones who are responsible for supplying recycled plastics as raw material. Therefore, after conducting the first two interviews, both brands stated that they work with the same supplier which was BariQ. Therefore, it was preferred to reach BariQ for an interview and a field visit since it was the primary producer dealing with the two interviewees. Not only this, but it was the only bottle-to-bottle recycling factory in Egypt that operates with all brands that requires rPET for their products. BariQ collects plastic waste, recycles it and forms the final raw material, which is rPET. BariQ supplies rPET to the interested secondary producers, which are mostly well-known trusted brands as Nestle, L'Oreal, Pepsi and Coca-cola. Interviewing BariQ was essential to get an overall view of the recycling process, starting

from the collection of plastic waste till producing a final usable product made of recycled plastics, and right before releasing it in the market, which facilitates identifying the gaps starting from the root cause. Figure (10) demonstrates the process of recycling and clarifies the difference between the two stages required for producing final products made of rPET in Egypt, which will then be put in the market to be sold to the target consumers.

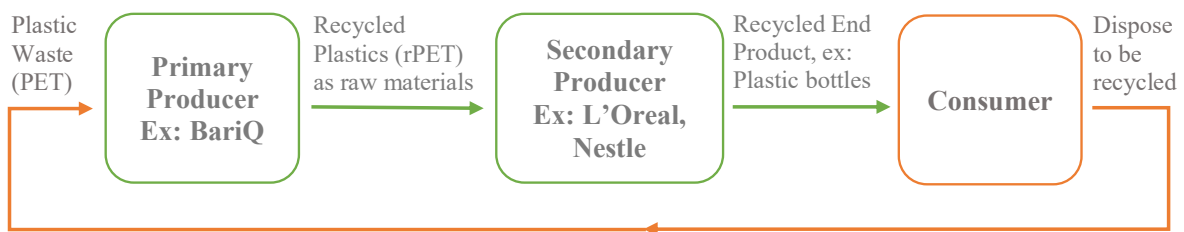


Figure 10: Stages of recycling plastics (PET) before reaching the consumer (Author,2022)

#### 4.1.1 Interview (A): Secondary Producers

Two interviews were conducted with secondary producers, Nestle and L’Oreal. To investigate their roles towards the environment and the reasons behind integrating recycling within their production strategy. Each brand is motivated by its main driver, a general motto integrating their vision with sustainability. Nestle: *“Give value for people, not only sell products”*. L’Oreal: *“Making Beauty Sustainable”*. After analyzing and merging the two interviews, a generic analysis was constructed.

Both had similar scenarios when it comes to sustainability targets and actions. The main reason for shifting to using recycled materials is the belief in their responsibility towards handling the damages they may cause to the environment so they are committed to look



for ways to leave a positive impact on the environment, for instance, through saving its resources and reducing the amount of waste going to landfills. Furthermore, calculating their CO<sub>2</sub> emissions and setting targets to reduce them significantly, to eventually reach net zero by 2050.

This direction started when the European Union (EU) started forming new regulations under the “European Green Deal” discouraging selling products made of virgin materials and supporting products having recycled content, there are no clear targets yet but it is expected to have mandatory taxes on non-recycled products soon and more support on selling recycled products. Since Nestle and L’Oreal are global companies originated in the EU, they are obliged to be fully aware of the EU regulations. Additionally, they export more than 50% of their products, so any adjustments in regulations related to export will immensely affect them.

Nestle focused on recycling their plastic water bottles and launched them in 2021. While L’Oreal focused on recycling their shampoo bottles (Elvive and Garnier) and launched them in 2019. Both succeeded to produce recycled plastic bottles because they are made of PET plastics, which is the only type of plastic that can be recycled and formed as a bottle again at a high quality that is compatible with the accepted health standards, it also has the property of being the only transparent type of plastic, which gives the possibility for dyeing it with the desired color or keeping it transparent.

The know-how for recycling PET, bottle-to-bottle, is present at only one factory in Egypt for the current time, which is called BariQ. Other types of plastics as PP and PE, which are used for the bottle caps, labels and packaging, are still in the testing phase to be recycled but there are no promising indicators yet. It was more convenient for Nestle and L'Oreal to seek external support for recycling plastics owing to the complications and a series of procedures required to get recycled plastics as a raw material, and ensure compliance with the global health standards. The recycling process is hectic, it starts from collecting plastic waste from different sources (ex. households, factories, restaurants, ... ) through forming deals with the informal sector, sorting them according to type and color, and going through the recycling phases that require a series of machines, and eventually produce resin as an end product, which is named rPET (recycled PET). The resin is then sold to Nestle and L'Oreal, so they take it from there to be shaped and designed as each brand desires.

Nestle did a responsible initiative which is removing the PVC plastic wrap that was used to cover the cap, mainly to avoid PVC from entering the recycling process as it obstructs it and unnecessarily creates unqualified end products. Supporting this action, they created an awareness campaign assuring people that it is still safe as long as the cap is closed and clicks when being opened for the first time. Nestle also partnered with similar brands in an initiative with the government and the informal sector to observe and improve the waste collection process through setting targets and giving incentives for the collectors to ensure efficiency and productivity of the process. Another initiative,

currently in the process, is creating an EPR (Extended Producer Responsibility) model, to be proposed for the government for having a standard model for all the companies to use. To allow comparability and encourage all industries to collect as many plastics as they sell, eventually reaching neutrality.

L'Oreal Group has initiated and launched a new sustainability program "L'Oreal for the future", which is a set of targets to be reached by 2030 through mainly focusing on social and environmental complications. Moreover, a decision was made to allocate €150 million to address crucial social and environmental issues.

Three major challenges are faced by Nestle and L'Oreal. The first one is the *Cost*, where rPET is 1.6 times more expensive than the virgin material, owing to the long process required. Which includes collection of plastic waste and selecting PET only, sorting, manufacturing and testing. Hence, creating a more expensive end product due to being recycled. The second one is the *Quality*, which requires time and investment in research and lab tests. Meaning that it may take an average of 3 years to get the desired quality, ensuring it is also compatible with the global standards and satisfying the consumer's preferences. The third major challenge is the *Consumers' Acceptance*, this is expected with any new concept introduced in the market, it was worked on through different marketing strategies.

For Nestle, they advertised on social media announcing their new 100% recycled bottles.

The responses were a mix of criticism and skepticism on the quality of the bottle and the water. Nestle was expecting this response in Egypt since this was the first of its kind and people take time to process. They need to be more educated on this topic, and Nestle's main aim is to *educate the consumer*, through raising more awareness on the importance of recycling and stress on the high quality that can be produced from recycling. They created RVMs (Reverse Vending Machines) and put them in different locations to encourage people to recycle their plastic bottles. The bottles are sold in selected places which are modern trade (big supermarkets) and out of home (hotels) this is due to current segmentation of target consumers, and not tied to a limited capacity.

For L'Oreal, they claim on their shampoo bottles that they are 100% recycled, on the other hand, it is not advertised on a wider scope as they do not find the market mature enough to digest this fact or support it yet. Besides, there is a risk of getting the wrong message. There are no specific stores for selling the shampoo, it is distributed in most places and sold normally. Both brands set achievable targets within the coming years. The common targets between them were, by 2025: create packaging that is made of 100% recyclable or reusable materials. By 2050: they will reach net zero emissions. Everything related to the environment and people including challenges, initiatives and future targets is disclosed in their sustainability reports, posted on their websites to be accessed by anyone.

Both Nestle and L'Oreal set strict environmental targets to reach net zero emissions, those targets are part of their brand identity. Which affects their brand positioning and may lead to improving

the consumer's purchase intentions.

**The following are important quotes supporting the hypothesis**

*"Not everyone accepted our recycled plastic bottles when it was announced on social media. However, we aim to educate the consumer and market through different channels until it starts affecting their mindsets".*

*"It Took us 3 years of testing with BariQ the quality of recycled shampoo bottles until it reached the agreed global standards before introducing them to the market"*

**4.1.2 Interview (B): Primary Producer**

An interview and a field visit were conducted with BariQ, the first and only bottle-to-bottle recycling facility in Egypt and the MENA region, started in 2011, with the aim to lead the recycling industry and produce high quality end products. BariQ is a subsidiary of INTRO Resource Recovery, and their first manufacturing line of business. Now BariQ is the main reason behind the existence of high-quality food-grade (Food-Grade: Safe for food packaging and storage) recycled plastic bottles in Egypt. The end product is resin, sold in the form of pellets, which are then taken by mostly international brands (bottle and food container makers) to be shaped, then introduced to the market in different designs and forms (ex. Nestle water bottles and L'Oreal shampoo bottles).

BariQ has state of the art machines that can produce 10 tons of rPET per hour, the place is enriched with a diversified staff having complementary skills, this aided in having the capability to run a one-of-a-kind recycling facility with highly complicated machines. In addition to, building their own customized software programs used for operating and controlling the whole system to be self-sufficient. Not only this, but they also focus on

operating sustainably by using machines that reduce energy consumption by more than 50% compared to the normal process.

Moreover, reuse the water used for manufacturing by re-entering the system to reduce the rate of water consumption. BariQ is specialized in transparent PET only, which is the only material that can be recycled to produce a transparent food-grade plastic bottles again, the pellets produced are tested for quality in PPM (Parts Per Million) which is a highly precise method for ensuring a premium quality. The produced pellets are proudly approved by international regulators including the U.S. Food and Drug Administration (FDA), the European Food Safety Authority (EFSA), REACH and Health Canada. As a consequent, they can export their rPET. The amount exported is more than 50% due to the higher demand from developed countries in Europe and the United States.

The booming of BariQ started recently in 2021, when the EU exerted pressure on the international companies to abide by specific criteria, as they assess the recyclability of bottles and they add incentives for those who follow the targets. They claimed that by 2025 no one can export to the EU unless they have 25% recycled content in their products, if there is no recycled content there will be a fine of 450 euros. From here it became obligatory for the companies to recycle, and it was the golden opportunity for BariQ to be a major contributor for helping companies reach their environmental targets. This is how the demand in Egypt started to rise and the recycling business started to become highly profitable. In this situation, BariQ started selling their rPET with a 60% premium

price compared to virgin PET, after they were selling it at 10% discounted price in the previous ten years. BariQ is aware that this price may lower again in the medium term when the competition strengthens, till it stabilizes.

BariQ is more known on a B2B (Business-To-Business) level since they directly communicate with factories of secondary producers. However, they created BariQ Academy for focusing on conducting awareness sessions and workshops on the industry and its indispensability for the future, targeting all age groups (ex. schools, universities and employees). BariQ aims to cooperate with secondary producers starting from the design phase to ensure they get proper PET products that are suitable to be recycled in their stream, in other words, create recyclable products. To make a recyclable product, it should be made of PET plastics (not a mix of 2 or more types), to be transparent and add the colors to the labels instead, to have labels and caps that can be easily removed, to use ink that can be 100% dissolved to avoid contamination or engrave on the bottle instead, finally, the size of the bottle to be within the normal range, not too big or too small.

One good example is Sprite plastic bottles, they transformed the color to be transparent instead of being green, which now makes them recyclable. One issue is when companies take the transparent rPET and dye them with their desired colors, this makes the bottles non-recyclable to become bottles again, however can be recycled in other industries as fabrics. But this closes the loop for bottle-to-bottle manufacturers. As a consequent, BariQ is discussing with these companies to stop dyeing the rPET and look for alternative

methods instead.

A newly emerging industry as BariQ's bottle-to-bottle recycling facility is expected to face new challenges. Their first challenge is the collection, where the informal sector is not bound to specific rules so their actions are not closely observed and the prices are not standard. The second challenge is the consumer's acceptance and support, which is in the process of being changed through BariQ academy and their online platforms. The third challenge is the lack of getting government support, this needs time and significant proofs to be eligible for support, not only financially, but also through creating or applying relevant policies to form a clear system.

**The following are important quotes supporting the Hypothesis, from the interview**

*"BariQ started booming in 2021, when it was claimed that, by 2025 no one can export to the EU unless they have 25% recycled content in their products, or there will be a fine of 450 euros".*

*"We started selling our rPET with a 60% premium price compared to virgin PET, they were selling at 10% discounted price in the previous ten years".*

*"Consumers' perceptions towards recycled products still need development since it's the main driver for the market to grow, that's why we created BariQ academy which educates people on recycling".*

Below are some pictures of BariQ captured at the field visit.





Figure 12: BariQ Administrative Building (Author, 2022)



Figure 11: BariQ Interior, showcasing their process (Author, 2022)



Figure 13: BariQ factory View (1) (Author, 2022)

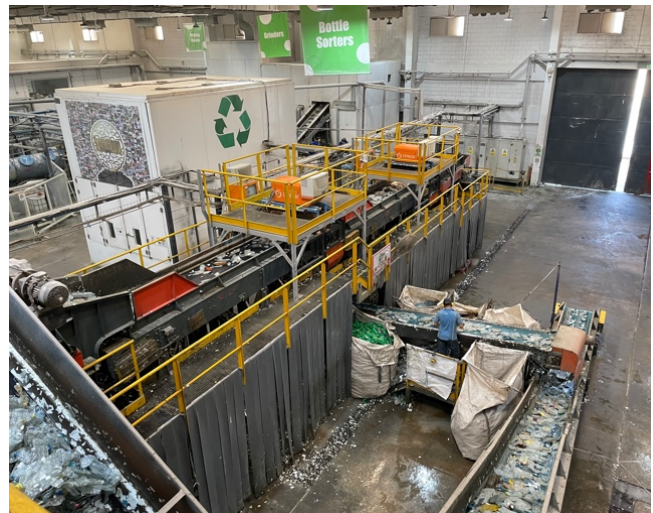


Figure 14: BariQ factory View (2) (Author, 2022)

## **4.2 Online Survey Results**

The aim of the survey was to investigate the level of awareness and type of perceptions of consumers towards recycled products in the Egyptian market. The survey targeted well-educated people, class A & B, age range 18 - 60 years old. Both genders were equally encouraged to contribute in filling the survey. The survey started with two general questions, then the questions shifted to specifically asking about recycled plastic bottles, followed by recycled shampoo bottles, ending it with a general open-ended question that would show the overall interest towards purchasing recycled products. Finally, there is a section for personal information to ensure that responses are within the target audience as well as being diversified, also to assist in analyzing the validity of responses. A total of 117 valid responses were collected. The responses for close ended questions are presented in graphs and charts, and the open-ended questions are grouped and presented in schedules using excel sheets.

## Section 1: General

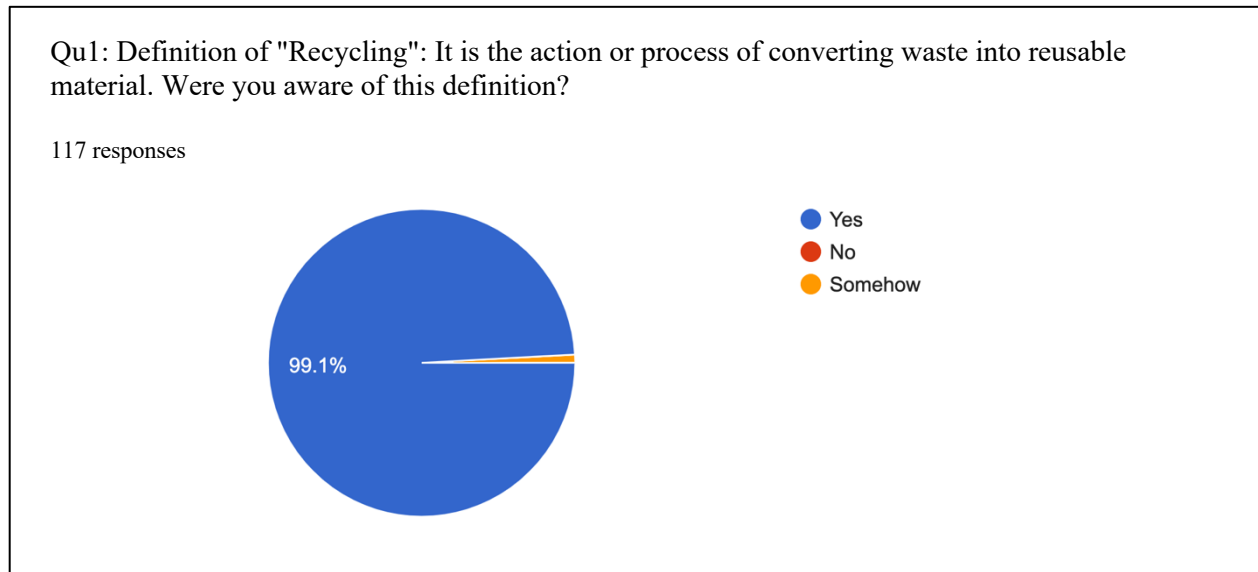


Figure 15: Consumers Survey Qu.1 (Author'22)

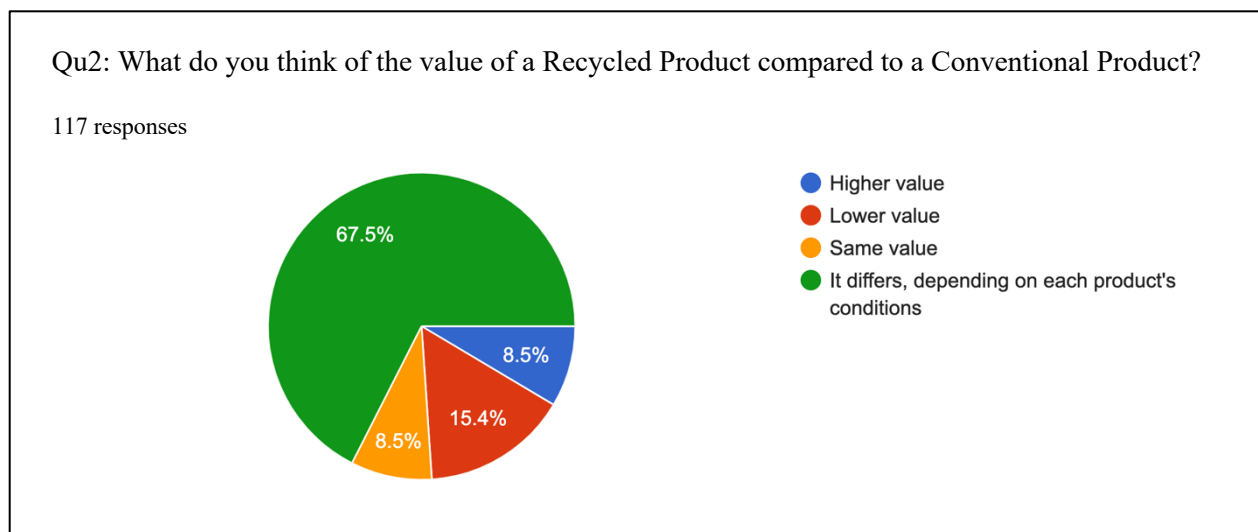


Figure 16: Consumers Survey Qu.2 (Author'22)

## Section 2: Plastic water bottles

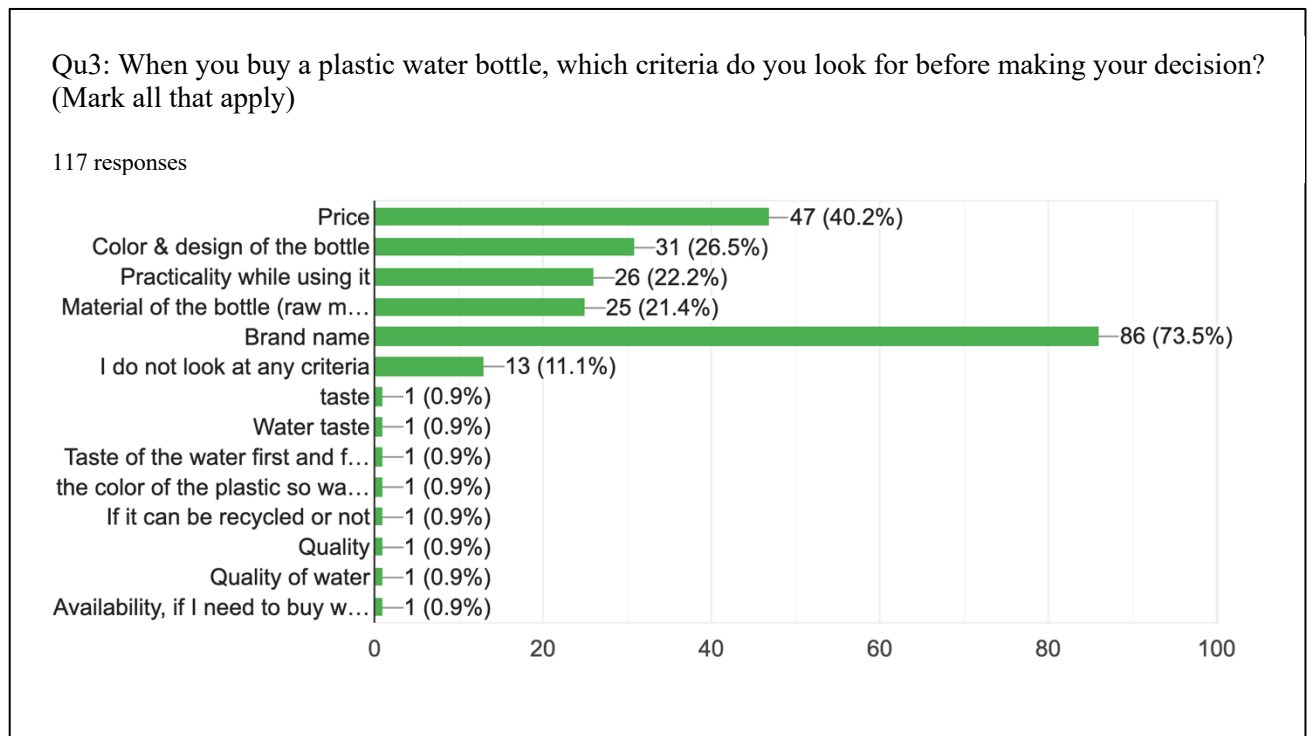


Figure 17: Consumers Survey Qu.3 (Author'22)

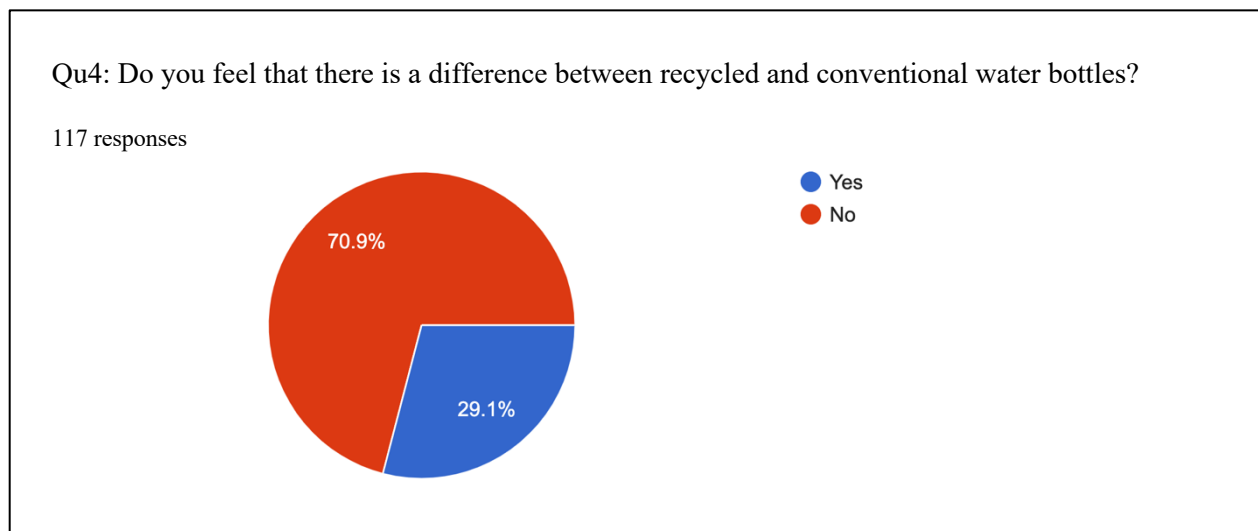


Figure 18: Consumers Survey Qu.4 (Author'22)

Table 3: Consumers Survey Qu.5 (Author'22)

| Qu5: If yes, what is the difference? (ex. color, quality, it's just a feeling,.. etc) |  |
|---|--|
| 1   | Color, quality, a feeling ? .. all ?   |
| 2   | Quality  |
| 3   | Quality of the bottle material itself  |
| 4   | weaker plastic quality   |
| 5   | Quality  |
| 6   | The material feels of lesser quality   |
| 7   | I feel like it's thinner and it only lasts for a single use .  |
| 8   | Quality , as I am not sure of the output safety quality criteria of the recycled product   |
| 9   | Quality/ plastics lightness  |
| 10  | A lot of times, it's quality, which affects the decision about other products too & almost the companies that aren't trustworthy despite their big names. Also, the feeling is a factor in many cases due to that loss of trust. |
| 11  | Quality of the bottle  |
| 12  | I think the material would be less durable, worse in a general manner  |
| 13  | Quality  |
| 14  | The material, practicality of using it   |
| 15  | I fear the recycled one might be less sanitary.  |
| 16  | I feel like someone drank from it before me  |
| 17  | Taste  |
| 18  | Color  |
| 19  | Colors are different to cover the original state of the recycled material  |
| 20  | Color  |
| 21  | Colour   |
| 22  | First of all it's a feeling that the material is different But I don't know for sure if it's a correct one   |
| 23  | Just a feeling i guess   |
| 24  | It is just a feeling   |
| 25  | It's just a feeling.   |
| 26  | A feeling  |
| 27  | Design   |
| 28  | I dont think i've seen a lot of recycled water bottles here in Egypt.  |
| 29  | I dont know what's the difference  |
| 30  | None   |
| 31  | Looks more appealing   |
| 32  | Recycled is more environment friendly  |

Qu6: Do you support buying recycled plastic water bottles?

117 responses

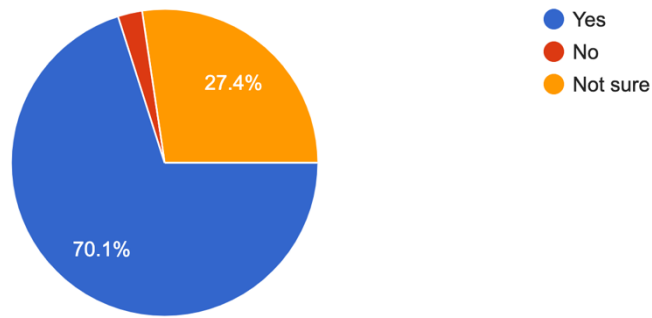


Figure 19: Consumers Survey Qu.6 (Author'22)

Qu7: Have you ever bought a recycled plastic water bottle?

117 responses

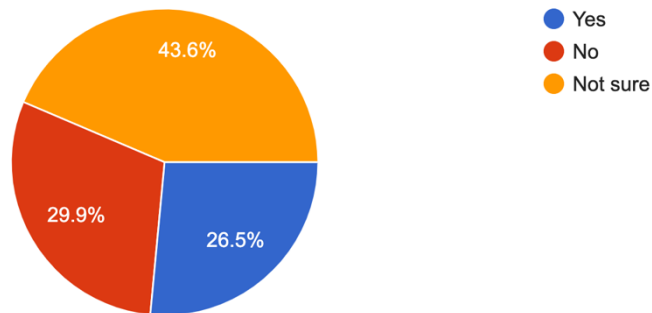


Figure 20: Consumers Survey Qu.7 (Author'22)

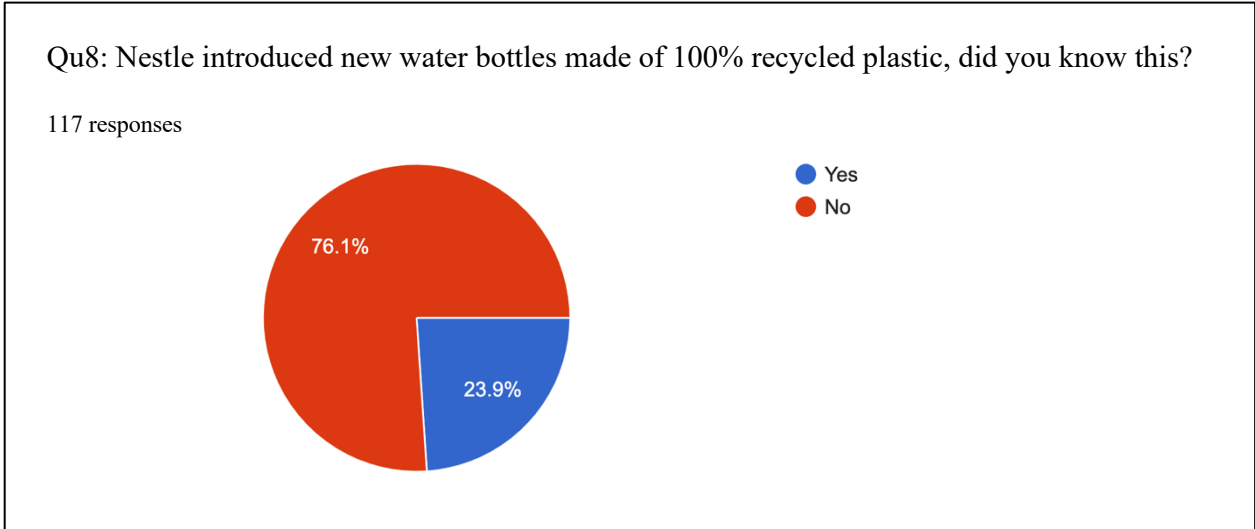


Figure 21: Consumers Survey Qu.8 (Author'22)

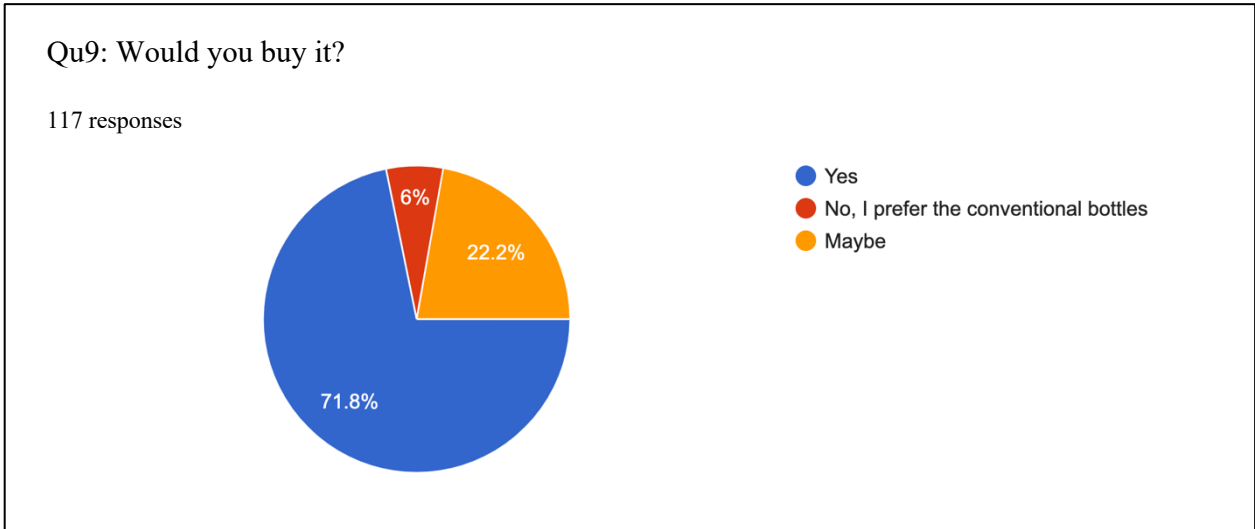


Figure 22: Consumers Survey Qu.9 (Author'22)

Qu10: If you are purchasing a recycled water bottle, what are the 3 main factors that you need to check in order to buy it? Rank the factors from 1 to 3 (highest priority - lowest priority)

117 responses

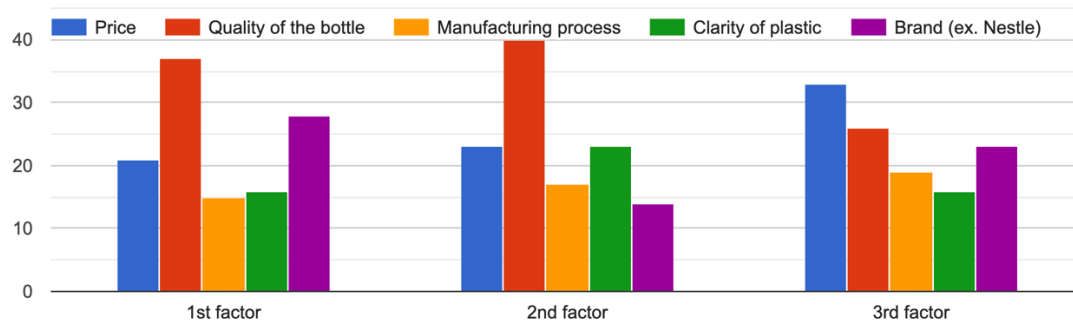


Figure 23: Consumers Survey Qu.10 (Author'22)

### Section 3: Plastic shampoo bottles

Qu11: Do you feel that there is a difference between recycled and conventional shampoo bottles?

117 responses

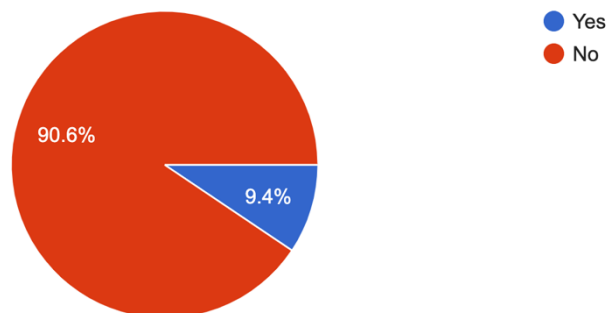


Figure 24: Consumers Survey Qu.11 (Author'22)



Table 4: Consumers Survey Qu.12 (Author'22)

| Qu12: If yes, what is the difference? (ex. colour, quality, it's just a feeling,.. etc) |  |
|---|--|
| 1   | Quality  |
| 2   | Quality  |
| 3   | It would be quality if the manufacturing process is not fulfilling the requirements and standards of quality, hygiene, and safety of used chemicals. |
| 4   | I feel like the plastic is thinner so it's weaker when squeezed.   |
| 5   | Recycled will be lighter in weight   |
| 6   | Material I Think is different  |
| 7   | Recycled bottles might be less sanitary  |
| 8   | Color  |
| 9   | I think texture of the bottle, color, and durability.  |
| 10  | Not sure if htere is a difference so please take that into account in the above answer   |
| 11  | None   |
| 12  | Recycled is more eco friendly and more appealing in terms of design  |

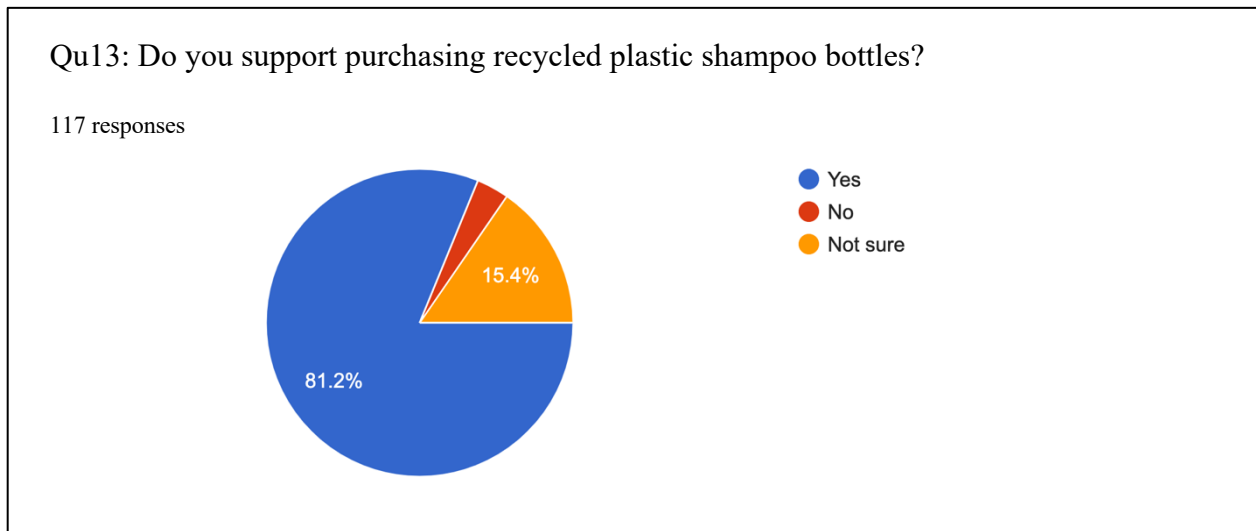


Figure 25: Consumers Survey Qu.13 (Author'22)

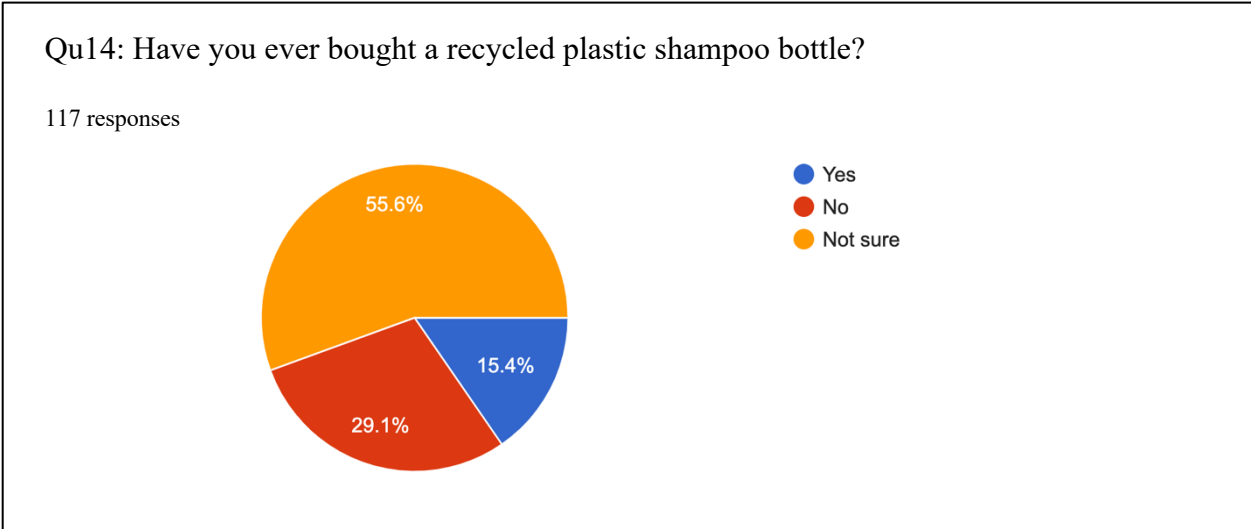


Figure 26: Consumers Survey Qu.14 (Author'22)

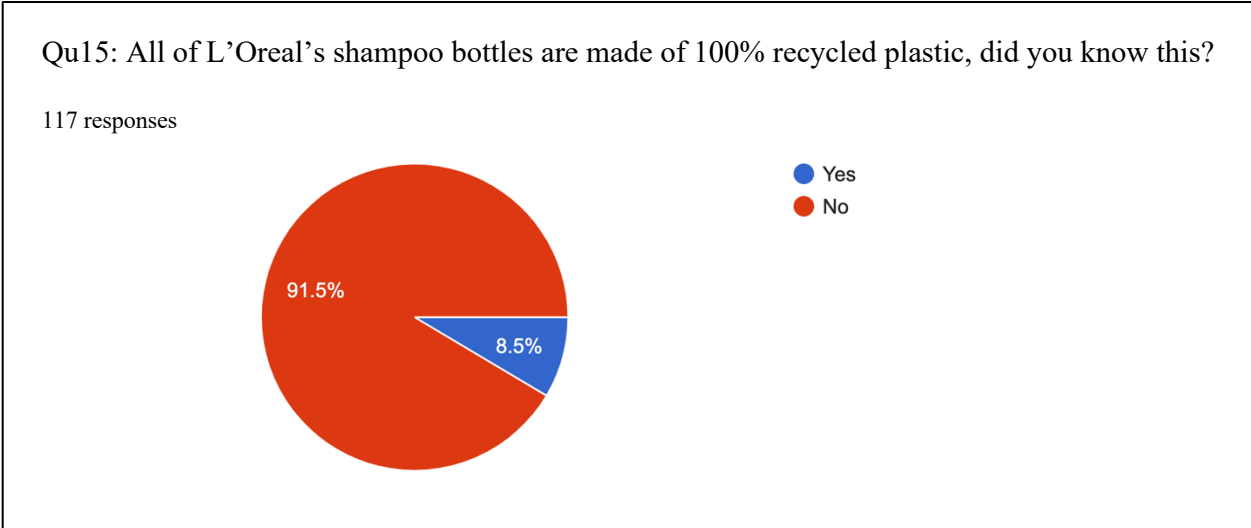


Figure 27: Consumers Survey Qu.15 (Author'22)

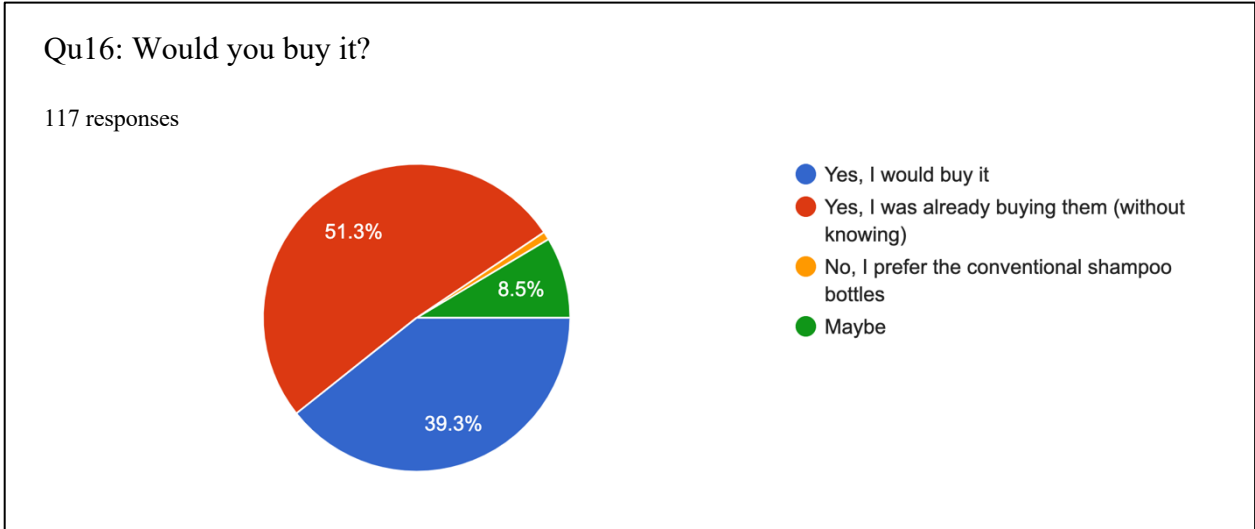


Figure 28: Consumers Survey Qu.16 (Author'22)

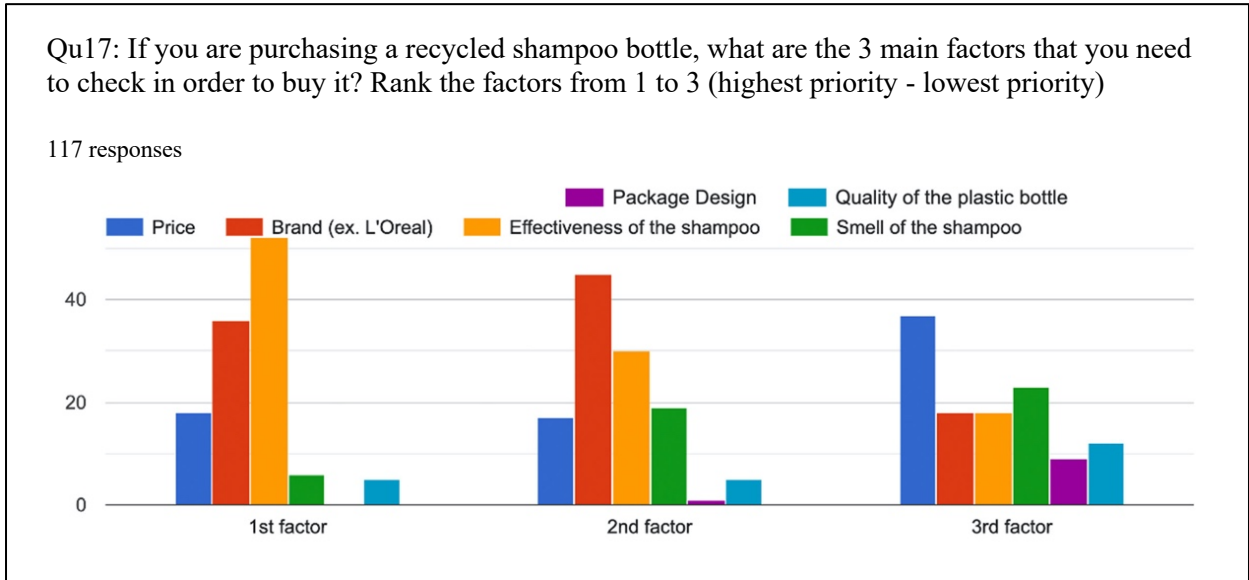


Figure 29: Consumers Survey Qu.17 (Author'22)

Qu18: Do you consider buying other products made of recycled materials? (ex. clothes, shoes, bags, home decorations, ... etc)

117 responses

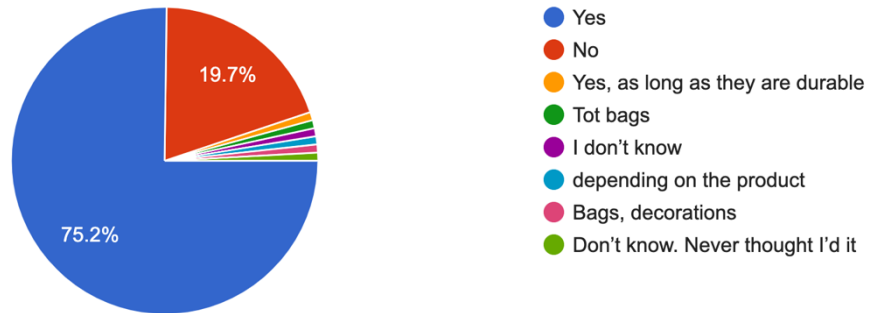


Figure 30: Consumers Survey Qu.18 (Author'22)

Table 5: Consumers Survey Qu.19 (Author'22)

| Qu19: If you previously bought recycled products, please mention these products and their brands |  |
|--|--|
| 1  | Backpack- Upfuse   |
| 2  | Upfuse- bags   |
| 3  | Bag- up fuse   |
| 4  | I have bought products from upfuse   |
| 4  | I have bought slippers made by a local sri lankan brand created from recycled plastic.   |
| 5  | Notebooks but can't remember the brand   |
| 6  | Recycled notebooks and paper, recycled plastic bags, recycled tissue   |
| 7  | Was recycled notebooks made of straw, but don't know the brand   |
| 8  | Note book and bag  |
| 9  | Bag  |
| 10   | Tot bags   |
| 11   | Recycled clothes, bags, and accessories  |
| 12   | Clothes, reusable food utensils  |
| 13   | Clothes / bags   |
| 14   | Clothing - H&M   |
| 15   | Clothes  |
| 16   | Some of h&m 's clothes are made partially of recycled cotton and recycled polyester  |
| 17   | H&M's sustainability clothing line is one of the most fashionable in the market!   |
| 18   | Zara   |
| 19   | zara clothes   |
| 20   | Shoes and clothes  |
| 21   | Plastics bags, Shoes, Warm Blankets  |
| 22   | Elia slippers, mango recycled pants  |
| 23   | Nike shoes, tote bag from an international bazaar and Gomash, gift bags from Alwan or local stationery stores, socks from Loop, notebooks from Mintra, lunch bag from Verynile.  |
| 24   | I have supervised something like a recycling competition and we recycled paper using a primitive way at home ... The quality sucks, however I was very proud of what we did ... Maybe if it had been done by professionals it would have been better |
| 25   | Soda (coca cola)   |
| 26   | Nestle water   |
| 27   | Water bottle-nestle  |
| 28   | Nestle water   |
| 29   | L'oreal elvive   |
| 30   | Many products can't remember   |
| 31   | Can't remember any but for sure I did buy something recycled   |
| 32   | I support the idea but recycled products are often pricier, and I don't want to pay extra  |

## Section 4: Personal Information

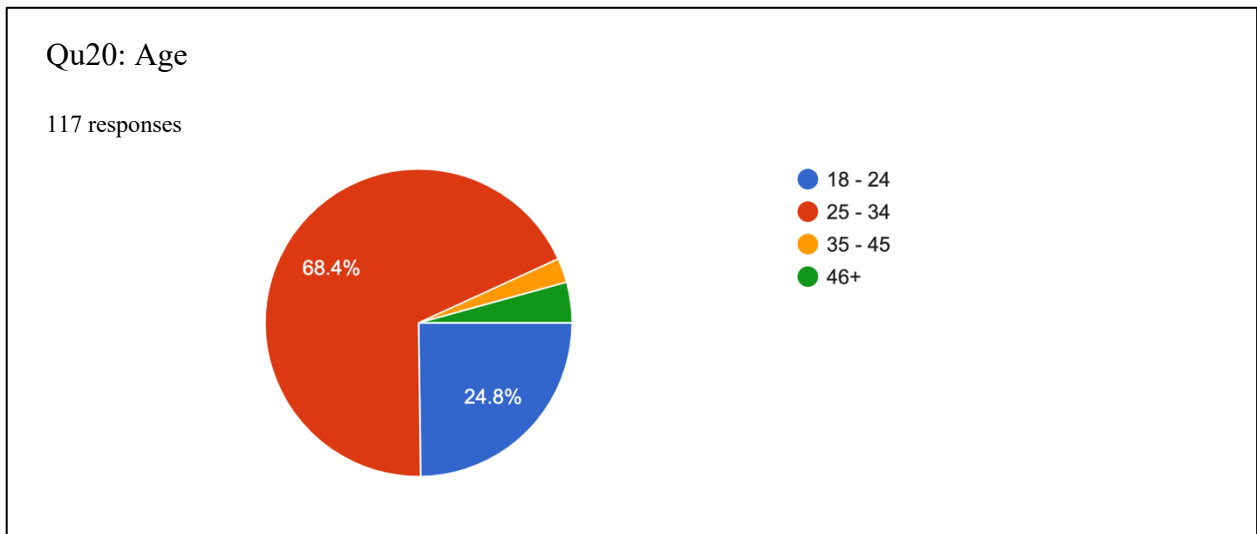


Figure 31: Consumers Survey Qu.20 (Author'22)

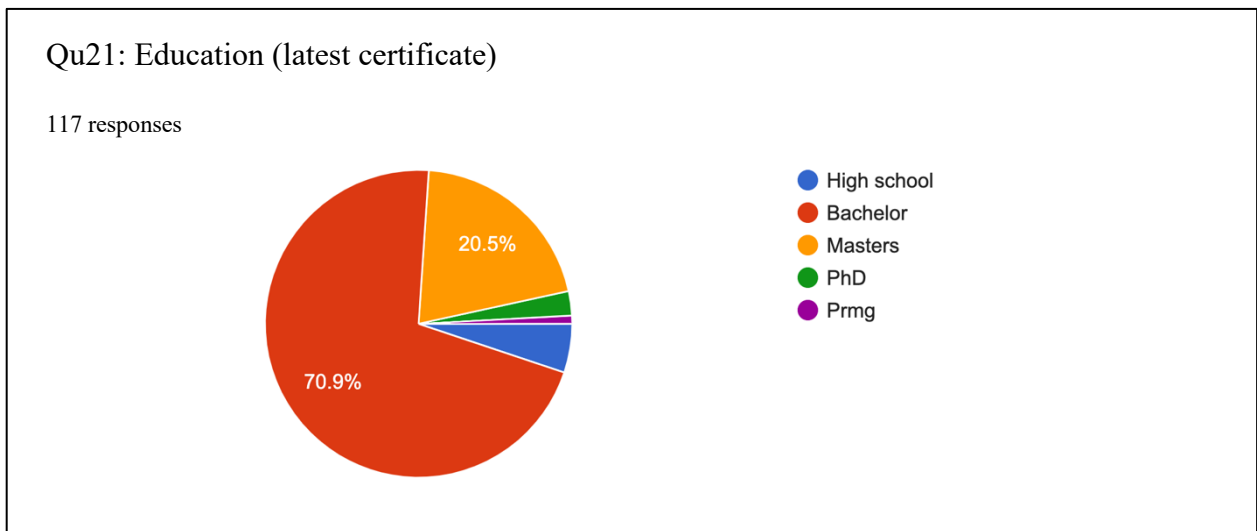


Figure 32: Consumers Survey Qu.21 (Author'22)

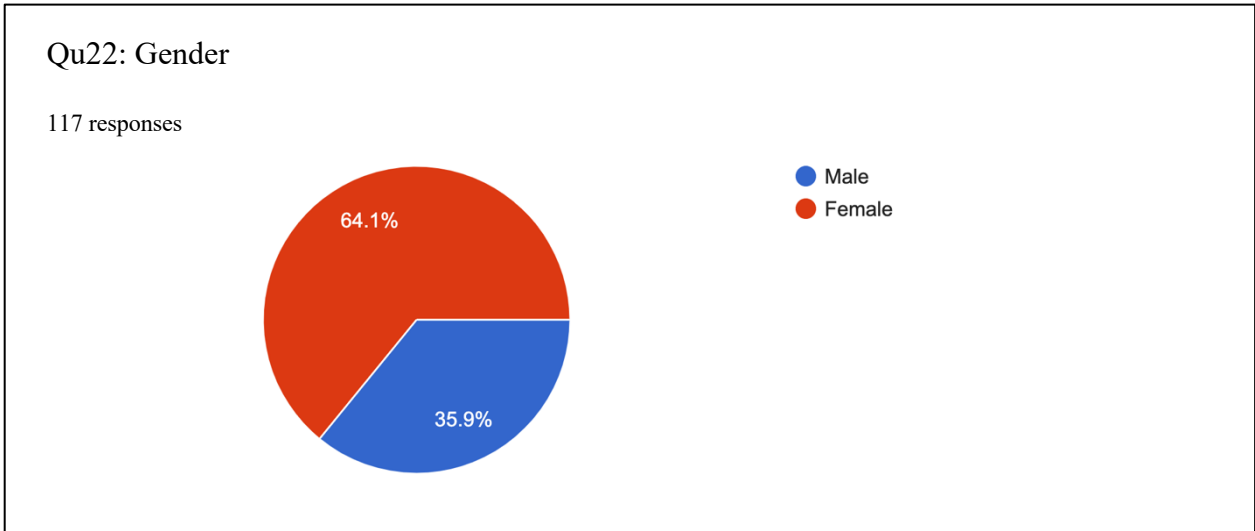


Figure 33: Consumers Survey Qu.22 (Author'22)

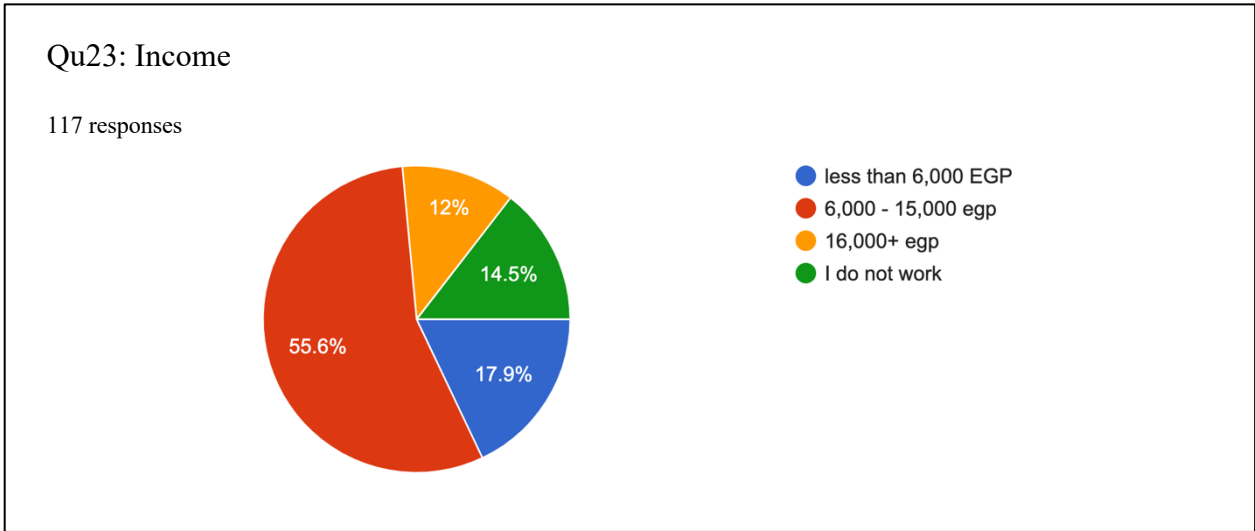


Figure 34: Consumers Survey Qu.23 (Author'22)

### 4.3 Discussion: Analysis of Results

Recycling can be applied through numerous processes depending on the type of material used and the expected final product. In this research, the focus was narrowed down by choosing one material, which is plastic, and one final product, which is bottles. Then the bottle was studied in two forms, water bottle and shampoo bottle. To analyze the consumer’s perceptions and needs towards those products, two well-established brands were chosen, to eliminate the possibility of complete unawareness of the existence of the product, and to ensure that the consumers have an idea about the brand identity and trust the brand’s actions. The two products were Nestle’s recycled water bottles and L’Oreal’s recycled shampoo bottles (Elvive & Garnier).

#### 4.3.1 Interview Analysis

Starting with analyzing the results of the interviews, table (6) below shows the keywords generated from the interviews.

*Table 6: Keywords from interviews (Author, 2022)*

| <b>Keywords/Codes Generated from the Interviews</b>        |                                  |
|--|----------------------------------|
| Global Targets   | PET- bottle to bottle            |
| EU regulations   | Informal Sector                  |
| Consumers acceptance                                       | Self-Sufficient                  |
| Waste Collection Process                                   | Recyclable Vs Recycled           |
| Serving the MENA region                                    | Export                           |
| High Cost  | Quality - PPM                    |
| Quality Tests  | Circular economy                 |
| Sustainability Approaches                                  | Recyclable from the design phase |
| EPR  | Government Support               |
| <i>Is it really a core purpose or is it an obligation?</i> |                                  |



It was clarified from the interviews that a new phenomenon of recycled plastics has been emerging at the large-scale global companies which complies with the concept of sustainability and environmental targets to fight climate change and mitigate its negative effects on the society. The ethical side of the businesses is not only getting more attention and visibility, but also is getting more competitive. The environmental targets include, and are not limited to, recycling, reducing material consumption and reusing the existing resources, which is all under the EPR concept, and that's why Nestle and L'Oreal have started to produce recycled products (plastic water bottles and plastic shampoo bottles).

Even though bottle-to-bottle recycling emerged in Egypt ten years ago by BariQ, it started booming only starting 2020. Which was the first big opportunity for BariQ to compensate all the unfortunate struggles they faced in the previous 10 years. They were able to set the price of recycled raw material to be 1.6 times the price of a virgin material, mainly due to having no competitors in the market. But the real question here is, did it actually boom because the companies decided, all at the same period, to become more environmentally responsible? Or is there another reason? Actually, there is another reason which is the new EU regulations, it was stated that they may apply a charge on exported products made of only virgin material, and they will expect to receive products with at least 25% recycled content, this is to be applied by 2025. As a consequent, well-known brands in Egypt who heavily depend on exporting (that may reach more than 50% of their products), stay updated with any relevant news and regulations set by the

EU as it can possibly threaten their exporting activity.

Another possible reason is, the UN SDGs (Sustainable Development Goals) set for 2030. All global companies are keen to participate in applying them, there is also Egypt's 2030 agenda, which consists of the same goals tailored for Egypt to encourage all companies operating in Egypt participate in achieving those goals too. The Egyptian government is also aiming to ensure that all companies prioritize leaving an impact on the people and planet. They encourage large-scale companies to report on their non-financial activities through an ESG report (Environment, Social and Governance), it is now voluntary but it is expected to be obligatory soon. This new interest changed the structure of most of the companies by prioritizing achieving the sustainability targets. It is now essential to have "Sustainability" actions on every company's website to showcase their sustainability actions and annual ESG reports. Additionally, this year COP27 (known as, The Climate Change Conference) will be in Egypt in November 2022, hosting all the presidents of all countries, all the top and well recognized environmental figures and all the huge organizations as the United Nations, to follow up with the achievements in mitigating climate change negative impacts. Therefore, this created a great motivation for companies to participate in it and showcase their relevant achievements to be part of such major event.

On the other hand, regular consumers might not be aware of all that, they only want a decent product that meets their expectations. This created a challenge for the producers

who decided to introduce recycled products to the market, they had to set a strategy for introducing such products. Nestle's strategy was by announcing on social media the recycled water bottles as soon as they were released in the market in 2021. The challenge was facing the negative comments of the very diverse consumers following them on social media, then they distributed the bottles in only two types of retail which are the hyper markets and hotels, due to the segmentation of the product which includes a limited number of target consumers, their key strategy is to *educate the consumer*, by emphasizing the reliability of process and the amount of quality tests implemented to produce the bottles. However, keeping the segmentation at this level is not the optimum solution, there should be ways to reach a wider scope of consumers to be able to achieve the goals set for 2025, it only requires time and proper planning to deliver the right message that must be compatible with the target consumer's mindset.

L'Oreal's strategy is different, they already released the recycled shampoo bottles in 2019 without advertising for it, believing that this is still not the suitable time, and it is more convenient to have consumers purchasing their bottles without noticing that they are recycled, better than announcing and taking the risk of losing some consumers. This shows their prioritization of keeping up with their sales rather than spreading a new concept and infusing it with the Egyptian culture. Both strategies had challenges, which is mainly handling the consumer's reactions and correcting their ideologies on recycled products, especially the ones used for containing food.

### 4.3.2 Survey Analysis

A myriad of useful insights was collected from the survey. To begin with, table (7) below consists of the main keywords generated from the survey results.

*Table 7: Keywords generated from interview results (Author, 2022)*

| Survey Keywords    |  |
|--------------------|--|
| Quality of product | Brand Name                                 |
| Level of Awareness | Recycled vs Conventional                   |
| Expensive          | Recycled products give a different feeling |
| Value Vs Price     | Uncertain purchase potential               |

#### Section 1

In the first section, there were two general questions measuring the awareness and general perception of recycling, they showed that 99% (almost all) of the respondents know the definition of recycling and 68% believe that the value of recycled products is not necessarily higher or lower than a conventional product, it depends on each case alone, which means that the idea of recycled products having a lower value is not generalized, and this can be used as a motive to expand the room for promoting more recycled products in the market. The remaining percentage is distributed on higher, lower and same value, all are minorities.

#### Section 2

The main focus was on plastic water bottles. The results showed that the top three criteria considered by the target group before purchasing traditional water bottles are the brand

name, price, color and design. This aided in narrowing the focus and identifying the consumer's interests and fears towards recycled water bottles. Then, they were asked if they feel a difference between recycled and conventional water bottles, surprisingly 71% answered "No", while the rest 29% said "Yes", and their main concerns were on quality, color and just having a negative unidentified feeling. This shows that the recycled products need to be communicated in terms of those three concerns. Looking at the ones who actually bought a recycled bottle, they were 27% and the ones who were unsure reached 44%, meaning that the majority are not really looking at the information written on the water bottle to check its material or other physical properties. After that, was testing how many people support having recycled plastic bottles Vs how many know about Nestle's 100% recycled bottle Vs how many would buy it. The results showed that 70% support the idea, but only 24% know about Nestle's bottle, and 72% agree to buy it. Also 22% answered "maybe" they would buy it, which shows that they just need to know more to make a decision. The percentage of people who know about Nestle's bottle is very low, which means that there is an awareness problem. The advertising was not covering all the targeted audiences, also the limited availability in the market is a main factor for the low awareness.

Ending this section with, the three main factors that consumers check on before buying a recycled water bottle, the results showed that the first factor was the Quality of the bottle, the second and third were the Price and Brand, according to the weighted average shown in the figure below. This clarifies that when it comes to being recycled, the quality and

price are prioritized over the brand, unlike when it was not recycled, the brand got the highest votes. But this can be looked into with a different perspective, that the brand may be the indicator for a good quality, but when a new concept enters the market as recycled bottles there might be doubts on it, in this case the brand is still considered and affects the consumers perceptions but not as the first factor, it becomes the second or third.

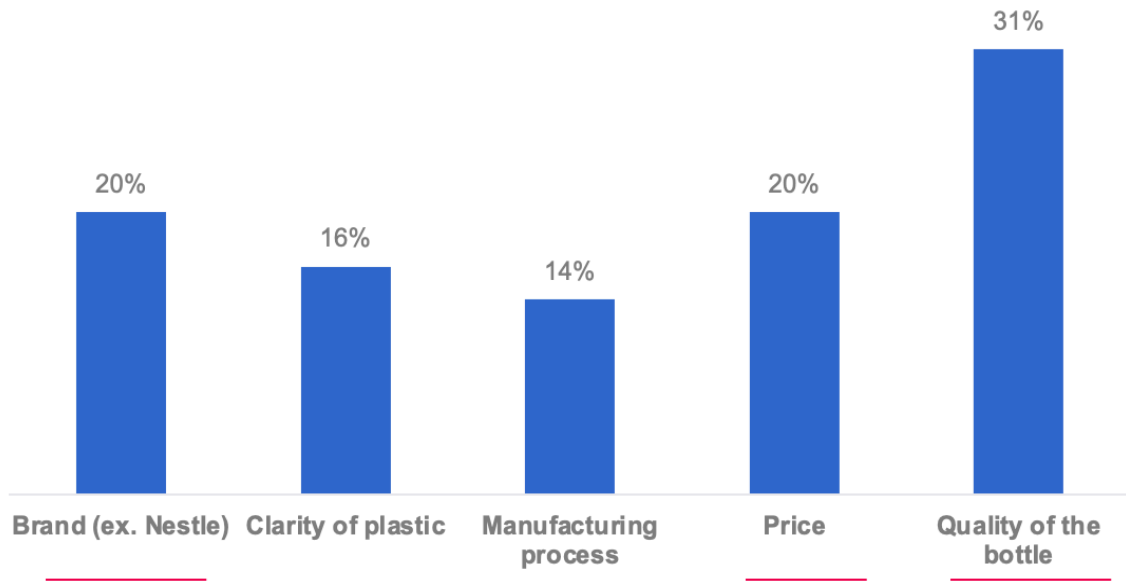


Figure 35: Weighted average of factors considered before purchasing a recycled water bottle (Author'22)

Further analysis was generated for the top two responding profiles which were Age (25-34), Education (Bachelor's Degree), Income (6,000-15,000 EGP). Which allowed forming a comparison between males and females responses. The comparison showed that both males and females agree on considering the quality of the bottle as the first priority, and the Brand to be the third priority. For the Price, it was considered as the second priority only for males, while females were more concerned about the clarity of the plastic. This shows that females care more about the outer look and males are more financially oriented. Exact percentages are shown in

the table below.

Table 8: Further analysis of factors considered for recycled water bottles, by profile (Author'22)

| Qu10: Top 2 Profiles of Respondents           |                                 |                    |                       |       |                       |
|---|---------------------------------|--------------------|-----------------------|-------|-----------------------|
|   | First Factor                    |                    |                       |       |                       |
|   | Brand (ex. Nestle)              | Clarity of plastic | Manufacturing process | Price | Quality of the bottle |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 35%                             | 22%                | 13%                   | 9%    | 22%                   |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 15%                             | 10%                | 15%                   | 20%   | 40%                   |
|   | Second Factor                   |                    |                       |       |                       |
|   | Brand (ex. Nestle)              | Clarity of plastic | Manufacturing process | Price | Quality of the bottle |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 9%                              | 22%                | 17%                   | 9%    | 43%                   |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 20%                             | 5%                 | 20%                   | 30%   | 25%                   |
|   | Third Factor                    |                    |                       |       |                       |
|   | Brand (ex. Nestle)              | Clarity of plastic | Manufacturing process | Price | Quality of the bottle |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 17%                             | 17%                | 0%                    | 43%   | 22%                   |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 25%                             | 15%                | 10%                   | 25%   | 25%                   |
|   | Weighted Average of all factors |                    |                       |       |                       |
|   | Brand (ex. Nestle)              | Clarity of plastic | Manufacturing process | Price | Quality of the bottle |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 23%                             | 21%                | 12%                   | 14%   | 29%                   |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 18%                             | 9%                 | 16%                   | 24%   | 33%                   |

### Section 3

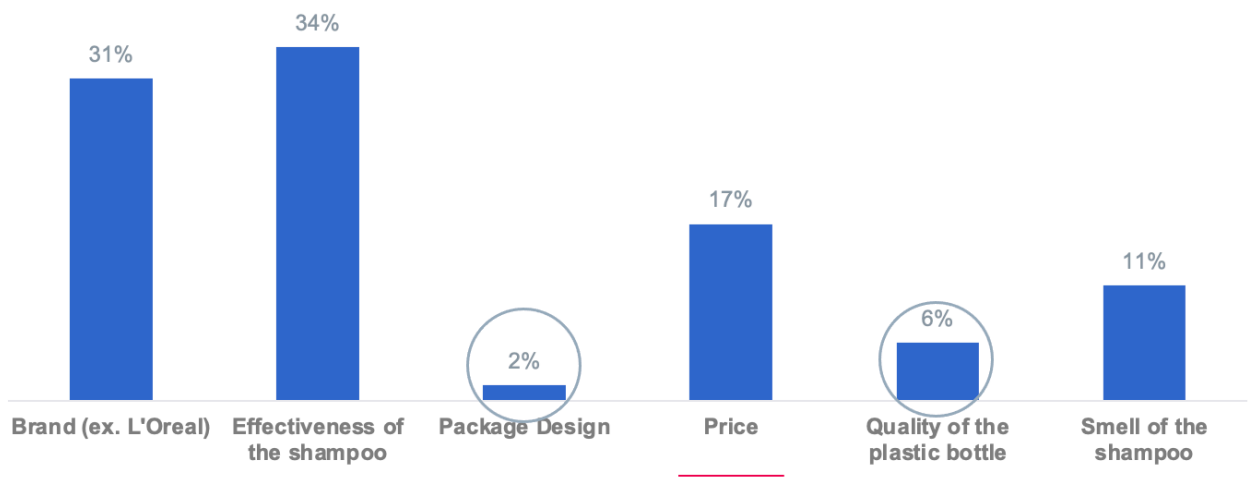
Focusing on Plastic Shampoo Bottles, the results showed that 90% said they do not feel a difference between conventional and recycled shampoo bottles, the 10% that felt the difference was mostly due to feeling that it has a lower quality. When they were asked about if they support recycled shampoo bottles 81% said “Yes”, 15% said “Maybe” which means that they want to know more and there is a chance they become supporters, and a mere 4% said “No”. Then asking if they actually bought a recycled shampoo bottle, only 15% said “Yes”, 30% said “No”, which leaves the majority of 55% stating “Not Sure”,

which indicates that they do not check the description written on the bottle and they are not aware of the brands that produce those recycled bottles. When asking specifically about L'Oreal's shampoo bottles, shockingly only 8.5% knew that they were recycled, which explains the poor effect of only claiming on the bottle but not publicly advertising it. On the other hand, 39% said they were already buying it without knowing, 51% are willing to buy it, 8.5% said maybe they will buy it, and a negligible 1% refused the idea. This shows almost a 90% support towards the concept of not only accepting, but also purchasing recycled shampoo bottles, which is an excellent indicator.

After that, identifying the three main factors that need to be checked in order to buy a recycled shampoo bottle, the results showed that they were first, Effectiveness of the shampoo, second, the Brand, third, Price. This is according to the weighted average shown in the figure below.

Other factors as the quality and design of the recycled shampoo bottle were the last two factors considered, which explains the higher acceptance and support towards purchasing a recycled shampoo bottle compared to the recycled water bottle. Another reason is because categorizing shampoo bottles as convenience products. Which is a type of product that is known to be chosen by the consumer based on the function more than the visual design.





*Figure 36: Weighted average of factors considered before purchasing a recycled shampoo bottle (Author'22)*

Further analysis was generated for the top two responding profiles which were Age (25-34), Education (Bachelor's Degree), Income (6,000-15,000 EGP). Which allowed forming a comparison between males and females' responses. The comparison showed that both males and females agree on considering the Effectiveness of The Shampoo as the first priority, and the Brand to be the second priority. For the third priority, Price was considered by males, while females were more concerned about the smell of the shampoo. This confirms that males are more financially oriented, while females are more interested in the function of the shampoo. The exact percentages are shown in the table below.

Table 9: Further analysis of factors considered for recycled shampoo bottles, by profile (Author'22)

| Qu:17 Top 2 Profiles of the sample            |                     |                              |                |       |                           |                      |
|---|---------------------|------------------------------|----------------|-------|---------------------------|----------------------|
| First Factor                                  |                     |                              |                |       |                           |                      |
|   | Brand (ex. L'Oreal) | Effectiveness of the shampoo | Package Design | Price | Quality of plastic bottle | Smell of the shampoo |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 30%                 | 48%                          | 0%             | 9%    | 4%                        | 9%                   |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 25%                 | 45%                          | 0%             | 20%   | 5%                        | 5%                   |
| Second Factor                                 |                     |                              |                |       |                           |                      |
|   | Brand (ex. L'Oreal) | Effectiveness of the shampoo | Package Design | Price | Quality of plastic bottle | Smell of the shampoo |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 35%                 | 30%                          | 0%             | 13%   | 0%                        | 22%                  |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 35%                 | 15%                          | 0%             | 30%   | 5%                        | 15%                  |
| Third Factor                                  |                     |                              |                |       |                           |                      |
|   | Brand (ex. L'Oreal) | Effectiveness of the shampoo | Package Design | Price | Quality of plastic bottle | Smell of the shampoo |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 13%                 | 9%                           | 0%             | 39%   | 13%                       | 26%                  |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 35%                 | 15%                          | 5%             | 25%   | 10%                       | 10%                  |
| Weighted Average of all factors               |                     |                              |                |       |                           |                      |
|   | Brand (ex. L'Oreal) | Effectiveness of the shampoo | Package Design | Price | Quality of plastic bottle | Smell of the shampoo |
| 25 - 34 Bachelor Female<br>6,000 - 15,000 egp | 29%                 | 36%                          | 0%             | 15%   | 4%                        | 16%                  |
| 25 - 34 Bachelor Male<br>6,000 - 15,000 egp   | 30%                 | 30%                          | 1%             | 24%   | 6%                        | 9%                   |

When they were generally asked about purchasing other products made of recycled materials, a majority of 80% actually consider the concept, it just differs from a product to the other. Examples of recycled products mentioned and already bought were numerous and diversified, mostly were in the fashion industry as bags, clothes and shoes some were from famous brands as Zara, H&M and Nike, others were unknown. The rest of the answers, the minority, were day-to-day products as the ones mentioned in the survey. Which indicates the preference of consumers when it comes to the type of recycled products, it is more accepted and purchased if it is a fashion product.

## Section 4

Lastly section 4, it was mainly about the personal information to assess to what extent the survey answers were diversified. It showed that the majority, 68%, were between 25-34, and 25% were between 18-25 years, and 7% were older. Regarding the education, 70% are bachelor's holders, 20% are master's holders, the rest are negligible, which indicates a well-educated group. Moving to the gender, 64% females and 36% males, it was preferred to have it almost equal. Then the income states, a majority of 56% were between 6,000EGP-15,000EGP which is an entry level range, and up to 5 years of experience. The rest were scattered on above and below 6,000EGP, and not working at all.

# Chapter 5

## Summary, Conclusions and Recommendations

### 5.1 Conclusions

Recycling has become the new direction for large production scale companies having global environmental targets. This study indicated that being able to apply real change mainly begins from the decision makers and regulators, which are the governmental entities and powerful global organizations as the UN, the EU and the Ministry of Environment. Global companies operating in Egypt and the MENA region, as Nestle and L'Oreal, are abiding by the global sustainability regulations and targets. They understand that the return they get from setting environmental targets may not be necessarily financial, but may be benefiting the company's positioning, brand image and aid them in gaining a new type of an ethically supportive target audience.

Before the global environmental targets set by the UN and EU, recycling facilities were encountering large deficits due to the low demand and lack of governmental support. Currently, achieving environmental targets got prioritized and the recycling facilities as BariQ now reached a premium price for selling their recycled PET to be 1.6 times the price of a virgin plastic. This created a booming recycling industry and a successful business model. Additionally, due to the execution of local and international conferences discussing topics related to climate change and climate action. COP27 is

on top of them, it will be held in Egypt in November 2022. This conference provided Egypt with the opportunity to prove itself within the world and showcase its achievements and targets towards combatting climate change. As a result, Nestle and L'Oreal took the environmental direction seriously to leave their own impacts and support the idea of preserving nature's resources.

Recycling is lacking financial support and governmental support. It is crucial to create a standard system and clear frameworks for recycling to be abided by the industry's suppliers and producers. To avoid the exploitation of vendors and increasing the prices with no sense. Consequently, standardize the flow of operations for recycling procedures, and be able to apply the concept of EPR in all the relevant companies.

Survey results showed that everyone knows about the concept of recycling, however, the gap was in the specific products mentioned in the survey, which were the recycled plastic bottles of Nestle and L'Oreal. It demonstrated that the most known and supported recycled products were mainly fashion related as shoes, bags and clothes. Taking the survey results as a general sample, Nestle reached only 24% of their target audience from their social media marketing campaign and L'Oreal reached only 8.5% of their target audience even though it's claimed on the bottle label.

The responses refuted the idea of framing the recycled products in a specific value that is always lower than the value of virgin materials, the majority (70% of the

sample) believed that value of recycled products differ depending on the type of product itself, which was proven later in the questions concerning Nestle and L'Oreal's recycled plastic bottles.

The level of uncertainty towards already buying recycled plastic bottles, either water or shampoo, was considerably high, with an average of 50%, which is the first indicator proving that the target consumers lack awareness on the materials used for plastic bottles in general.

On the other hand, the level of support for the idea of purchasing recycled water and shampoo bottles was high, with an average of 75%, with higher given to L'Oreal's shampoo bottles. Nevertheless, this does not reflect the percentage of people actually purchasing recycled products. Hence, to guarantee a real action there must be a concentrated focus on the main pillars considered by the consumer before purchasing a product. Having this in the survey showed that, for Nestle's recycled water bottles, people looked for First: Quality, Second and Third, Price and Brand. While for L'Oreal's shampoo bottles, they chose to look for First: Effectiveness of the shampoo, Second: Brand and Third: Price. Which proves that the Brand is one of the top three criteria considered before purchasing recycled bottles.

This demonstrates that, the quality of recycled water bottles should be prioritized as the key message for communicating with the target consumers. Interestingly, for the

shampoo bottles, the effectiveness of the shampoo itself, was prioritized which makes it the key message to be used for communicating with the target consumers. Since the quality of the shampoo bottle was not even a concern for the consumers, this interprets the larger acceptance towards purchasing recycled a shampoo bottles.

Further analysis by profile showed that greater acceptance was shown from the young age group (18-35), which indicates the possibility for a better future due to the developed young mindsets. It showed also that there was no significant difference between the results of males and females regarding this topic. However, the only spotted difference was that males prioritize the price more than females for both products.

Overall, the results showed high potential for supporting and purchasing recycled bottles, despite the significantly low awareness. It also showed a better score for acceptance towards L'Oreal's recycled shampoo bottles more than Nestle's recycled water bottles, which creates a new interpretation of having better chance for recycled products that are not in contact with food. Even though the quality of water bottles is 100% guaranteed but still there will always be quality concerns from consumers since it is involving food.

## 5.2 Summary of Survey Results

- The study reveals that 50% of the people were not sure if they were buying bottles having recycled content (water & shampoo), indicating very low awareness on recycled content in all plastic bottles purchased
- Recycled fashion products are more popular than the recycled water and shampoo bottles
- The main spotted gap was in the low awareness of consumers towards the existence of Nestle's and L'Oreal's recycled bottles
- Nestle got only 24% awareness, after executing a marketing campaign
- L'Oreal got only 8.5% awareness, with only claiming on the bottle
- About 75% support the idea of using recycled bottles, 0% refuse, the rest are undecided
- Quality of the bottle is a priority if it will be filled with water, but not a priority if filled with shampoo
- For the shampoo, the quality of the shampoo liquid itself is the priority, not the bottle
- The difference between males and females was that males prioritized the price in both products, while females had different priorities concerning the color or smell of the product.
- The difference in age groups was a higher interest shown towards the brand for the younger age.
- Generally, more acceptance was shown towards purchasing recycled shampoo bottles than recycled water bottles, which is believed to be due to not being in contact with food
- The "Brand" of the product is at the top three requirements for purchasing a recycled plastic bottle, which supports the stated hypothesis



### 5.3 Limitations and Future Recommendations

- The sample included responses from same or very close social and financial levels, the next phase will need testing the perceptions of people with different social and financial levels (Class C), who are still within the target groups of Nestle and L'Oreal's mentioned products
- Implement a face-to-face interviews with the consumers to create a more experiential interview by asking people to drink from recycled plastic bottles, then hear their honest opinions to help gain more accurate perceptions
- Survey questions lacked having scales for purchasing criteria, which would have helped in deeper quantitative analysis.
- Age groups in the survey were not in equal amounts, the age 35+ was a minority compared to the whole sam
- Categorized recycled products into: Involving food content, and Not involving food content. As this difference changes the main concerns of the consumer.
- Investigate the performance and awareness for local recycled products, having less popular brands, and see if there is a difference in the insights when the brand category changes
- Expand the scope to be investigating different products made of recycled plastics, not only water bottles (ex: bags, shoes, t-shirts, home accessories, ...)

## 5.4 Recommendations for the recycling industry and the community

- Recycling factories need financial support either from investors or green loans
- They also need governmental support to form reliable legislations and standard frameworks, and have control on suppliers
- There is a need to spread awareness about EPR as a core concept in all industries
- Encourage cooperation between primary and secondary producers, to raise the efficiency of the recycling process
- Consider recycling and the circular economy starting from the design phase, to ensure sustaining the system, example: keep the PET plastic pure and transparent, use removable labels, and dissolvable ink. To keep it recyclable and in the circular loop.
- People are aware of recycling as a general concept, but not in specific details, so detailed awareness is needed focusing on the industry operations and considered specs. Then demonstrate how the produced final product can be guaranteed to be safely used.

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# Appendices

## 1. Interview Questions

### **Thesis Topic: Factors affecting the consumer's purchase intentions towards recycled products**

#### **Interview Questions**

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\*This interview will be conducted by Sherine Esmat, with someone who is involved in plastic recycling industry

- It will be either face to face or via phone call
  - It will be voice recorded, after asking for permission
  - Results will be anonymous and used only for research purpose
- 

#### **Introduction**

Hello Mr. ...., my name is Sherine Esmat, I am doing my master's degree thesis on recycled plastic products in the market, how consumers perceive them and on what basis do they make their purchase decisions. I would like you ask you a few questions to know more about the process, the challenges and how the recycled products reach the market.

#### **Background**

1. When did you start
2. Why did you start this business
3. What's your vision
4. What are your targets and what did you achieve so far
5. How did you start operating

#### **Business Details**

6. How much do you recycle per month/year (output)
7. Who are your clients
8. What's your source of funding
9. Who gives you support
10. What is the type of relation between you and the government
11. Describe & explain the flow of your operations
12. Do you always generate profits?
13. Is your business considered risky or stable? Explain why

#### **The Future**

14. What are your biggest challenges and fears?
15. What do you wish/plan to achieve for the future?
16. How do you ensure the continuity & success of the business?

## 2. Online Survey Questions

### Recycled Products in the Market

This survey is created to collect data for the thesis of an AUC graduate student pursuing MSc in Sustainable Development. It is anonymous and all the information will be recorded for academic purposes

#### Important definitions

##### Recycled product:

A product created from recycled materials, which are materials that were previously used, then instead of being discarded as waste they got re-manufactured to be used again in the same or a different function.

##### Conventional product:

A product made of the normally known material

\* Required

1. Qu1: Definition of "Recycling": It is the action or process of converting waste into reusable material. Were you aware of this definition? \*

Mark only one oval.

- Yes  
 No  
 Somehow

2. Qu2: What do you think of the value of a Recycled Product compared to a Conventional Product? \*

Mark only one oval.

- Higher value  
 Lower value  
 Same value  
 It differs, depending on each product's conditions

#### Plastic Water Bottles

"Nestle" is used as an example to be able to assess the results

3. Qu3: When you buy a plastic water bottle, which criteria do you look for before making your decision (mark all that apply) \*

Check all that apply.

- Price  
 Color & design of the bottle  
 Practicality while using it  
 Material of the bottle (raw material/ recycled)  
 Brand name  
 I do not look at any criteria  
 Other: \_\_\_\_\_

4. Qu4: Do you feel that there is a difference between recycled and conventional water bottles? \*

Mark only one oval.

- Yes  
 No

5. Qu5: If yes, what is the difference? (ex. color, quality, it's just a feeling... etc)

\_\_\_\_\_



6. Qu6: Do you support buying recycled plastic water bottles? \*

Mark only one oval.

- Yes
- No
- Not sure

7. Qu7: Have you ever bought a recycled plastic water bottle? \*

Mark only one oval.

- Yes
- No
- Not sure

8. Qu8: Nestle introduced new water bottles made of 100% recycled plastic, did you know this? \*



Mark only one oval.

- Yes
- No

9. Qu9: Would you buy it? \*

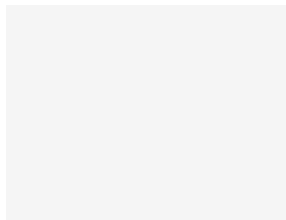
Mark only one oval.



Yes



No, I prefer the conventional bottles



Maybe

10. Qu10: If you are purchasing a recycled water bottle, what are the 3 main factors that you need to check in order to buy it? Rank \*  
the factors from 1 to 3 (highest priority - lowest priority)

*Mark only one oval per row.*

|                   | Price                 | Quality of the bottle | Manufacturing process | Clarity of plastic    | Brand (ex. Nestle)    |
|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>1st factor</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>2nd factor</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <b>3rd factor</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Plastic Shampoo Bottles

"L' Oreal" is used as an example to be able to assess the results

11. Qu11: Do you feel that there is a difference between recycled and conventional shampoo bottles? \*

*Mark only one oval.*

- Yes  
 No

12. Qu12: If yes, what is the difference? (ex. colour, quality, it's just a feeling... etc)

\_\_\_\_\_

13. Qu13: Do you support purchasing recycled plastic shampoo bottles? \*

*Mark only one oval.*

- Yes  
 No  
 Not sure

14. Qu14: Have you ever bought a recycled plastic shampoo bottle? \*

*Mark only one oval.*

- Yes  
 No  
 Not sure

15. Qu15: All of L' Oreal's shampoo bottles are made of 100% recycled plastic, did you know this? \*



Mark only one oval.

- Yes
- No

16. Qu16: Would you buy it? \*

Mark only one oval.

- Yes, I would buy it
- Yes, I was already buying them (without knowing)
- No, I prefer the conventional shampoo bottles
- Maybe

17. Qu17: If you are purchasing a recycled shampoo bottle, what are the 3 main factors that you need to check in order to buy it? \*  
Rank the factors from 1 to 3 (highest priority - lowest priority)

Mark only one oval per row.

|                   | Price                 | Brand (ex. L'Oreal)   | Effectiveness of the shampoo | Smell of the shampoo  | Package Design        | Quality of the plastic bottle |
|-------------------|-----------------------|-----------------------|------------------------------|-----------------------|-----------------------|-------------------------------|
| <b>1st factor</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         |
| <b>2nd factor</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         |
| <b>3rd factor</b> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>         |

18. Qu18: Do you consider buying other products made of recycled materials? (ex. clothes, shoes, bags, home decorations,.. etc) \*

Mark only one oval.

- Yes
- No
- Other: \_\_\_\_\_

19. Qu19: If you previously bought recycled products, please mention these products and their brands

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Personal Information

All of the information is anonymous and to be used for research purposes only

20. Qu20: Age \*

Mark only one oval.

- 18 - 24
- 25 - 34
- 35 - 45
- 46+

21. Qu21: Education (latest certificate) \*

Mark only one oval.

- High school
- Bachelor
- Masters
- PhD
- Other: \_\_\_\_\_

22. Qu22: Gender \*

Mark only one oval.

- Male
- Female

23. Qu23: Income \*

Mark only one oval.

- less than 6,000 EGP
- 6,000 - 15,000 egp
- 16,000+ egp
- I do not work
- Other: \_\_\_\_\_

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Google Forms

### 3. IRB Approval



Case# 2021-2022-184

**To: Sherine Esmat  
Mohamed Nagib AbouZeid  
Maissa Khattab**

**From: Heba Kotb Chair of the IRB  
Date 21<sup>st</sup> July 2022**

**Re: IRB approval**

---

This is to inform you that I reviewed your revised research proposal entitled

**“Factors affecting the consumers purchase intentions towards recycled products”**

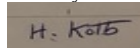
It required consultation with the IRB under the "expedited" category. As you are aware, there were minor revisions to the original proposal, but your new version addresses these concerns successfully. Your proposal used appropriate procedures to minimize risks to human subjects and that adequate provision was made for confidentiality and data anonymity of participants in any published record. I believe you will also make adequate provision for obtaining informed consent of the participants.

This approval letter was issued under the assumption that you have not started data collection for your research project. Any data collected before receiving this letter could not be used since this is a violation of the IRB policy.

Please note that IRB approval does not automatically ensure approval by CAPMAS, an Egyptian government agency responsible for approving some types of off-campus research. CAPMAS issues are handled at AUC by the office of the University Counsellor. The IRB is not in a position to offer any opinion on CAPMAS issues, and takes no responsibility for obtaining CAPMAS approval.

This approval is valid for only one year. In case you have not finished data collection within a year, you need to apply for an extension.

Thank you and good luck.



Heba Kotb  
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Email: hebakotb@aucegypt.edu

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