UHASSELT

KNOWLEDGE IN ACTION

Faculty of Business Economics

Master of Management

Master's thesis

Circular Economy: Consumer Perception for Remanufactured Goods

Mohammad Shadab Alam

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization International Marketing Strategy

SUPERVISOR :

Prof. dr. Pieter PAUWELS

2020
2021

UHASSELT

KNOWLEDGE IN ACTION

www.uhasselt.be
Universiteit Hasselt
Campus Hasselt:
Martelarenlaan 42 | 3500 Hasselt
Campus Diepenbeek:
Agoralaan Gebouw D | 3590 Diepenbeek

UHASSELT

KNOWLEDGE IN ACTION

Faculty of Business Economics

Master of Management

Master's thesis

Circular Economy: Consumer Perception for Remanufactured Goods

Mohammad Shadab Alam

Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization International Marketing Strategy

SUPERVISOR :

Prof. dr. Pieter PAUWELS

Disclaimer COVID-19 Crisis

This master thesis was written during the COVID-19 crisis in 2020-2021. This global health crisis might have had an impact on the (writing) process, the research activities and the research results that are at the basis of this thesis.

Abstract

An increase in the demand for products leads to the overexploitation of resources and adversely affects the environment. The concept of circular economy is a solution that helps in increasing the sustainable use of raw materials. It is defined as the economy generated by the reuse of goods, which minimizes pollution (air, water, soil) and carbon footprint. The proper handling of used products to make them available for recycling and reuse has created a market for remanufactured goods. However, literature shows that consumers have a poor opinion towards the acceptance of remanufactured goods. Thus, the circular economy is strongly dependent on understanding consumer's attitudes towards remanufactured products. The quasi-experimental based research in this report incorporates essential factors like awareness about the remanufactured product, brand equity, price, and quality to examine the consumer's attitude to switch from purchasing new products to remanufactured products. In this research, Nike (a high brand value) and PRIMARK-shoe (a low brand value) are considered to examine the consumer's attitude to remanufactured products. Two different surveys have been conducted for the two brand values, and the data obtained has been processed using SPSS software. Correlation, regression, and descriptive analysis are utilised to analyse the results obtained.

Results of the study reveal that brand equity positively affects consumer's attitudes towards remanufactured products. Additionally, awareness about remanufactured products for high brand value positively impacts consumer's attitude towards remanufactured products, whereas, for low brand value, quality has a positive impact. Furthermore, the study highlights that the effect of price on building customer attitude towards remanufactured goods is negligible due to consumer awareness about recycling and its positive impact on the environment. The research shows that the end consumer prefers a quality product with a high brand value compared to a low one when purchasing a remanufactured product.

Keywords: Circular economy, remanufactured products, brand equity, consumer attitude, awareness, quality, price

Acknowledgment

I would like to thank my thesis supervisor Prof. dr. Pieter Pauwels, Dean of Faculty of Business Economics, Hasselt University, for his tremendous support and guidance in the research and creation of this master thesis. His valuable feedback gave me more confidence, inspired me to be more creative, and pushed me to be more efficient.

Table of Content **Page no.**

List of Tables

List of Figures

Chapter 1

Introduction

Introduction

An increase in the demand for products leads to the overexploitation of resources and adversely affects the environment. This increase in demand also leads to waste generation, either in used products or food. Waste handling is one of the significant challenges for any country nowadays. The proper handling of used products to make them available for recycling and reuse has created a market for remanufactured goods.

The circular economy is the solution that helps in increasing the sustainable use of raw materials. It is defined as the economy generated by the reuse of goods minimizing pollution (air, water, soil) and carbon footprint. The European market for remanufactured products has a turnover of approx. €30 billion. Although it represents a small percentage of the total manufacturing market that is only 1.9%, it is seen as a critical part of business strategy and potential differentiator (European Remanufacturing Network, 2015).

Well-informed choices, behaviours, and lifestyles play a critical role in achieving sustainable development (Jackson and Michaelis, 2003, Lie et al., 2009). On the other hand, a lack of complete knowledge about the benefits of remanufactured goods is considered one of the crucial barriers to proper circular economy implementation. Fortunately, we can change by creating awareness about the benefits of circular economy and its positive impacts on the environment. Proper communication about the circular economy helps create a better image of the product and better perception.

However, the main research questions to explore are the awareness of the end customer about the recycled part of the product and when exactly it is necessary to communicate its remanufactured nature and benefits. Moreover, it is equally important to find the end consumer's readiness to use and accept the remanufactured product. Therefore, the main objective of this proposal is to find consumer awareness about the circular nature of the product, perception about the quality of the remanufactured goods, and explore the willingness of the consumer to adopt remanufactured goods/products. In this regard, different dimensions such as price, brand equity, quality, and marketing are used to analyse the consumer perception regarding remanufactured goods.

Chapter 2

Literature Review

Literature Review

The global impact of resource exploitation leads to reorganizing our economic and social relations, which seems to be locked within technologies, lifestyle, supply chains, and organizational, regulatory, institutional, and political structures (Markard et al., 2012). Sustainable development is the only way to minimize resource exploitation. It is defined as the effective use of resources for the human development goals keeping in mind for the future generation. Sustainability transitions are multi-dimensional, long-term, and fundamental transformation processes through which established socio-technical systems shift towards sustainable modes of production and consumption (Markard et al., 2012). Over the past 15-20 years, socio-technical transitions, system innovations, and the emergence of sustainable technologies have received increasing sustainable attention in social science, and a number of conceptual frameworks have been developed (Smith et al., 2010, Grin et al., 2010).

The impact of sustainability on Consumers is that they get emotionally attached to the company's brand and offer to fulfil their three features of self: self-relief, self-enrichment, and self-enabling (Park et al. 2008). It allows users to improve their self-image by using a company's offering to communicate their sustainability impact and feel like more integral individuals (Berger 2006). Sen and Bhattacharya 2001 supported the notion that corporate social responsibilities (CSR) strengthen an individual's desire for self-enhancement.

Circular Economy

The circular economy is the means towards sustainability by reversing current practices of rapid resource depletion and waste generation. The circular economy is defined as an industrial approach that is regenerative or restorative by design and intention. It replaces the end-of-life concept with restoration, shifts towards using renewable energy, eliminate toxic chemicals, impairs reuse, and aims to eliminate waste through the superior design of materials, products, systems, and business models. It is also defined as an idea that favours increased and optimal resource efficiency (Preston, 2012; Roos, 2014).

Ellen Macarthur Foundation coined the most used definition of circular economy and is represented in the famous 'butterfly diagram' [Ellen Macarthur foundation, 2013]. In this butterfly visualization diagram, the circular economy is divided into two cycles named: biological and technical. Both processes consist of actors and activities. The center of the diagram consists of the consumer for the biological cycle and the user for the technological cycle. The others involved in this definition are the service provider, the product manufacturer, and the part manufacturers. This diagram goes with three principles that the foundation invents as circular economy principles. These principles are helping in preserving and enhancing natural capital, the more prolonged circulation of products and materials in both cycles, and designing waste.

From the European Remanufacturing Network (ERN 2015) report, the circular economy is classified as an alternative to a traditional linear economy that extracts resources and develops products that are disposed of after use. The critical approach of circular economy is to keep the resources in use for maximum possible time, extracting maximum value from them during use, then recovering and regenerating them at the end of each service life. By keeping the components and resources for more prolonged use, enormous environmental benefits can be achieved.

Based on the analysis of the significant number of publications in the scientific literature on the circular economy, Kirchherr et al. 2017 defined circular economy as "an economy that replaces the end-of-life concept. It is achieved through reducing, reusing, recycling, and recovering materials in the production/distribution and consumption process. Intending to achieve sustainable development, it works at three different levels. These are micro-level (companies, product, consumers), meso-level (eco-industrial park), and macro-level (city, state, country), thus providing the benefits of current and future generations by creating environmental quality, economic prosperity, and social equity."

The possible solution to increase sustainability in business comes through the remanufacturing of used products for resale into the market (Atasu et al. 2008, Blackburn et al., 2004). A primary principle of the circular economy is the idea of a restorative, self-generating ecosystem, where the output of the system (i.e., waste) is recaptured for as future inputs (i.e., supply) (Yuan et al., 2006). Different activities involved in the circular economy are cascading, reuse, repair, maintenance, remanufacturing, and recycling (Ellen MacArthur Foundation, 2013).

Remanufacturing

The whole process of manufacturing starts from the extraction of material that is used to produce goods. These goods are sold to the customers and are disposed off at the end of life. The circular economy aims at decoupling the value creation from waste generation and resource utilization by transforming production and consumption systems. Talking about the circular economy, most of the literature focuses on the production side, exploring the business models, strategies to develop the circular value proposition, and the benefits of such models. However, it is also essential to find the effect of the circular economy on the consumption pattern and consumer behaviour.

Remanufacturing recovers value from used products by replacing the damaged part or reusing the elements to bring the products like the new one. Doing this helps reduce the use of natural resources and the generation of waste, thus decreasing environmental pollution. A remanufactured good appears with various names such as refurbished, reconditioned, rebuilt, and recertified goods. The basic process for remanufacturing is the same for both the industrial and consumer market. First, the product is disassembled and cleaned, then replaces or restores all missing, defective, worn, or broken parts before reassembling, followed by testing the product to ensure its operation capability like new product (Guide and Van Wassenhove, 2009).

There are various examples from the industry which show a big market for remanufactured products. The estimated total annual sales of 7300 remanufactured firms in the US by 1997 was $53 billion. Various remanufacturing literature also provides successful examples of industries like Kodak (Geyer et al. 2007), BMW, IBM, and Xerox (Ayres et al. 1997), showing the remanufacturing can be profitable. Cannibalization is the main issue that stops the industry from remanufacturing the products. It is challenging for managers to decide to remanufacture a product as they have little guidance and diverse industry practices. The fear of cannibalization restricts them from either remanufacturing products or selling them through invisible channels to avoid cannibalization (Atasu et al., 2008).

In contrast, other manufacturers like Bosch Tools and Gateway sell their remanufactured products through direct channels. It totally depends on the question, "when does the profit from remanufacturing overcome the losses due to cannibalization?". For example, Ayres et al. 1997 show that Bosch of the USA initially does not know how the remanufactured product will affect the sales of the product. They start the remanufacturing of those products whose market share is low, and the profit margin of the remanufactured products is very high. Similar can be seen in the electrical motors industries described by Klausner et al. (1998) as most electrical motors last longer than the product they power. The products containing remanufactured motors can be sold to consumers at a discounted price. The used engine will be remanufactured or not depends on the usage pattern.

The combination of the new and remanufactured products creates a distinct product portfolio in a manner that the remanufactured products exist only due to the previous sales of new products. A decrease in the demand for the new product results in reduced production of remanufactured products. It can be said that there is a direct relationship between the new product and the remanufactured product. There are different terminologies used in the industries. An illustration of a multitude of terms used in the automotive sector is neatly encapsulated in a document provided by APRA (2012) in its paper, Remanufacturing terminology: Remanufacturing term guideline. The diagram showing the terminology is shown in the below-mentioned figure.

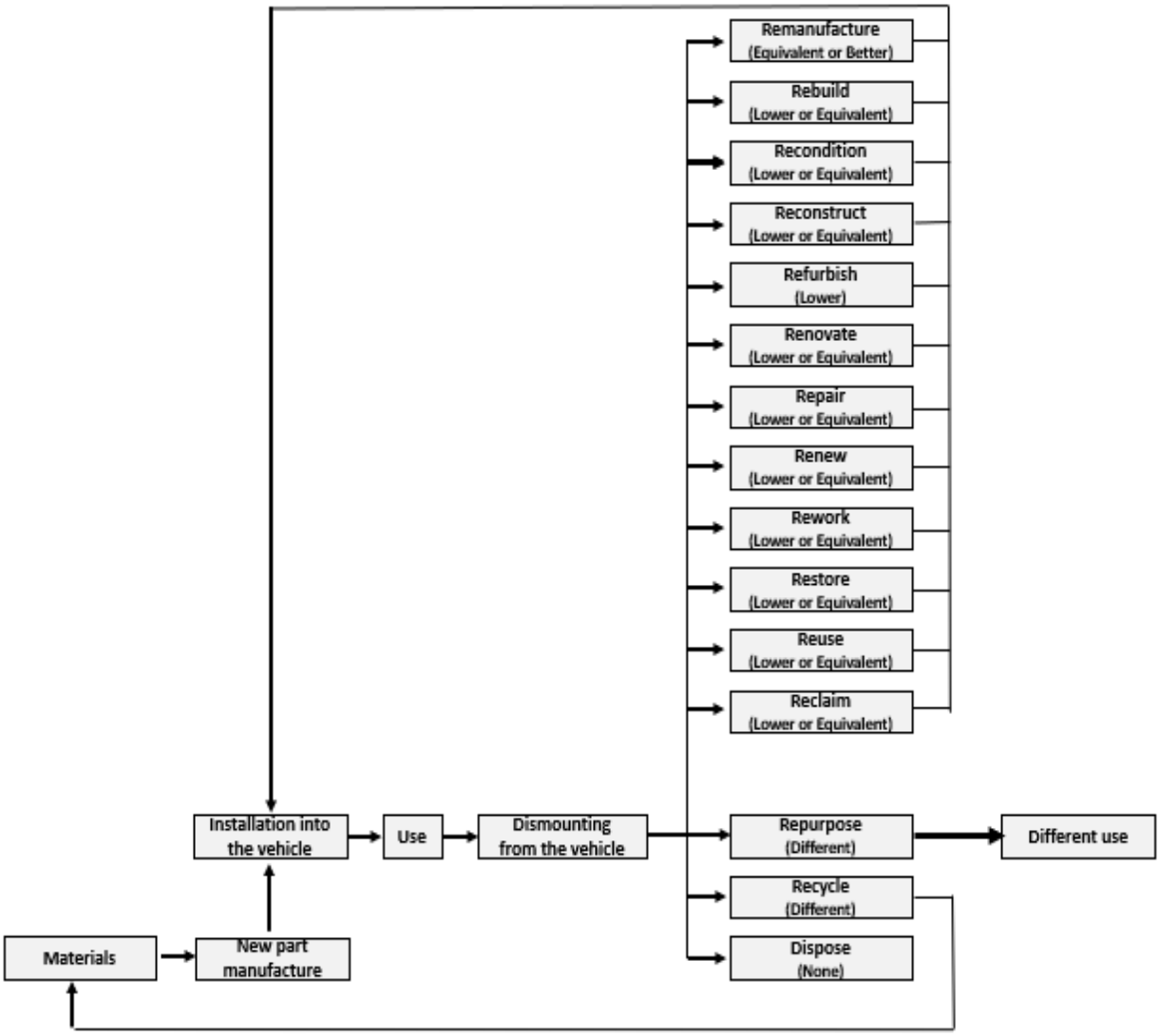

Figure1: Terms used in automotive sector [source: APRA Europe (2012) Remanufacturing Terminology: Remanufacturing Term Guideline.]

Green Product

The products which cause less harm to nature and are environmentally friendly are called green products. They have a low impact on nature. Talking about ecofriendly products, the main attributes should include a significant result in reducing the environmental impact; recyclable, ozone friendly, biodegradable, reusable, and renewable (Park & Oh, 2005). Usually, consumers identify eco-friendly products through information provided on the product labels and advertisements; but detecting the quality of the environmentally sound product is questionable due to information credibility, consumer

education, and product certification (Wagner, 1997). The green product created a new segment of consumers termed eco-friendly consumers. They are generally consumers more conscious about environmental issues and follow an eco-friendly lifestyle resulting in decreased environmental problems in the purchase, use, or disposal of goods (Ahn & Park, 1998). Park & Oh, 2005 categorize eco-friendly behaviors as resource conservation, recycling consciousness, and public awareness in their report. All these behaviors give the sense to participate in environmental initiatives and ensure the preservation of the environment and resources for future generations. Moreover, environmentally conscious consumers are highly responsible and have professional knowledge of the domain (Park & oh, 2005).

A survey in Europe carried by Gallup organization for European organization, Hungry (Eurobarometer 2009) confirms that more than 8 in 10 EU citizens consider the impact of products on the environment as an essential element while purchasing the products (34% 'very important' and 49%'rather important'). While talking about impact over brand's name, 6 in 10 interviewees said that they consider environmental impact more important over a product's brand name while making the buying decisions.

Consumer perception

One purchases a product or service to satisfy their recognized needs (Agykem et al., 2015). This choice of product to fulfill the requirement of consumers depends on the perception of consumers about the quality of a product. There exist different variables to determine the quality of a product. All these qualities lie in the eyes of the consumer. Kotler (2001) stated that there is a doubt in a consumer's mind regarding the relationship between price, value, and quality of a product. However, price plays a vital role in determining the product quality when the information is less provided. Some consumers choose the quality of a product based on the country of origin, while others may evaluate the producers. Perception plays a critical role in the life of a consumer. Our environment is ignited with numerous provocations which try to attract our attention. The way we interpret information defines the quality of our perception. Perception is best described as how a consumer selects, organizes, and analyzes information input to create a clear view of the world and make them in a position to respond (Kotler, 2001). In the case of a remanufactured product, knowledge about the product's history helps develop consumers' attitudes. One key difference is found in the influence of process knowledge and product history on consumer perceptions in the literature. Ackerman & Hu (2017) and Mugge et al. (2018) stated more information about prior use could decrease consumer perception regarding reused products. On the other hand, Wang & Hazen (2016) found that more information about quality, cost, and eco-friendly nature improved consumer perceptions.

Consumer initial feedback on remanufactured goods might not be positive for specific reasons, including feelings of uncertainty about the product quality. Such tension can cause consumers to turn to other cues that value the product (Lee, 2001). The market-clearing price for remanufactured goods is distinctly lower than for new products, even when controlling for aspects such as brand and warranty length (Guide and Li, 2010). It is because the cost of manufacturing a new product from scratch uses new

components and is costly. In remanufactured products, recycled parts are used, which are available at a much lower cost. Using market response data, other researchers have concluded that seller reputation and other product characteristics influence remanufactured sales (Ovchinnikov 2011, Subramanian and Subramanyam, 2012).

Chapter 3

Theoretical Framework

Theoretical Framework

The main objective of this paper is to investigate consumer awareness and perception for remanufactured goods and explore the willingness of consumers to switch from new products to remanufactured products. In this regard, different dimensions such as price, brand equity, quality, and marketing are used to analyse the consumer attitude towards remanufactured goods. It will be done by a quantitative study based on a survey.

Research Questions and hypotheses

RQ1: To what extent does brand equity increase the customer's attitude towards remanufactured goods?

Rationale: Brand is defined as a name, image, or symbol through which a company or organization is seen by those who experience it. Brand equity helps reduce the dilemma about the product quality and trust of consumers considering a new product purchase. High brand equity is consumer's perceptions of the relative value of a brand in terms of higher quality, better reliability, more vital awareness, increased loyalty, and improved value (Aaker 1991, Keller 2007). Since a remanufactured product is created from used parts, many consumers can become less attracted to the product. Hence for a consumer regarding the attractiveness of a remanufactured product, the brand equity of the original brand manufacturer may serve as product reliability and quality (Aaker et al. 2004). Keeping this in mind, it can be expected that remanufactured products offered by higher brand equity firms can attract more customers than remanufactured products offered by lower brand equity firms. Thus, the hypothesis can be:

H1: Remanufactured goods produced by higher brand equity manufacturer builds greater customer's attitude towards that product.

RQ2: To what extent does awareness about the eco-friendly features of the remanufactured goods influence consumer attitudes towards remanufactured goods?

Rationale: Communication plays a significant role in delivering a message to society. For the smooth functioning of any business, it is essential as it helps to contact the customers directly. It can be done by organizing any live events or by marketing and advertisements. The idea is to make the customers aware of the features of a product, give them enough time to form their perception, and then collect their opinion about it. Likewise, the time of marketing a product is equally crucial as there should be enough time given to the customer so that he can make up his mind to adopt it.

Moreover, it should be within the list of trending products of that period as nobody is interested in buying obsolete products, for instance, marketing the benefits of teleconferencing tools during a pandemic. As can be seen in many works of literature, this is clear that marketing about the eco-friendly features of the green and environmental products build consumer preference that ultimately leads to an increase in consumer perceptions towards remanufactured goods (Atasu et al. 2008, Ferguson and Souza 2010).

It is evident because the environmental impact of production can be lower than those of new products (Klassen Vachon 2011, Kleindorfer et al. 2005). On the other hand, some consumers buy remanufactured products with the primary aim of not helping the environment but improving their social status (Griskevicius 2010). These observations lead to the following hypothesis:

H2: The higher the awareness of eco-friendly features, the higher is the customer's attitude towards remanufactured goods.

RQ3: To what extent does product quality increase the consumer's attitude towards remanufactured goods?

Rationale: Quality is having a direct relation with brand equity as it plays a major role in creating a brand equity. But quality alone can be an attribute while purchasing remanufactured products. The general assumption in the literature is that remanufactured goods will be more attractive if the price is sufficiently low and the brand equity and quality are high (Debo et al. 2005, Guide and Li 2010). Keeping this in mind, it can be expected that the remanufactured product with high quality can attract more customers. Thus, the hypothesis can be:

H3: The higher the quality of remanufactured goods, the positive is the consumer's attitude towards the remanufactured goods.

RQ4: To what extent does the price level increase the consumer's attitude towards remanufactured goods?

Rationale: One of the fundamental principles of the economic theory states that price plays a significant role in market demand. As the price of a product decreases, the number of orders should increase. In theory, to increase sales, firms should drop the cost of their remanufactured goods. From the literature, it is observed that many firms use the discounting pricing strategy and sets the price of remanufactured products between 10% to 80% lower than the price of a similar new product (Ovchinnikov 2011). The literature also states that a higher level of discounting should increase the perceived attractiveness of remanufactured products in a linear fashion (Debo et al., 2005). The discount should not be more that it creates a negative effect because of the quality inference. Thus, the hypothesis can be:

H4: Lower the price of remanufactured goods as compared to the new goods, increases their attractiveness and attitude among consumers.

Chapter 4

Research Approach

Models and Variables

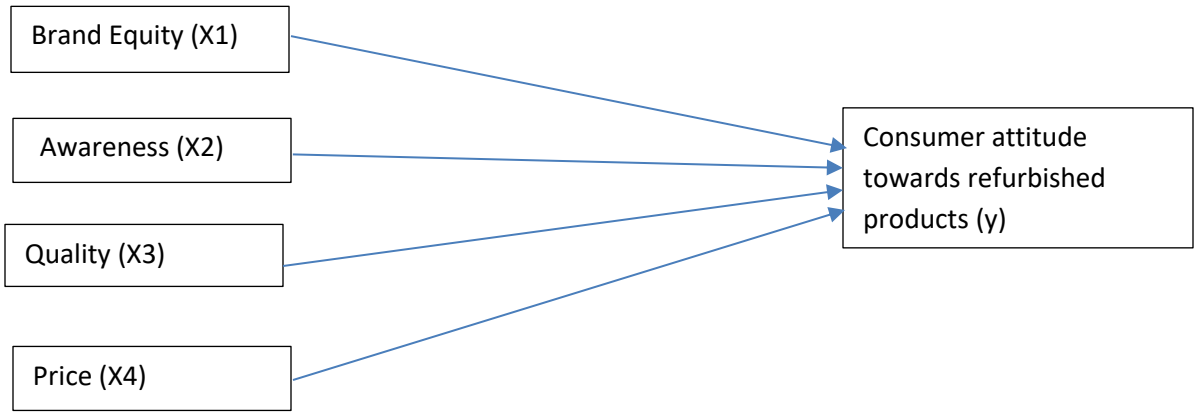

Figure 2: Conceptual model

A multi-linear model is developed to assess the validity of hypotheses. As shown in figure 2, this model consists of five constructs. Consumer attitude is a dependent variable, and the remaining four, awareness, brand equity, quality, and price are the independent variables. Using the model equation defined below as:

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \beta_4 * x_4$$

Where

Y = consumer attitude

X_i = independent variable (awareness/ brand equity/ quality/ price)

β_i = coefficient

Research design

Since the cause-and-effect relationships are used to assess our hypotheses validity, therefore causal research has been conducted. For this reason, a quantitative method of data collection has been applied to analyse individual customers in a non-contrived field study. Among all the quantitative research methods implying non-contrived field studies, the quasi-experimental survey has been selected to investigate the relationships between the variables. The purpose of this research is disclosed to the participants in a detailed introduction before the questionnaire. Moreover, the study is a cross-sectional one, limited to a specific time frame.

Chapter 5

Data Collection Plan

Data Collection Plan

In this research, two brands of shoes with different brand values, one with a high brand value, such as Nike and the other with a low brand value like PRIMARK, are selected to conduct the surveys. The objective is to find the consumer awareness about the circular nature of the product, perception about the quality, price, and brand value of the remanufactured goods, and explore the willingness of the consumer to adopt remanufactured goods/products. The survey is conducted to investigate the relationship and find the influence of different factors on consumer perceptions of the remanufactured product.

The selection of two brands is on the qualitative pre-test about the brand associations among the closed peer group. Almost everyone agreed for Nike as high brand value. On the other hand, PRIMARK has a well-built brand in clothing because of its high fashion and low cost, but they all have agreed to keep the PRIMARK shoes in the low brand category because of cheap quality and design. The other reason in support of the brand selection is the website trends.google.com, which shows that in the past five years, the web search for Nike shoes is very high compared to PRIMARK shoes, as no one ever searched about the PRIMARK shoe. Figure 3 shows the web search related to both brands in the last five years.

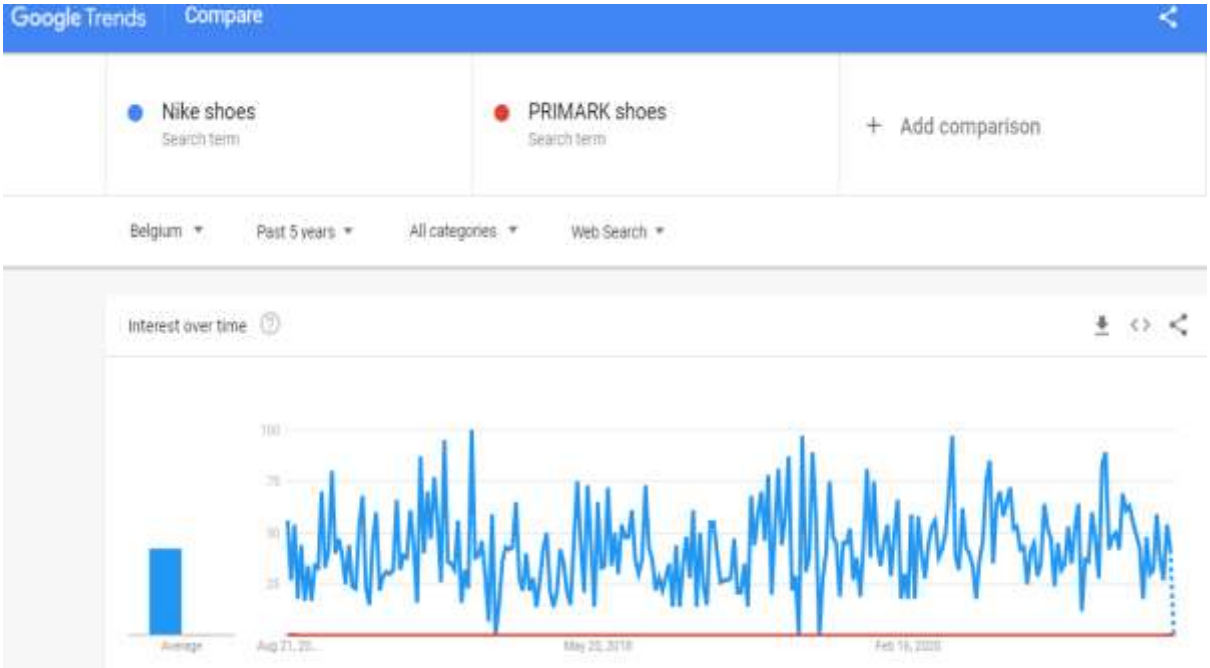

Figure 3: Web search for Nike and PRIMARK shoe

Data collection has been done using a structured, formal, self-administered online questionnaire created by the Google forms platform and submitted to different age groups, irrespective of their gender within Belgium. Two separate surveys have been developed, one with the Nike brand and the other with the PRIMARK brand. The survey consists of 21 questions of different types and covers all the hypotheses, followed by a small audio-visual clip that describes the product's eco-friendly characteristics and

environmental nature. The survey participants have been allowed to submit the form after filling all the questions. They are asked fixed-response alternative questions in a pre-arranged order based on a five-point scale and some with yes-no answers. The two questionnaires have been distributed online, via email, and social media using non-probability sampling techniques such as snowball and convenience sampling since a complete list of the entire population to be studied is not available to us. As a consequence, a simple random sample is not possible. The respondents can participate by following an anonymous link.

At the beginning of both the questionnaires, survey participants have been asked whether they are familiar with the brand (Nike and PRIMARK). The questionnaires, designed to collect the data to test the hypothesis, are based on a **5-point Likert scale**. The values are organized in the 5-point Likert scale from highest to lowest values. Depending on the nature of the questions, it means that "**1**" stands for "**Very important**", "**Strongly Agree**", or "**Very likely**" while "**5**" stands for "**Very unimportant**", "**Strongly disagree**," or "**Very unlikely**".

Data Cleaning

The sampling approach captured various points of view and enabled a deeper understanding of the area of research. The total sample size included **87 responses** for the Nike brand and **89 responses** for the PRIMARK brand. Since data cleaning is of utmost importance to ensure the reliability of the key informants, its overall review has been done before exporting it to the **SPSS** software tool to detect whether there are any invalid or missing responses. Firstly, the answer to the question "**Did you watch the video?**" has been checked. If the answer is no, the response from the data is deleted as it is a quasi-experimental survey, and watching the video is mandatory before taking the survey. The irrelevant information provided by Google forms, like the start date and duration of the survey for each participant, are deleted.

Consequently, responses to the question "**Did you watch the video?**" are also deleted as this is not in line with the research objectives. As a result, 85 responses for brand Nike and 89 responses for brand PRIMARK are considered fully answered and usable for further analysis. After importing data to SPSS, the survey results are also investigated to detect possible outliers that could significantly impact the research results. After comparing the 5% trimmed mean and mean values, no potential outlier has been identified in the data. Finally, questions measuring the same variable are grouped, and the variables are assigned a unique name to understand them easily. All these steps helped to analyse the data according to the designed hypothesis quickly. Finally, questions measuring the same variable have been combined to create one variable this is done by adding all the responses into one column in SPSS. As the data is on a 5-point Likert scale, each variable's combination of one column helps to perform further analysis and easily find valuable results. In this way, the final data set is designed to assess the hypothesis.

Sample

Nike

Table 1: Frequency analysis of gender for brand Nike

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	69	81.2	81.2	81.2
	Female	16	18.8	18.8	100.0
	Total	85	100.0	100.0	

Table 2: Frequency analysis of age for brand Nike

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-35	79	92.9	92.9	92.9
	36-50	6	7.1	7.1	100.0
	Total	85	100.0	100.0	

Frequency distribution for gender and age is shown in table 1 and table 2, respectively. It can be seen from Table 1 that the total number of respondents taking the survey of brand Nike was 85. Most respondents, i.e., 69 out of 85, are male, which is about 81.2% of the total sample. In contrast, 18.8% of the total respondents are female. Table 2 shows that respondents varied in age, with the majority of 92.9% in the age group of 20-35 years old. Very few, i.e., six respondents, disclosed that they are in the age group of 36-50 years old; this corresponds to 7.1% of the total respondents taking the Nike brand survey. It shows that the sample is skewed as compared to the general population.

Table 3: Frequency analysis of education for brand Nike

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	University Degree	70	82.4	82.4	82.4
	Doctorate Degree	15	17.6	17.6	100.0
	Total	85	100.0	100.0	

Table 3 corresponds to the frequency distribution for the level of education who participated in the survey for the brand Nike. It is clear from Table 3 that most of the respondents, 82.4% had a university degree. Respondents with a doctorate degree correspond to 17.6% of the total sample. There are no responses recorded with "Elementary school," "High school," and "other" as the highest level of education. It is clear from the above table that the sample is very skewed compared to the general population.

Table 4: Frequency analysis of occupation for brand Nike

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	55	64.7	64.7	64.7
	Service	27	31.8	31.8	96.5
	Other	3	3.5	3.5	100.0
	Total	85	100.0	100.0	

Table 5: Frequency analysis of disposable income for brand Nike

Disposable income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 1000	8	9.4	9.4	9.4
	1001 - 2000	4	4.7	4.7	14.1
	3001 - 4000	1	1.2	1.2	15.3
	Above 4000	2	2.4	2.4	17.6
	I don't share	70	82.4	82.4	100.0
	Total	85	100.0	100.0	

Respondents are also asked to provide their occupation level and disposable income in euros per month, shown in table 4 and table 5, respectively. From table 4, it is clear that 55 respondents disclosed they are students; this belongs to 64.7% of the total population and can be seen in the percent column. Twenty-seven respondents have an occupation as service, and three admitted that they belong to other professions. There are no responses recorded for "Agriculture" and "Business. Talking about the monthly disposable income, table 5 shows that 70 respondents don't want to share their income; this consists of about 82.4% of the population. The number of respondents having incomes "below 1000," 1001-2000," "3001-4000," and "above 4000" are 8,4,1, and 2, respectively.

Table 6: Frequency analysis for familiarity of brand Nike

Are you familiar with the Nike brand?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	85	100.0	100.0	100.0

Table 7: Frequency analysis for refurbished definition

"Refurbished products are defined as the unused customer return products that are essentially new or the products with mi0r defects". Have you ever heard about refurbished products?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	2.4	2.4	2.4
	Yes	83	97.6	97.6	100.0
	Total	85	100.0	100.0	

Table 6 shows that all the respondents answered yes to the question about being familiar with the Nike brand. It explains that Nike is one of the most common shoe brands in Belgium. Talking about the refurbished product, table 7 shows that 83 respondents said they heard about it. This value corresponds to 97.6% of the percent column. 2 out of 85 said they never heard about the refurbished product. The high value of respondents aware of the refurbished product may be because almost all respondents have a university degree or a doctorate.

Table 8: Frequency analysis for buying pattern of refurbished products

Have you ever purchased a refurbished product?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	55	64.7	64.7	64.7
	Yes	30	35.3	35.3	100.0
	Total	85	100.0	100.0	

Table 8 corresponds to buying pattern of refurbished goods. From table 8, it is clear that 30 out of 85 respondents, i.e., 35.3% purchased the refurbished products once in their life. Most of the respondents, 55 out of 85, never bought a refurbished product in their life. It explains that being aware of the

refurbished product is not enough to purchase these types of products. There need to be extra factors that can influence the customers to move towards refurbished products.

PRIMARK

Table 9: Frequency analysis of gender for brand PRIMARK

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	77	86.5	86.5	86.5
	Female	12	13.5	13.5	100.0
	Total	89	100.0	100.0	

Table 10: Frequency analysis of age for brand PRIMARK

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-35	85	95.5	95.5	95.5
	36-50	4	4.5	4.5	100.0
	Total	89	100.0	100.0	

Frequency distribution for gender and age are shown in table 9 and table 10, respectively. The total number of respondents taking the survey of brand PRIMARK is 89. From table 9, it can be seen that about 86.5% of the respondents are male, and 13.5% are female. It shows that majority of the respondents are male and is equal to 77 out of 89. Table 10 shows that respondents varied in age, with the majority of 95.5% in the age group of 20-35 years old. Very few, i.e., four respondents, disclosed that they are in the age group of 36-50 years old; this corresponds to 4.5% of the total respondents taking the PRIMARK brand survey. It shows that the sample is skewed as compared to the general population.

Table 11: Frequency analysis of education for brand PRIMARK

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	University Degree	79	88.8	88.8	88.8
	Doctorate Degree	10	11.2	11.2	100.0
	Total	89	100.0	100.0	

Table 11 corresponds to the frequency distribution for the level of education who participated in the survey for brand PRIMARK. In table 11, it is clear that the majority of respondents, 88.8% have a university degree. Respondents with a doctorate degree correspond to 11.2% of the total sample. There are no responses recorded with "Elementary school," "High school," and "other" as the highest level of education. It is clear from the above table that the sample is very skewed compared to the general population.

Table 12: Frequency analysis for the occupation of brand PRIMARK

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	65	73.0	73.0	73.0
	Service	23	25.8	25.8	98.9
	Other	1	1.1	1.1	100.0
	Total	89	100.0	100.0	

Table 13: Frequency analysis for disposable income of brand PRIMARK

Disposable Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 1000	16	18.0	18.0	18.0
	1001 - 2000	2	2.2	2.2	20.2
	3001 - 4000	5	5.6	5.6	25.8
	Above 4000	3	3.4	3.4	29.2
	I don't share	63	70.8	70.8	100.0
	Total	89	100.0	100.0	

Respondents are also asked to provide their occupation level and disposable income in euros per month, shown in Tables 12 and 13, respectively. From table 12, it is clear that 65 respondents disclosed they are students; this belongs to 73.0% of the total population and can be seen in the percent column. Twenty-three respondents have an occupation as service, and one admitted that they belong to other professions. There are no responses recorded for "Agriculture" and "Business. Talking about the monthly disposable income, table 13 shows that 63 respondents don't want to share their income; this consists of about 70.8% of the population. The number of respondents having incomes "below 1000," 1001-2000," "3001-4000," and "above 4000" were 16,2,5, and 3 respectively.

Table 14: Frequency analysis for familiarity of brand PRIMARK

Are you familiar with the PRIMARK brand?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	89	100.0	100.0	100.0

Table 15: Frequency analysis for definition of refurbished product

"Refurbished products are defined as the unused customer return products that are essentially new or the products with mi0r defects". Have you ever heard about refurbished products?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	89	100.0	100.0	100.0

Table 14 shows that all the respondents answered yes to the question about being familiar with the PRIMARK brand. It explains that PRIMARK is also a familiar brand in Belgium. Talking about the refurbished product, table 15 shows that all respondents said they heard about the idea of refurbished products. The high value of respondents aware of the refurbished product may be because almost all respondents have a university degree or a doctorate.

Table 16: Frequency analysis for buying pattern of refurbished products

Have you ever purchased a refurbished product?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	52	58.4	58.4	58.4
	Yes	37	41.6	41.6	100.0
	Total	89	100.0	100.0	

Table 16 corresponds to the buying pattern of refurbished goods. From table 16, it is clear that 37 out of 89 respondents, i.e., 41.6% purchased the refurbished products once in their life. The majority of the respondents, 52 out of 89, never bought a refurbished product in their life. It explains that being aware of the refurbished product is not enough to purchase these types of products. There need to be extra factors that can influence the customers to move towards refurbished products.

Chapter 6

Data Analysis

Descriptive statistics

Descriptive statistics such as maximum, minimum, means, and standard deviations for both the shoe brands Nike and PRIMARK are obtained and shown in Tables 17 & 18, respectively. The first thing that needs to be checked before interpreting these data is the normality of distributions of the results.

The normality of both the data is checked based on the skewness and kurtosis results in Tables 17 & 18. In Table 17 for Nike, all the variables have positive skewness. It implies that the median and mode of the data are shifted more to the left; therefore, the most common answer is slightly below the mean. All these values indicate that the effect of variables Awareness_N, Brand_Equity_N, Quality_N, and Price_N are important factors for buying the refurbished products and affect the consumer attitude towards buying the refurbished product. In Table 18 for PRIMARK data, effects of variables Awareness_P, Price_P, and Quality_P show positive skewness telling the most common answer slightly below the mean. The mean values show that awareness, quality, and price are important in setting the consumer attitude towards the refurbished products. Brand_Equity_P and Consumer_Attitude_P show a negative skewness, indicating that the most common answer is slightly above the mean. The mean values of Brand_Equity_P and consumer attitude_P from table 18 show that they are of low importance or unimportant in PRIMARK. A Z-test is applied to assess the normality using skewness. Z-values are obtained by dividing the skew values by their standard errors. In our case, since the sample size is $50<n<300$, the level of acceptance corresponds to 3.29(West, Finch & Curran, 1995). Since the absolute Z-values were < 3.29, we can conclude that data regarding these variables is approximately symmetric and normally distributed.

For most of the variables in Table 17 for Nike, the Kurtosis value is positive except for Awareness_N. In the case of PRIMARK from Table 18, the kurtosis value is positive except for Consumer_Attitude_P and Awareness_P. A Z-test has been applied by dividing excess kurtosis by their standard errors. The samples distribution is considered normal as the calculated absolute z-values for all the variables did not exceed 3.29.

When looking at the result of descriptive statistics for high brand value (Nike) and low brand (PRIMARK) from Table 17 and Table 18, respectively, a maximum weight of 1 and a minimum value of 5 is generated for all variables. For awareness, the mean value of 1.57 and 1.59 on a five-point scale is obtained for Nike and PRIMARK, respectively. It indicates that awareness about the eco-friendly nature of the product is perceived to be necessary. The standard deviation of 0.584 and 0.558 for Nike and PRIMARK clearly shows that there is not much variety in the answers, mean respondents agree on the awareness about the green nature of the product.

For brand equity, the mean value of 2.06 and 3.96 is obtained for Nike and PRIMARK, respectively. It indicates that brand value plays a significant role in selecting the product. As Nike is a high brand, its effect on choosing the product is perceived as high compared to PRIMARK, a low brand in the shoe

section. It can be seen from the high mean value of PRIMARK indicating an insufficient effect of a brand while buying the product.

For the quality, the mean value of 1.42 and 1.53 is obtained for Nike and PRIMARK, respectively. This mean value in both cases indicates that quality is important while purchasing the refurbished product and does not depend on the brand type. The low standard deviation value in both the brands suggests that most respondents agree that quality is important while purchasing the refurbished product.

For the price, the mean value of 1.50 and 1.55 is obtained for Nike and PRIMARK, respectively. These low mean values indicate that price is important while selecting a product and does not depend on the brand type. The low value of standard deviation in both the brands suggests that the majority of the respondents agree that the price is vital while purchasing the refurbished product.

For consumer attitude, the mean value of 1.76 and 3.15 are obtained for Nike and PRIMARK, respectively. This difference in the mean values shows that consumers' attitude towards buying a refurbished shoe is higher for Nike than PRIMARK. Since we considered Nike having high brand equity value and PRIMARK as having low brand equity value, it can be said that the attitude towards buying a refurbished product is higher for brands with high equity than for low equity.

Table 17: Descriptive analysis for brand Nike

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Consumer_Attitude_N	255	1	5	1.76	.627	.609	.153	1.856	.304
Awareness_N	170	1	3	1.57	.584	.443	.186	-.697	.370
Brand_Equity_N	170	1	4	2.06	.567	1.198	.186	3.850	.370
Quality_N	170	1	5	1.42	.735	2.232	.186	5.775	.370
Price_N	255	1	5	1.50	.827	2.047	.153	4.452	.304
Valid N (listwise)	170								

Table 18: Descriptive analysis for brand PRIMARK

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Consumer_Attitude_P	267	1	5	3.15	1.270	-.521	.149	-1.132	.297
Awareness_P	178	1	3	1.59	.558	.231	.182	-.882	.362
Brand_Equity_P	178	1	5	3.96	.654	-1.550	.182	5.444	.362
Quality_P	178	1	5	1.53	.768	2.404	.182	8.166	.362
Price_P	267	1	5	1.55	.631	1.613	.149	6.189	.297
Valid N (listwise)	178								

Correlation analysis:

For the two brands Nike and PRIMARK, a separate correlation analysis is done. Pearson correlation and significant value for each hypothesis are analysed separately for both brands. For hypothesis 1, Pearson's correlation value for brand equity and consumer attitude is 0.424 for Nike and 0.168 for PRIMARK. It means that for Nike, there is a moderate, statistically significant (0.000<0.01) and positive correlation, while for PRIMARK, there is a weak, statistically not significant (0.025>0.05) and positive correlation between brand equity and consumer attitude.

For hypothesis 2, Pearson's correlation value for awareness and consumer attitude is 0.242 for Nike and 0.018 for PRIMARK. It means a weak, statistically significant (0.001<0.01), and positive correlation between awareness and consumer attitude towards refurbished products for Nike. The PRIMARK correlation between awareness and consumer attitude towards refurbished products is weak, statistically not significant (0.815>0.05), and positive.

For hypothesis 3, Pearson's correlation value for the quality and consumer attitude is 0.184 for Nike and 0.124 for PRIMARK. It means that correlation is weak, statistically significant (0.016<0.05), and positive for Nike. The correlation between quality and consumer attitude for PRIMARK is weak, statistically insignificant (0.1>0.01), and positive.

For hypothesis 4, Pearson's correlation value for price and consumer attitude is 0.128 for Nike and 0.110 for PRIMARK. It means that there is a weak, statistically significant (0.00<0.01) for Nike and not significant (0.072>0.05) for PRIMARK with a positive correlation between price and consumer attitude.

Table 19: Correlation analysis for brand Nike

Correlations

		Consumer_Attitude_N	Awareness_N	Brand_Equity_N	Quality_N	Price_N
Consumer_Attitude_N	Pearson Correlation	1	.242**	.424**	.184*	.128*
Awareness_N	Pearson Correlation	.242**	1	.084	-.021	.017
Brand_Equity_N	Pearson Correlation	.424**	.084	1	-.037	.029
Quality_N	Pearson Correlation	.184*	-.021	-.037	1	.618**
Price_N	Pearson Correlation	.128*	.017	.029	.618**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 20: Correlation analysis for brand PRIMARK

Correlations

		Consumer_Attitude_P	Awareness_P	Brand_Equity_P	Quality_P	Price_P
Consumer_Attitude_P	Pearson Correlation	1	.018	.168*	.124	.110
Awareness_P	Pearson Correlation	.018	1	-.020	.205**	.048
Brand_Equity_P	Pearson Correlation	.168*	-.020	1	-.369**	-.297**
Quality_P	Pearson Correlation	.124	.205**	-.369**	1	.536**
Price_P	Pearson Correlation	.110	.048	-.297**	.536**	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

Regression analysis is performed to predict the value of a dependent variable based on the value of the independent variable. To test the hypotheses formulated in this paper, a multi-linear regression model is developed for both Nike and PRIMARK to find the influence of brand equity (H1), awareness (H2), quality (H3), and price (H4) on consumer attitude.

The multi-linear regression model for testing hypotheses is:

$$y = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \beta_3 * x_3 + \beta_4 * x_4$$

Where, Y = dependent variable (consumer_attitude)

X_i = independent variable (awareness/ brand equity/ quality/ price)

β_i = constant

The regression model's overall performance is analyzed using the model summary table for the two brands, and the outcome of the model is then interpreted.

Table 21a: Model summary for brand Nike

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.517[a]	.267	.250	.584	.267	15.059	4	165	.000

a. Predictors: (Constant), Price_N, Awareness_N, Brand_Equity_N, Quality_N

Table 21b: Model summary for brand PRIMARK

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.263[a]	.069	.048	1.298	.069	3.208	4	173	.014

a. Predictors: (Constant), Price_P, Awareness_P, Brand_Equity_P, Quality_P

The table provides information about the study of the regression line to account for the total variation in the dependent variable. The R-square coefficient, ranging from 0 to 1, represents the percentage of the total variance in the output variable that predictors can collectively explain. In the regression model, this coefficient corresponds to 0.267 for Nike and 0.069 for PRIMARK, which means around 27% for Nike and 7% for PRIMARK, the total observed variance in consumer attitude towards buying remanufactured goods can be collectively explained by awareness, brand equity, quality, and price. The adjusted R-square coefficient, which takes into account the number of predictors in the model, is determined to be 0.250 for Nike and 0.048 for PRIMARK. Since the sig. F change value corresponds to 0.000 for Nike (F change 15.059) and 0.014 for PRIMARK (F change 3.208) and is smaller than 0.05. It can be said that the adjusted R-square is statistically significant for both the brands, which means that at least one of our predictors has a statistically significant influence on the output variable.

Subsequently, regression coefficients are interpreted for both brands. When several predictors are jointly regressed against the output variable in a multiple regression model, the size of the individual regression coefficients shows how much an increase in one unit of the predictor would affect the output variable, assuming that all the other predictors are unchanged (Ghauri, Gronhaug, & Strange, 2020).

Each predictor variable tested whether the regression coefficient is significantly different from zero and, therefore, by what value it influences the output variable.

Table 22a: Coefficient values of different variables for brand Nike

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.104	.223		.466	.642		
	Awareness_N	.242	.077	.209	3.128	.002	.991	1.009
	Brand_Equity_N	.488	.080	.410	6.112	.000	.988	1.012
	Quality_N	.144	.078	.157	1.852	.066	.615	1.627
	Price_N	.064	.073	.075	.884	.378	.615	1.626

a. Dependent Variable: Consumer_Attitude_N

Table 22b: Coefficient values of different variables for brand PRIMARK

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.159	.809		.196	.845		
	Awareness_P	-.050	.179	-.021	-.279	.781	.950	1.053
	Brand_Equity_P	.512	.162	.252	3.158	.002	.848	1.180
	Quality_P	.358	.160	.206	2.239	.026	.633	1.580
	Price_P	.055	.180	.027	.304	.762	.698	1.432

a. Dependent Variable: Consumer_Attitude_P

According to the results, for Nike, awareness and brand equity are statistically significant in predicting consumer attitude with significant values of 0.002 and 0.000, respectively. While for PRIMARK, brand equity and quality are statistically significant in predicting consumer attitude with significant values of 0.002 and 0.026, respectively. The other predictors of models resulted in being statistically insignificant in predicting the consumer attitude for the refurbished shoe (sig. > 0.05).

Chapter 7

Results & Conclusion

Results

H1 states that remanufactured goods endorsed by higher brand equity manufacturer builds greater attitude among customers.

H2 states that the higher the awareness of eco-friendly features, the higher is the customer attitude towards remanufactured goods.

H3 states that the higher the quality of remanufactured goods, the higher is the consumer attitude.

H4 says that lower-priced remanufactured goods increase their attractiveness and attitude among consumers compared to the original goods.

To test these hypotheses, a multi-linear regression model is designed.

According to the results, for Nike data, a statistically significant positive correlation has been found between the predictors and output variables of the model: awareness of eco-friendly features and customer attitude (0.242, sig. = 0.001), the brand equity of manufacturer and consumer attitude (0.424, sig. = 0.000), quality of goods and consumer attitude (0.184, sig. = 0.016), price of the product and consumer attitude (0.128, sig. = 0.041). These coefficients indicate that the dependent variable moves in the same direction with the independent variables, the most substantial relationship being represented by the correlation between brand equity of manufacturer and the consumer attitude. At the same time, the weakest one corresponds to the correlation between the product's price and consumer attitude. For PRIMARK data, there is a statistically insignificant (except for brand equity) positive correlation between predictors and output variables of the model: awareness of eco-friendly features and customer attitude (0.018, sig. = 0.815), the brand equity of manufacturer and consumer attitude (0.168, sig. = 0.025), quality of goods and consumer attitude (0.124, sig. = 0.1), price of the product and consumer attitude (0.110, sig. = 0.072). These coefficients indicate that the dependent variables move in the same direction as the independent variable, but the effect is insignificant except for brand equity.

Subsequently, regression analysis for this model with both the brands is performed separately to see the statistically significant effect of predictors on the output variable. For Nike, no statistically significant interaction effect of quality and price has been detected [quality (0.066>0.05), price (0.378>0.05)]. The beta statistically significant coefficient of this model for the Nike brand is the direct effect of awareness (0.002<001) and brand equity (0.000<0.01) with the value of 0.21 and 0.41, respectively. It means that 1 unit, change in awareness affects 0.21 shift in consumer attitude, and for brand equity, this value is 0.41. It is also seen that the correlation of price and consumer attitude is positive, which is not in line with our hypothesis H4. From the analysis, we can say that the Nike data did not support H3 and H4.

For PRIMARK, no statistically significant interaction effect of awareness and price has been detected [awareness (0.781), price (0.762)]. The beta statistically significant coefficient of this model for the PRIMARK brand is the direct effect of brand equity (0.002) and quality (0.026<0.05) with the value of 0.252 and 0.206, respectively. It means that a 1-unit change in brand equity affects a 0.252 shift in consumer attitude, and for quality, this change is 0.206. From the analysis, it can be said that PRIMARK data did not support H2 and H4.

On comparing the results for the two different brands, it is found that the awareness about the eco-friendly feature of the product increases consumer attitude towards the product if the brand value is high. Still, this effect is not significant for low brand value. Brand equity is an essential factor and effectively creates the consumer attitude towards the refurbished shoe. In the case of high brand value, this effect is higher and is lower for low brand value. The impact of quality on consumer attitude is not significant for Nike but significantly affects the PRIMARK brand. The price is significant and affects the consumer attitude toward higher brands. The results for the higher brand for price and eco-friendly awareness value are in line with the study of B. T. Hazen et al. (2017), who performed the analysis for electronic refurbished products like laptops, mobiles, and desktops.

Conclusion

The research is focused on studying how consumer attitude towards the refurbished shoe depends on the different dimensions. Two of the dimensions introduced by B. T. Hazen et al. (2017) are applied in the analysis of consumer perception. Two different dimensions, quality and brand equity, are included as these are essential concepts in marketing. Data collection is done for two different brands among the independent groups in a quasi-experimental way, different from that used by B. T. Hazen et al. (2017), where they used a single survey for two separate groups. The brand selection is made to have high and low brand value in the shoe market. Using Nike for high brand value and PRIMARK for low brand value in the shoe market is based on the qualitative survey for brand selection among the local mates from college and neighbourhood.

The first research question is asked about the effect of brand equity on the consumer attitude while purchasing remanufactured goods. The second question is about the influence of awareness about eco-friendly features on consumer attitude towards remanufactured goods. The third question asked about the impact of quality on the consumer attitude for remanufactured goods. The fourth question asked to what extent does price affects the consumer attitude in purchasing remanufactured goods. To answer these questions, secondary research and two surveys among people are conducted for the brands Nike and PRIMARK. The survey is distributed via social media and email using non-probability sampling techniques, such as snowball and convenience sampling. The survey takers are able to participate by following an anonymous link.

Four hypotheses are suggested at the beginning of this research:

H1: Remanufactured goods produced by higher brand equity manufacturer builds greater customer's attitude towards that product.

H2: The higher the awareness of eco-friendly features, the higher is the customer's attitude towards remanufactured goods.

H3: The higher the quality of remanufactured goods, the positive is the consumer's attitude towards the remanufactured goods.

H4: Lower the price of remanufactured goods as compared to the new goods, increases their attractiveness and attitude among consumers.

For hypothesis H1, two brands Nike and PRIMARK, are selected based on the qualitative pre-test about the brand association and using the Google trends mentioned in the data collection plan section. This manipulation of high and low brand equity is done considering Nike's high brand value and PRIMARK's low brand value. In both the surveys, questions related to brand equity are to measure how the brand's name (Nike and PRIMARK) affects the consumer attitude towards buying the refurbished products of that brand. From descriptive statistics, the difference in the mean values in consumers' attitude shows that consumers' attitude towards buying a refurbished shoe is higher for Nike than PRIMARK. The answer is further supported by the regression analysis and significant values of the beta coefficient. As considered during brand selection, Nike has high brand equity value, and PRIMARK has low brand equity value. In a more generalized form, it can be said that the attitude towards buying a refurbished product is higher for brands with high equity than for low equity, thus confirming the first hypothesis H1.

The second research question is utilised to find the effect of awareness about the eco-friendly features of the refurbished product on consumer's attitudes. It is observed that hypothesis H2 has been confirmed for high brand value products but has been rejected for low brand value. This indicates that for high brand value, awareness about eco-friendly features increases the consumer's attitude towards refurbished products and faith in higher brand value products, while for low brand value effect of awareness is not significant.

The third research question is used to evaluate the effect of quality on consumer's attitudes towards the refurbished product. By analysis, it is found that hypothesis H3 is rejected for high brand value products but is confirmed for low brand value. This indicates that product quality does not affect consumers' attitude towards the refurbished product for high brand value. For a low brand value effect of the increase in quality increases the consumer's attitude towards refurbished products.

The fourth research question is used to find the effect of price on consumer's attitudes towards the refurbished product. By analysis, it is found that hypothesis H4 is rejected for both high and low brand

value products. It indicates that price does not affect the consumer's attitude towards buying refurbished products.

Limitation and Future Research

The main limitation of this study is the relatively small sample size and distribution of the survey resulting in a small number of observations. Nike and PRIMARK are widely known brands in many countries and launching the research on a larger scale would undoubtedly affect the discussed results. The larger sample size with the respondents living in different geographical locations could help to broaden the scope of the research and improve the reliability of the responses. Furthermore, it is not confirmed that the research findings are applicable across all the shoe categories and for all the consumer segments. Another limitation could be related to the variables studied in this research. The variables used (awareness, brand equity, quality, price) can effectively evaluate the consumer attitude. However, the research does not consider all the variables in consumer attitude like government incentives. It has a significant impact on the final results. Finally, the resources were limited because this research is conducted during the global pandemic (COVID-19). Research had to be completed online, and the face-to-face interaction was minimal with the respondents. These complications had a significant impact on the outcome of the study.

The limitations of the research have created several opportunities for future research. As it was mentioned before, a bigger sample size could have been reached with the survey. Moreover, face-to-face interviews can be conducted to understand better the rationale of the survey responses and the respondents. Future research could also potentially focus on more variables like government incentives, multiple brand options, discount coupons on the purchase of refurbished products, exchange offers to increase the scope and relevance of the project. In addition, the study can be done on different refurbished products and markets such as consumer electronic goods, refurbished clothes, etc. Another research on refurbished product acceptance in developing and developed nations can also be done indicating the attitude of the end customer towards refurbished products depending upon their living standards, purchasing power, and product necessity. Further research on these segments can help develop a sustainable world.

Bibliography

Aaker, D. A. 1991. Managing Brand Equity: Capitalizing on the Value of a Brand Name. The Free Press, New York, NY.

Aaker, J., S. Fournier, S. A. Brasel. 2004. When good brands do bad. J. Consum. Res. 31(June): 1–16.

Agykem. CK, Haifeng. H, Agyeiwaa. A. 2015. Consumer perception of product quality. Microeconomics and macroeconomics 201, 3(2): 25-29.

Atasu, A., M. Sarvary, L. N. Van Wassenhove. 2008. Remanufacturing as a marketing strategy.

APRA (2012) *Remanufacturing Terminology: Remanufacturing Term Guideline* at http://www.apra-europe.org/dateien/downloads/Reman_Term_Guideline_2012-03-06.pdf.

Ackerman, DS, Hu, J., 2017. Assuring me that it is as 'Good as New' just makes me think about how someone else used it. examining consumer reaction toward marketerprovided information about secondhand goods. J. Consum. Behav. 16 (3), 233–241.

Benjamin T. Hazen & Diane A. Mollenkopf & Yacan Wang, 2017. "Remanufacturing for the Circular Economy: An Examination of Customer Switching Behavior" Business Strategy and the Environment, Wiley Blackwell, vol. 26(4), pages 451-464, May.

Debo, L. G., L. B. Toktay, L. N. Van Wassenhove. 2005. Market segmentation and product technology selection for remanufacturable products. Manage. Sci. 51(August): 1193–1205.

EllenMacArthur Foundation. 2013. Towards the Circular Economy: Opportunities for the Consumer Good Sector, 2. Isle of Wight, United Kingdom.

Eurobarometer. 2009. Europeans' Attitudes Towards the Issue of Sustainable Consumption and Production. The Gallup Organization for the European Commission, Hungary.

Ferguson, M. E., G. C. Souza. 2010. Closed-Loop Supply Chains New Developments to Improve the Sustainability of Business Practices. CRC Press, Boca Raton, FL.

Griskevicius, V., J. M. Tybur, B. Van den Bergh. 2010. Going green to be seen: Status, reputation, and conspicuous conservation. J. Pers. Soc. Psychol. 98(3): 392–404.

Guide, V. D. R. Jr., L. N. Van Wassenhove. 2009. The evolution of closed-loop supply chain research. Oper. Res. 57(1): 10–18.

Guide, V. D. R. Jr., J. Li. 2010. The potential for cannibalization of new products sales by remanufactured products. Decis. Sci. 41(August): 547–572.

James D. Abbey & Margaret G. Meloy & V. Daniel R. Guide Jr. & Selin Atalay, 2015. "Remanufactured Products in Closed-Loop Supply Chains for Consumer Goods" Production and Operations Management Society, vol. 24(3), pages 488-503, March.

Keller, K. L. 2007. Strategic Brand Management: Building, Measuring and Managing Brand Equity, 3rd edn. Prentice Hall, Upper Saddle River, NY.

Klassen, R. D., S. Vachon. 2011. Greener supply chain management. T. Bansal, A. Hoffman, eds. Oxford Handbook on Business and the Natural Environment. Oxford University Press, New York, NY, 269–289.

Kleindorfer, P., K. Singhal, L. N. Van Wassenhove. 2005. Sustainable operations management. Prod. Oper. Manag. 14(Winter): 482–492.

Kotler. P and Armstrong. G., 2001. Principles of marketing; Pp 240-242.

Lee, A. Y. 2001. The mere exposure effect: An uncertainty reduction explanation revisited. Pers. Soc. Psychol. Bull. 27(October): 1255–1266.

Markard, J.; Raven, R.; Truffer, B. Sustainability transitions: An emerging field of research and its prospects. Res. Policy **2012**, 41, 955–967.

Mugge, R, de Jong, W, Person, O., Hultink, EJ, 2018. 'If it ain't broke, don't explain it': the influence of visual and verbal information about prior use on consumers' evaluations of refurbished electronics. Des. J. 21 (4), 499–520.

Ovchinnikov, A. 2011. Revenue and cost management for remanufactured products. Prod. Oper. Manag. 20(November/December): 824–840.

Subramanian, R., R. Subramanyam. 2012. Key factors in the market for remanufactured products. Manuf. Serv. Oper. Manage. 14(2): 315–326.

Wang, Y, Hazen, BT., 2016. Consumer product knowledge and intention to purchase remanufactured products. Int. J. Prod. Econ. 181, 460–469.

Yuan Z, Bi J, Moriguichi Y. 2006. The circular economy: a new development strategy in China. Journal of Industrial Ecology 10(1/2): 4–8.

Annexure-1

Survey1: Nike remanufactured products Questionnaire

1. Did you watch the complete video?
   (2)Yes (2)No

2. Are you familiar with the Nike brand?
   (2)Yes (2)No
3. To what extent can Nike offer a quality product?
   (1) Extremely high (2)high (3)moderate (4)low (5) extremely low

4. "Refurbished products are defined as the unused customer return products that are essentially new or the products with minor defects". Have you ever heard about refurbished products??
   (1) Yes (2) No
5. Have you ever purchased a remanufactured product?
   (1) Yes (2) No
6. Have you ever heard about Nike refurbished shoes?
   (1) Yes (2) No
7. To what extent is it important to promote remanufacturing?
   (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
8. For you as a customer, to what extent is it important to promote the eco-friendly features of the product?
   (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
9. How likely is the awareness about eco-friendly features of the product will create a positive purchasing attitude?
   (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely

10. To what extent do you agree with the statement that 'Nike will offer a quality refurbished product'?
    (1) Strongly Agree (2) Agree (3)neither agree nor disagree (4)Disagree (5)strongly disagree

11. For you as a customer, how likely is it easy to switch towards the Nike refurbished shoe?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely
12. How likely would you buy refurbished shoes from Nike?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely

13. To what extent is the price an important factor while purchasing remanufactured products?
    (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
14. To what extent is quality an important factor while purchasing remanufactured products?
    (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
15. How likely would you use Nike refurbished shoes if the price is 40% higher compared to new shoes?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely
16. How likely would you use Nike refurbished shoes in the future if the quality of the product is low?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely
17. How much are you willing to pay for the Nike refurbished shoes compared to the new shoes?
    (1) Higher than new product (2) 81-95% (3) 66-80% (4) 50-65% (5) Less than 50%

18. Your Gender
    (1) Male (2) female
19. Your Age
    (1) Under 20 (2) 20-35 (3) 36-50 (4) 51-65 (5) Above 65
20. Your highest level of educational
    (1) Elementary School (2) High School (3) University degree (4) Doctorate Degree (5)Other
21. Your occupation
    (1) Student (2) Service (3) Agriculture (4) Business (5) Other
22. Your income in Euros per month
    (1) Below 1000 (2) 1001-2000 (3) 2001-3000 (4) 3001-4000 (5) Above 4000

Survey2: PRIMARK remanufactured products Questionnaire

1. Did you watch the complete video?
   (2)Yes (2)No

2. Are you familiar with the PRIMARK brand?
   (2)Yes (2)No
3. To what extent can PRIMARK offer a quality product?
   (1) Extremely high (2)high (3)moderate (4)low (5) extremely low

4. "Refurbished products are defined as the unused customer return products that are essentially new or the products with minor defects". Have you ever heard about refurbished products??
   (1) Yes (2) No
5. Have you ever purchased a remanufactured product?
   (1) Yes (2) No
6. Have you ever heard about PRIMARK refurbished shoes?
   (1) Yes (2) No
7. To what extent is it important to promote remanufacturing?
   (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
8. For you as a customer, to what extent is it important to promote the eco-friendly features of the product?
   (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
9. How likely is the awareness about eco-friendly features of the product will create a positive purchasing attitude?
   (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely

10. To what extent do you agree with the statement that "PRIMARK will offer a quality refurbished product"?
    (1) Strongly Agree (2) Agree (3)neither agree nor disagree (4)Disagree (5)strongly disagree

11. For you as a customer, how likely is it easy to switch towards the PRIMARK refurbished shoe?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely

12. How likely would you buy refurbished shoes from PRIMARK?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely

13. To what extent is the price an important factor while purchasing remanufactured products?
    (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
14. To what extent is quality an important factor while purchasing remanufactured products?
    (1) Very important (2) Important (3) Somewhat important (4) very unimportant (5) unimportant
15. How likely would you use PRIMARK refurbished shoes if the price is 40% higher compared to new shoes?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely
16. How likely would you use PRIMARK refurbished shoes in the future if the quality of the product is low?
    (1) Very likely (2) Likely (3) Neutral (4) Unlikely (5) Very Unlikely
17. How much are you willing to pay for the PRIMARK refurbished shoes compared to the new shoes?
    (1) Higher than new product (2) 81-95% (3) 66-80% (4) 50-65% (5) Less than 50%

18. Your Gender
    (1) Male (2) female
19. Your Age
    (1) Under 20 (2) 20-35 (3) 36-50 (4) 51-65 (5) Above 65
20. Your highest level of educational
    (1) Elementary School (2) High School (3) University degree (4) Doctorate Degree (5)Other
21. Your occupation
    (1) Student (2) Service (3) Agriculture (4) Business (5) Other
22. Your income in Euros per month
    (1) Below 1000 (2) 1001-2000 (3) 2001-3000 (4) 3001-4000 (5) Above 4000