ASSESSING THE CONSUMERS' ATTITUDE TOWARDS SUSTAINABILITY ON PURCHASE DECISIONS IN PERSONAL CARE PRODUCTS IN WESTERN PROVINCE, SRI LANKA

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Dissertation submitted in partial fulfillment of the requirements for the degree

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DECLARATION

I declare that this is my own work and this Dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

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The supervisor should certify the Dissertation with the following declaration.

The above candidate has carried out research for the Master of Business Statistics Degree Dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of the Supervisor: Dr. Pansujee Dissanayaka
Ms. D R T Jayasundara

Signature of the Supervisor: Date: 22/07/2025

UOM Verified Signature

DEDICATION

This work is dedicated to my parents, whose unwavering love and support have been foundation of all my achievements and to my husband, whose constant support, encouragement and believe in me made this journey possible.

ACKNOWLEDGEMENT

I would like to express my deepest heartfelt gratitude to the following personals that supported me in completing this research successfully with their invaluable guidance and encouragement. This research would not have been executed without those individuals who supported me during this period.

First and foremost, I would like to make this as an opportunity to give my heartfelt gratitude to my research supervisor Dr. Pansujee Dissanayake, Senior Lecturer, Department of Statistics & Computer Science, Faculty of Science, University of Kelaniya for her invaluable advices, support and continuous guidance offered to me by spending her precious time. Moreover, I would also like to extend my appreciation to Dr. Asanka Gunawardana, Senior Lecturer, Department of Decision Sciences, Faculty of Business, University of Moratuwa for her constructive feedback and valuable guidance given to me to improve my research.

Further, I would like to thank MSc in Business Statistics programme coordinators Ms. Ravindi Jayasundara and Dr. Bimali Jayasinghe for the support and assistance provided along the period.

Finally, I would like to thank my family, colleagues and friends who have been a tremendous support throughout by encouraging me each step of the way.

ABSTRACT

Environmental problems are rapidly increasing in the global context. This has urged many businesses to think about sustainable aspects to incorporate in their supply chain activities. With rapid external environmental changes, businesses have to be extra attentive on how consumer purchasing patterns have changed in current environment.

Personal care product category is one of the most highly valued product categories under Fast moving consumer goods segment. Several international businesses who are in personal care products manufacturing have initiated to combine sustainable elements in their product features whereby consumer attraction has gained and rapidly changed purchasing behavior towards sustainable products. With this understanding, this study is analyzing how consumers' attitude on sustainable aspects has impacted on purchase decisions in personal care category in Western province Sri Lanka.

This research was performed using the survey method with an online structured questionnaire. Data were gathered from 325 number of participants who purchase or potential to purchase personal care products in Western province Sri Lanka. In this cross sectional study under the quantitative approach, structural equation modeling was mainly applied for the analysis. In prior to the actual data collection, a pre-study and a pilot study were conducted. The statistical software IBM SPSS and AMOS were used for data analysis. As per the results, the factors awareness about sustainability, green advertising and beliefs & attitudes were identified as factors which are having a significant positive impact on purchase decision. Moreover, among those factors, green advertising has a strong positive impact on purchase decisions than other factors.

Based on these findings, personal care products manufacturing can improve consumer purchase decisions positively by making consumers aware about sustainability and its importance, promote product features through green advertising, and change consumer thinking including beliefs and attitudes towards sustainability. Findings of this research are helpful to contribute towards sustainability to reduce environmental problems.

Keywords: Purchase decision, Consumers' attitudes, Sustainability, Personal care products

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LIST OF ABBREVIATIONS

AGFI	Adjusted Goodness of Fit
AMOS	Analysis of Moment Structures
AS	Awareness about Sustainability
AVE	Average Variance Extracted
BA	Beliefs and Attitudes
CAGR	Compound Annual Growth Rate
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CFL	Criterion of Fornell - Larcker
CMIN/df	Normed Chi-Square Value
EC	Environmental Consciousness
FMCG	Fast Moving Consumer Goods
GA	Green Advertising
GDP	Gross Domestic Product
GFI	Goodness of Fit
HTMT	Heterotrait - Monotrait Ration of Correlation
IBM	International Business Machines Corporation
M&A	Mergers and Acquisitions
MNC	Multinational Companies
PD	Purchase Decision
PMI	Purchasing Managers' Index
PP	Product Packaging
RMSEA	Root Mean Square Error of Approximation
SEM	Structural Equation Modeling
SMU	Social media usage
SPSS	Statistical Package for Social Sciences
SV	Social values
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UN	United Nations

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CHAPTER 1

INTRODUCTION

The modern business world is rapidly developing through different business engagements around the globe. Among those businesses, multinational companies (MNC) have played a significant role by providing products and services to customers while providing their contribution to economic development of the country (Bazel-Shoham et al., 2020). In recent past, multinational companies have rapidly involved in expanding their business functions through mergers and acquisitions (M&A) and joint ventures. This has become a global trend for many multinational businesses in their expansion process with the aim of market development (Y. Chen & Young, 2010; Gomes, 2020).

With development of technologies, customers are now more involved in purchasing products via online and use of different technologies such as mobile apps, smart cards etc. These technologies have improved the communication between companies and customers (H. Kim et al., 2019). This has influenced customers to get exposed to more information about different variety of products, ingredient used, manufacturing processes and also its supply chain. Through the digital platforms and social media, massive amount of information is conveyed to customers. Customers are now a days more educated and well aware about the technologies therefore customers are keep on searching for detailed information about products or services that they consume (Luan et al., 2019). Most importantly, customers are frequently increasing the level of awareness about the products they are planning to purchase through reading the online reviews and comments given by other users. This has been a direct influenced on their purchase decision (Pentina et al., 2015). As per the recent studies conducted on consumer purchase decisions, 90% of customers read online reviews and nearly 83% of customers browse online product reviews before they make a purchase decision either for online purchase or at physical shops (Vimaladevi & Dhanabhakaym, 2012; K. Z. K. Zhang et al., 2014).

Further to the above with the recent projections on manufacturing and services activities in Sri Lanka, there is a considerable level of increasing development is expected in manufacturing sector. According to recent studies conducted by Central bank (Central Bank of Sri Lanka, 2024a), there is an indication of Sri Lanka Purchasing Managers' Index (PMI) for manufacturing as 55.6 in January 2024 which is a positive rising figure which displayed a development in manufacturing sector including FMCG.

1.1 Background and Context of the Study

Personal care products are one of the closest goods for consumers in their daily life. These products are designed for external use with purpose of personal hygiene, grooming and self-care (Darbre, 2023). Most importantly, under personal care range, products such as soaps, shampoo and conditioner, hair oils, cream, sun protecting products, deodorant, cosmetics, toiletries, tooth cleaning products, hygiene products are considered (Bohra et al.,

2022). Therefore, personal care product varieties available in the market are considered under main categories such as hair care, skin care, oral care, deodorants, feminine hygiene products, toiletries and beauty products as cosmetics (Ghazali et al., 2017; M. Sharma & Mahlawat, 2021; Statista, 2024). This study was paid attention on personal care product category among the FMCG product range which is consisted with a higher product variety which used for personal use. Further, personal care products purchase decisions are highly subjective to customer preference.

Fast Moving Consumer Goods (FMCG) industry is a sector which is consisted with a rapid growth in both local and global terms (Helen & Selvi, 2022). This sector has given a major contribution towards the economic growth and welfare of the society. Specially, the contribution is reflected on the GDP of the country (Wang et al., 2022). The products which are consumed within a year are considered as a Fast Moving Consumer Goods. These products can be categorized under different segments such as Homecare, Household care, Personal care and Food category (M. Sharma & Mahlawat, 2021; Shukla & Bordoloi, 2015).

1.1.1 Sustainability aspects in Personal Care Category

In recent past, the Sustainability is one of the most frequently discussed topics in business arena. The term sustainability is referred to the achievement of needs and wants of current generation without compromising the attainment of the needs of future generation (Rudawska, 2019). United Nations have done continuous follow ups regarding sustainable development goals and 2030 agenda, organizations in different industries were highly utilized their time in incorporating sustainability aspects in their business activities. Businesses are focused towards transformative shifts in their activities by developing human well-being, development in urban areas, addressing environmental concerns and contribution towards economic development (United Nations, 2023).

Further, there are diverse ranges of personal care products available in the retail market which is ended in waste water and environment at the end of its life time. This is basically there are no proper disposal procedures developed for customers to follow at the end of product life time. Therefore, this can created a serious concern for people and businesses to think about the impact they generate through the manufacturing and consumption of personal care products (Khalid & Abdollahi, 2021; Lang et al., 2016).

As per the rise of the need of addressing environmental problems and concerns along with social and economic issues, Personal care product manufacturers have turned their product and process development tasks towards more sustainable aspects in global context.

1.1.2 Personal Care Category in Sri Lanka

According to recent reports, there is a generation of income closer to $1445 million in 2024 with an annual growth rate of 3.58% (CAGR) in personal care category in Sri Lankan market (Statista, 2024). Furthermore, consumer attitude is one of the critical factors which

influenced on purchase decisions. As a part of consumer behavior, consumer attitude towards different aspects can change their behavior in decision making (T. Chen et al., 2022).

In relation to the sustainability aspects of products in personal care segment, there are different approaches such as use of recyclable materials for packaging in personal care products, eco labeling, and use of vegetarian or vegan ingredients in product manufacturing (Ilangasekara & Siriwardana, 2022).

1.2 Research Problem

Many industries have initiated their business activities and processes towards sustainable business practices. With this development of sustainable approaches, it is required to understand how consumers' attitudes have moved towards sustainability in terms of their consumption. Personal care products are one of the products which are closer to consumers in their day to day life. These products are being used every day starting from the morning till evening. Therefore, studying the attachment of sustainable aspects in consumer attitudes relate to personal care products can have a crucial impact on personal care manufacturers as it helps to increase sales through promoting sustainable aspects to influence consumers' purchase decision.

When conducting a research, it is really crucial to identify research studies which are already conducted by both academic and corporate sectors in the field of the study. This approach has built a proper foundation for the study which has provided path to identify any research gap persists. There are considerable numbers of past studies available in the area of consumer attitude, purchase decisions. Furthermore, there are wider ranges of research conducted on sustainability as it is the most trending area of study from recent past with the 2023 agenda from United Nations. However, there are very minimum number of studies done regarding the combined area of consumer attitudes on sustainability and purchase decision which have identified as a research gap in both academic and industry. Especially, a very minor attention has been given to research on category of personal care in combination with consumers' attitudes on sustainability and how it impact to purchase decisions. Therefore, this study is contributing to address this gap which persists in empirical and performance terms.

Specially, in Sri Lankan context, Personal care product manufacturers in western province are not allocated a considerable portion for research and development during past period after the pandemic. In recent past, main research area focused by many researchers was about the economic crisis experienced by the country as a whole. Therefore, the contributions towards research are also minimized during the past period of time. There is a considerably huge knowledge gap is existed in the FMCG sector at the moment. Therefore to contribute to this research gap, this research is focused on identifying how consumers' attitude on sustainability effect on purchase decision in personal care products in Sri Lankan context.

1.3 Research Questions

As per the research problem which was identified in this study including both empirical and practical gap which are highlighted in this research, below research questions are recognized.

- Do consumer attitudes have an influence on purchase decisions in personal care products?
- Is there a considerable influence from sustainable aspects on consumer attitudes which ultimately impact to purchase decisions in personal care products?

1.4 Research Objectives

The aim of the research is to assess the factors of consumers' attitude towards sustainability and its effect on purchase decision in personal care products in Western province Sri Lanka.

Specific objectives

- To identify factors of consumers' attitudes that influence on purchase decisions in personal care products
- To recognize critical factors of consumers' attitudes relate to sustainability on purchase decision
- To provide recommendations relate to consumer attitudes about sustainability and how its contribute in increasing purchase decisions in personal care products

1.5 Significance of the Study

This research is focused on Personal care products as the product life time is longer comparative to other types of products in FMCG sector. Usually, period of these products life time is less than a year in shelf. Further, these products have a quick turn over, relatively low cost, almost used for daily usage by consumers (Sachdev, 2015).

Products available under personal care category are considerably purchased for medium terms usage and not for short term. These products are being consumed for few months compared to other product categories in FMCG sector. Further to that consumers have a personal value towards these categories of products than any other. As an example, products such as cream, face wash, soap, beauty products like cosmetics, shampoo and conditioners with different fragrances etc are have a sentimental value than any other FMCG product. Therefore, customers are making their purchasing decision more carefully and personal involvement is there in most of the time when purchasing these products. Therefore, consumer attitude has a significant involvement and consideration in purchasing personal care products. Due to this reason, this research has selected the personal care category and to study how the trending topic in these recent five years which is known as sustainability has changed consumers attitudes which can have an impact on their purchase decisions. This area has been researched in this study. Moreover, this research has focused

on consumers who are currently lives in Western province and purchase or potential to purchase personal care products.

Findings of the research are mainly contributed to the knowledge and industrial practices in the FMCG industry. Research finding from this study is supporting businesses to develop new business strategies in terms of incorporating sustainable features into their product design, production processes, marketing and promoting the products and other business activities related to manufacturing personal care products. Therefore, these valuable research findings are contributing to fulfill the knowledge gap in both academic and industry practices. Further it will also support to reach global sustainable development goals by 2030.

1.6 Chapter Summary

Chapter 1: Introduction chapter is consisted with the discussion about the research area explaining the personal care products. A discussion was made about sustainable aspects in personal care product category. Furthermore, this explanatory discussion was expanded towards Sri Lankan context. Research problem, objectives and significance of the research were also included in this section.

Chapter 2: The literature review, the main focus was given to present an in depth knowledge on research area and what other researchers have done in similar area. Overall discussion was made regarding different theories on consumers' attitudes towards sustainability and other related areas. Different factors related to sustainable attitudes were identified through literature. Research gap was also highlighted.

Chapter 3: Materials and methods chapter has a detailed discussion about the conceptual framework drawn based on literature findings. Thereafter operationalization table, research design including population, sample size and data collection method were included in this chapter in detailed form. The explanation on how SPSS and AMOS used for the analysis were included in the chapter with necessary details.

Chapter 4: This chapter is about data analysis and interpretation. The output results of pilot study based on reliability were presented. Thereafter, the analysis results were presented on actual dataset. Descriptive and inferential analysis results were presented in a detailed manner.

Chapter 5: This section is about Discussion and Conclusion. Based on results from the analysis, conclusions were made by achieving objectives of the research. Summary of the research findings were included to give a proper understanding on significant findings from the analysis.

Chapter 6: Recommendations were given appropriately considering the conclusion. Further, limitations of this study were included in the same chapter. Moreover, further research opportunities were also mentioned so the research area can be further studied on the mentioned areas.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter examined existing body of knowledge available in past studies, theoretical frameworks and identifying gaps in both academic and industrial arena.

Among the wider range of industries available in modern business environment, Fast Moving Consumer Goods (FMCG) is considered as a sector which manufactures products that are fasting moving among consumers. These products are being sold very frequently by leaving the store shelf at a very faster speed. In modern trade such as supermarkets, convenient stores, hypermarket and general trade, these Personal care products are widely available (Ker Xin et al., 2019). Since these products are frequently purchased by customers for their daily consumption, it has a much closed attachment with consumers' lives. This Personal care product segment is having certain characteristics such as rapid growth, wider product range availability, large potential consumer segment and high capability in development for businesses in this sector (Guo & Liu, 2023).

Collectively, some researchers have highlighted that FMCG products are categorized as low priced with low profit margin and high volume products which are being sold at large quantities. The world recognized companies including Johnson & Johnson, Unilever, Nestle, Procter & Gamble, Kellogg's, Heinz, Colgate- Palmolive, Coca-Cola, and General Mills are some of the businesses in FMCG segment (Malhotra, 2014). Personal care products are manufactured by including numerous types of product characteristics. These features and attributes of the products are really stimulating the consumer behavior and ultimately impact on purchase decision of customers (A. A. Kumar & Babu, 2014).

The literature reflected that personal care products are considered under the segment of mass production in consumer market. In nature, most of these personal care products have a longer supply chain and require to produce goods quickly to cater changing needs of consumers (Guo & Liu, 2023).

2.1.1 Sustainability

Sustainability is one of the most commonly discussed topics in recent past among many different sectors in terms of manufacturing companies and service sector businesses.

United Nations have initiated sustainable development goals back in 2015 with the objective of achieving a decent living for all living and non-living things and move the planet towards a healthy environment by covering three pillars named as the environment, society and economic performance (United Nations, 2023). At the moment there is a growing concern about environmental problems and global concerns identified by the UN such biodiversity loss, air & water pollution, poverty rates, greenhouse gas emissions and

waste generation are the most critical issues recognized. Main contributors for these issues are from different industries (Bocken et al., 2014; Bocken & Short, 2016; Carter & Rogers, 2008).

The Covid 19 pandemic has slow down economic activities in both local and global terms which had a serious negative effect towards attainment of sustainable development goals. However, during this post pandemic period, it has once again started moving towards contributing for the sustainable development goals (United Nations, 2023).

Existing literature has emphasized that human activities along with industry activities have actually affected the life of Earth which is due to Anthropocentric approach (Lewis & Maslin, 2015). Literature reflected that there should be a serious change from both consumers side and producers side in terms of transforming the current business models towards sustainable business models (Bocken & Short, 2021).

2.1.2 Consumers' Attitude towards Sustainability

Recent studies have found that many consumers are now started paying attention to sustainable aspects of products and services they consume (Statista, 2024). In a recent study, the author has figured out that consumer have an attitude as sustainability is primarily about purchasing and consuming only what is required without buying unnecessary products (Vehmas et al., 2024). In contrast, when consumers make purchase decisions, they are perceived the environmental and social values of the products as well as the manufacturing processes that delivered to them through the products they purchased (Rintamäki & Kirves, 2017).

Among the responses given in past studies, consumers have ranked the sustainability as important purchase criteria in the areas of energy utilization, construction of houses, purchase of consumer goods, travel & tourism, automotive and financial services. In those studies, 50% of consumers have ranked sustainability as the top five value driver in their purchasing process (Simon & Kucher, 2021). However, existing literature do not have adequate level of explanation on consumer behavior of personal care product purchase.

Some research findings have highlighted the factors such as country of manufacture, price, size of product, sustainable production and quality are key things to consider when purchasing household items, cloths and food items. As the consumer who is making responsible purchase decisions in global context are highly considered about environmental impact, ecological impact and social impact and value. As stated by literature, being more responsible in their purchase has become an emerging consumer attitude among consumers (Vehmas et al., 2024). Similarly, past studies reported that in 2014 there were only 50% of consumers were willing to purchase products with sustainable aspects however, those have been increased to 66% by end of 2015. This has indicated that there is an increase trend in the acceptance and recognition for the value of sustainable offering in every year (Nielsen Global Corporate Sustainability Report, 2015). Further studies have confirmed that

consumers' attitudes have been moved towards the technology advancement factors, ethical considerations and specifically in sustainable products (Mostaghel & Chirumalla, 2021).

In the modern era, sustainability is not just an option, it is a necessity in future when manufacturing or selling products to customers. Therefore, both consumers and producers should always have a consideration on sustainable aspects when buying and selling products (Abutaleb & El-Bassiouny, 2020). Despite multiple studies exploring about sustainability, there is lack of evidence on studies discuss about sustainable consumer attitudes and their purchase decisions.

2.2 Factors effecting to Sustainable Attitudes: Findings by other researchers

2.2.1 Environmental Consciousness

In the discussion of sustainability and consumer behavior, many research studies have discussed about environmental related aspects when it is related to products. Ozone layer depletion, air and water pollution, depletion of natural resource, soil degradations are some of the environmental concerns that are being discussed in current business scenarios where customer have moved towards in consideration of more environmental friendly products (Abutaleb & El-Bassiouny, 2020; Kotler, 2011). Further to the above area of studies, there are researches which have highlighted the consumer environmental considerations. Health concerns, moral and religious motives, quality and safety aspects have moved consumers to be more environmental conscious (Michaelidou, & Hassan, 2008). As per the research done on attitudes towards sustainable products, environmental protection and consciousness is one of the sub-factors which have been considered (Abutaleb & El-Bassiouny, 2020).

Different studies have presented the increasing trend in the market from both company side as well as consumers' side towards ethical purchasing with positive attitudes on green and sustainable products. More researches have confirmed that due these consumers positive attitudes and intentions have led the businesses to apply more sustainable practices in the current business processes (Han, 2015; Rao, 2007). Some studies have explained that consumers who are having a concern on health and environmental impacts, tends to move towards purchasing sustainable products and adjust for sustainable life style (Fuentes-Moraleda et al., 2019; Kirmani & Khan, 2018; Spaargaren, 2003).

2.2.2 Product Packaging

Product packaging has a major role in communicating information to customer. In the scenario of sustainability, product packaging is support to promote the eco-friendly features of the product to customers (De Canio et al., 2021). Some parts of the packaging may not be naturally degradable. When considering personal care products, the packaging such as bottles, sachets, bottle caps, tubes are not made out of natural bio degradable materials. If

the packaging is not environmental friendly then those packaging can create waste which can cause environmental pollution (Y.-S. Chen et al., 2017).

On the other hand in global context, recyclable and compostable packaging is being used by many companies in their product packaging. Some companies have promoted 3R concept in their business activities. Reduce, Reuse and Recycle are the concepts that companies are using at the moment which are really promoting the sustainable commitment by the company. These practices are being embedded in those companies' policies (EU Commission, 2019).

2.2.3 Awareness about Sustainability

A certain level of awareness about sustainability from consumers' side is important for businesses to act on sustainable products manufacturing and process development. This is where the companies can easily explain their sustainable aspects embedded with products attributes to customers (Huge-Brodin et al., 2020). This can be effectively used to reach consumers attitudes and encourage their purchases towards products with more sustainable attributes. Even the retailers are playing a significant role in communicating information to customers such as the importance of sustainability and sustainable features embedded in products. Retailer is positioned between manufacturer and the customer. Therefore, retailer can be a significant intermediary which can develop a positive impact on sustainable attitudes of customers. The word of mouth created by the retailer is a real influencing factor to change the consumer behavior in making purchase decisions. Therefore, consumers can be motivated towards sustainable products through retailers (Wilson, 2015).

2.2.4 Green Advertising

According to recent (Abutaleb & El-Bassiouny, 2020) study results, companies are effectively use marketing strategies towards sustainable marketing. They have taken serious steps in transforming their marketing strategies towards sustainable activities. Green advertising is consisted about promoting environmental friendly features and attributes to customers. This is a key selling point in green advertising. Many marketer are now using this approach to attract more customers to their products by using green advertising (Jäger & Weber, 2020). Some studies have emphasized that green advertising is about promoting and disseminating the advantages of the sustainable products attributes over non sustainable products. This has been known for many decades (Zinkhan & Carlson, 1995). Several studies have performed to recognize whether customers purchase products through green advertising due to certain advantages emphasized on self-benefits such as health, cost-saving or other benefits such as environmental protection. However, those research findings have revealed mixed reasons from both self-benefits and other benefits as customers to purchase products due to green advertising (De Dominicis et al., 2017). Moreover, some studies have specified that green advertising is one of the methods which can be used to position the product in consumers mind as a green product (Kao & Du, 2020; Madhavika et al., 2021).

2.2.5 Social Media Usage

There is a rapid increase in the digital consumption in local and global terms. Social media is playing a vital role in this phenomena (Armutcu et al., 2023). Moreover, there is a significant impact from social media on consumers' purchasing decision based on a study conducted in an international context (Stephen, 2016). This research has further stated that Internet usage; social media, mobile apps have become an increasing trend in humans' life. People have become more attached to social media where this medium has used for searching information about products and its characteristics, purchasing products using social media, changing purchasing behavior based on the information available in social media (Lebow, 2023). There were very interesting finding showed from the past research articles related to the area of social media. There were two types of languages that were highlighted as figurative language and explanatory language which was presented in social media reviews given by customers as a response to social media marketing activities. Figurative language is a way that customer express their experience with the product along with emotional connection with it. Online reviews given in figurative language has made a strong positive impact on potential customers where the finding indicated that potential customers have motivated to purchase those products due to those reviews as it was memorable and persuasive (Kronrod & Danziger, 2013). Under the explanatory language used in social media review, those have clearly stated those comments where they like or dislike the product. It is much more straightforward. Reviews from this language have also created a direct influence on customer purchase behavior (Moore, 2015). As the latest trend in modern market place, usages of social media platforms are the main medium of market for the purchase of products. Some studies have revealed that there is a positive influence from social media on consumers' purchasing behavior (Alamsyah et al., 2021; Armutcu et al., 2023).

2.2.6 Social Values

Social values are classified as some sort of characteristics which are acceptable and desirable by the collective society. This has a linkage with the culture which has social relations (Menard, 2015). Another study has emphasized that social value is a set of values which has a connection with culture and cultural beliefs. Further, this has an impact towards social behavior (Vieyt, 2022). Subjective norms are related to consumer attitudinal measures which have focused on social conscious consumption (Abutaleb & El-Bassiouny, 2020). It is focused on social pressure. Development of a new life style relates to environmental friendly life style then it would create a positive motivation to create a value among consumers. This is a good move towards sustainable life style of consumers (Kamboj & Matharu, 2021). There were few studies which discussed how environmental knowledge and social norms have an impact on environment attitude. It has stated that this relationship between social norms and environment attitude has a positive connection (Lin & Niu, 2018). Theory of Planned Behavior and Perceived behavioral control theories are the reflection of factors included in individual belief on presence of those which facilitate or hinder the performance of the behavior (Ogiemwonyi, 2024). In modern era, Theory of

Planned Behavior is used by several research studies after adding new variables to the main factors which was given in the model (Cronce & Larimer, 2013; Yadav & Pathak, 2017). This was done as to adapt the previously developed theory to the modern environmental and business world changes.

2.2.7 Beliefs and Attitudes

Consumers' believes, feelings and behavioral intentions are a part of consumer attitudes. It is an important factor to identify how beliefs and feelings of consumers are effecting on consumer attitudes (Geiger et al., 2019). During this period of time after the Covid 19 pandemic, consumers have become more environmental friendly and purchase eco-friendly products. The major cause for this change is the concerns relate to health and safety and long terms healthy life span. People would prefer to have an interest in living healthy and safety (Kamboj & Matharu, 2021). Some researchers have highlighted that it is important to have an emotional connection or feeling towards preservation of environment. This is a strong influencer towards adopting sustainable lifestyle (Wei et al., 2018). When a particular perception becomes a lifestyle, that practice is directly influencing the behavior of purchase and the types of products purchase. Thereafter, environmental concerns are the key drivers for sustainable product purchase. Different studies have stated that when a consumer is having the feeling or belief of being environmental friendly then he or she is always look for a product which generates less harmful impact on the environment (Riskos et al., 2021). Moreover, some researches have indicated that dimensions such as environmental knowledge and values, beliefs, attitude, intentions, social information and motivation are important feature which encourage sustainable product purchase of customers (Zhang & Dong, 2020). Further, Theory of Planned Behavior (TPB) is a developed theory which used to explain human behavior. There are three main factors which influenced the behavior of a person. Those were named as attitude towards the behavior, subjective norm and perceived behavioral control according to past studies (Ajzen, 1991). Attitude towards the behavior is referred to the evaluation of favorable or unfavorable consumer behavior. Perceived behavioral control is a reflection of factors included in individual belief on presence of those which facilitate or hinder the performance of the behavior (Ogiemwonyi, 2024). In prior to this TPB, there was a theory introduced as Theory of Reasoned Action (TRA) which was also discussed about human behavior. Moreover, that theory was consisted with two main areas as behavioral specific attitudes and subjective norms (Fishbein & Ajzen, 1975).

2.2.8 Purchase Decision

Any type of a decision making is a rational process (Ericson, 2010). Sequences of choices are involved in making purchase decision to satisfy consumer needs and wants (Hanaysha, 2018). Purchase decision of a customer is generally influenced by factors such as desired brand, model, purchase quality, amount of money etc. These can be influenced by information communicated by the marketer (Schiffman & Kanuk, 2007). Further the same

researchers were identified that purchase decisions are having a linkage between customer attitudes in buying or using a product. It is a selection of a product among set of alternative purchase decision choices (Schiffman & Kanuk, 2015). As per the text book written by marketing gurus (Kotler & Armstrong, 2017), purchase decision is about customers' decision on which product or brand to purchase. This is included with several steps such as identification of the need or problem, search for information, evaluation of alternatives, purchase decision and behavior of post purchase.

Decisions are being made after stepping through series of processes in mind. There were many studies conducted on understanding how consumers' attitudes are impacting for purchase intention (Kim & Chung, 2011). There is a linkage between sustainable practices of the company and the purchase intention which have found in different context of the studies (Abutaleb & El-Bassiouny, 2020). Even though there are a lot of studies available on consumer attitudes and its connection with purchase intention, there is very limited level of studies available on consumer attitudes and purchase decision.

Further, from the theoretical perspective, the Engel-Blackwell-Miniard model was developed to understand the customer decision making process. There were six phases involved in this process which were identified as problem or need recognition, search for information, recognition of alternatives and evaluation, purchase decision and post purchase evaluation (Engel et al., 1990; Fang-Ming et al., 2012). This theory further stated that there are mainly three categories which determined consumer decision making process. Individual differences, influences from environment and Psychological processes are the main categories identified. Motives, beliefs and attitudes are some of the internal factors and culture, social and marketing stimuli are some of the external factors which were considered under this theoretical discussion (Poppelaars et al., 2020).

2.2.9 Purchase Intention Vs Purchase Decision

Purchase intention is a relatively simple process compared to purchase decision. Consumer behavior, perception and attitudes are included under purchase intention. Further, it is a level of a consumer behavior that has an intention of purchasing a product based on desire, experience of use and expectation (Cahyanaputra et al., 2021; Kotler & Keller, 2016). More articles have emphasized that the purchase intention is a level at which customer tendency of act before the actual purchase (Martinez & Kim, 2012). Tendency to purchase a particular product where at purchase decision is about the actual purchase of the product is known as purchase intention (Meskaran et al., 2013). Purchase decision is not only consisted with the act of purchasing the product, it is also considered about the post purchase behavior of the consumer. Post purchase behavior is an important element in terms of the sustainable consumer attitudes. This is a critical stage where consumers' satisfaction and dissatisfaction of the product can also be determined after this stage of purchase decision. Specially, the studies which look into the sustainability aspects have not tried to figure out the connection between sustainable attitudes and purchase decision (Dapas et al., 2019).

2.3 Empirical Review between Consumers' Attitude and Purchase Decision

As per the existing literature, many researches were performed as separate studies to understand consumers' attitudes. Some studies have incorporated the sustainability aspect in relation to consumers' attitudes (Abutaleb & El-Bassiouny, 2020; Armutcu et al., 2023; Gunawardana, 2020; Jameel & Ferdinando, 2022; Kamboj & Matharu, 2021; Karunarathna et al., 2017; Lavuri et al., 2024; Madhavika et al., 2021; Magnier & Crié, 2015; Pathmaperuma & Fernando, 2018; Prakash et al., 2023; Zaman & Kusi-Sarpong, 2024). Out of the factors those studies were emphasized about consumers' attitudes, most significantly discussed factors were chosen for this research.

Despite many studies available about consumer attitudes and purchase intention, it is a quiet different approach than purchase decision (Dapas et al., 2019; Jameel & Ferdinando, 2022; Lavuri et al., 2024; Prakash et al., 2023). There were very limited number of research articles available under the area of consumers' attitude on sustainability and how it is related to purchase decision. Therefore, for this research purchase decision was taken as the dependent variable.

According to literature which was conducted in the area of consumer attitudes and purchase decision, many authors have used quantitative research method where structural equation modeling was done via AMOS software (De Canio et al., 2021; Hanaysha, 2018; Kamboj & Matharu, 2021; Lavuri et al., 2024; Prakash et al., 2023; N. Sharma et al., 2022; Zameer et al., 2024). In contrary, there are studies which have performed qualitative method using interviews and used Smart PLS for analysis (Abutaleb & El-Bassiouny, 2020; Heikkinen, 2024; Magnier & Crié, 2015). Therefore, by considering relevance and the most frequently applied methods, structural equation modeling was chosen to apply in this study.

2.3.1 Empirical Gap

There were very limited empirical investigation about combination of consumer attitude and purchase decisions (Hartmann & Apaolaza-Ibáñez, 2012; Shastry & Anupama, 2021). Many researches were separately discussed how different factor and variety of aspect changes consumer attitudes (Asshidin et al., 2016; Pathak et al., 2021).

There are studies which have discussed about how consumers are experiencing different phases of the purchasing process when purchasing a product which led to the purchase decision (Hanaysha, 2018). Majority of the studies have done regarding consumer purchase intention and not focused on consumer purchase decision (Asshidin et al., 2016; Hartmann & Apaolaza-Ibáñez, 2012; Pathak et al., 2021; Shastry & Anupama, 2021). This has indicated that existing literature does not adequately capture the area that this research intended to achieve. Few studies have attempted to focus on consumer attitudes on sustainability (Vehmas et al., 2024). Many studies have overlooked to investigate on how consumers' attitude on sustainability impact on purchase decisions in the products category of personal care.

2.3.2 Industry Research Gap

In general, Personal care product manufacturers are more frequently conduct market research to collect consumer insights. Personal care product manufacturers are collecting consumer insights and change their products, designs, ingredients, business processes and supply chain activities according to the requirements found from market analysis.

In recent time, along with the Covid 19 pandemic and economic crisis experienced during post pandemic period, number of market research conducted were reduced. Especially in Sri Lankan context, there was a considerable drop in investment for market research due to the economic crisis and market inflation. Existing market researches do not adequately capture whether consumers' preferences have improved towards sustainable personal care products.

Considering these gaps available in both empirical and industry level, it has been shown a significant important of conducting a study to understand how consumers' attitudes have changed towards the sustainability and how it has been impacted to their purchased decisions.

Hence the prominent factors identified through literature were used to develop this research conceptual framework and thereafter the research method was designed accordingly. Environmental consciousness, product packaging, awareness about sustainability, green advertising, social media usage, social values and beliefs & attitudes are considered as independent variables and the variable purchase decision was considered as the dependent variable of this research.

CHAPTER 3

MATERIALS AND METHODS

The conceptual framework was developed as per the significant variables recognized in the literature review. There were many variables highlighted in past studies where the most frequently discussed factors were chosen as variables for this study to apply in Sri Lankan context. Environment Consciousness, Product Packaging, Awareness about Sustainability, Green Advertising, Social Media Usage, Social Values and Beliefs & Attitudes are considered as independent variables and Purchase Decision as the dependent variable of this study.

3.1 Conceptual Framework

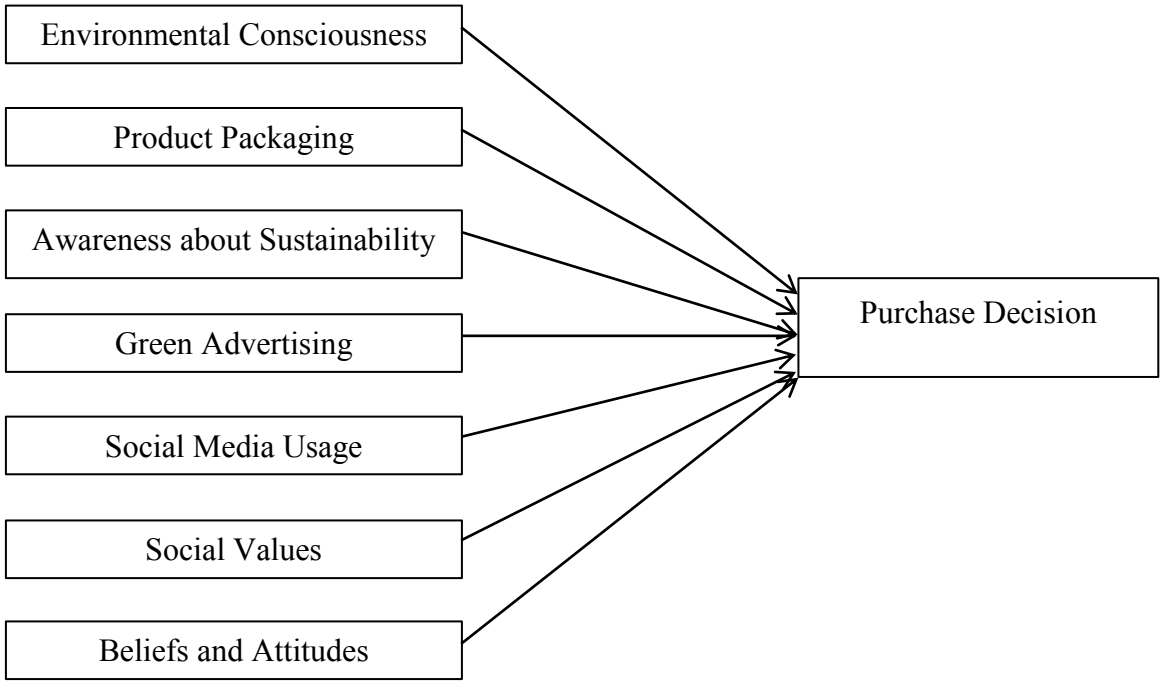

Figure 3. 1: Conceptual framework

This framework is consisted with seven independent variables selected for the research from literature review and a dependent variable which is presented in Figure 3.1. Environmental consciousness, Product packaging, Awareness about sustainability, Green advertising, Social media usage, Social values, and Beliefs & attitudes are identified as independent variables of the research and Purchase decision as the dependent variable. Based on these variables, the conceptual framework was developed.

3.2 Operationalization

Table 3.1: Operationalization

Main Variable	**Authors**
Consumers' Attitude towards Sustainability	
Environmental Consciousness	(Abutaleb & El-Bassiouny, 2020; Fuentes-Moraleda et al., 2019; Han, 2015; Kirmani & Khan, 2018; Michaelidou, & Hassan, 2008; Rao, 2007)
Product Packaging	(Y.-S. Chen et al., 2017; De Canio et al., 2021)
Awareness about Sustainability	(Huge-Brodin et al., 2020; Wilson, 2015)
Green Advertising	(Abutaleb & El-Bassiouny, 2020; De Dominicis et al., 2017; Jäger & Weber, 2020; Kao & Du, 2020; Madhavika et al., 2021; Zinkhan & Carlson, 1995)
Social Media Usage	(Alamsyah et al., 2021; Armutcu et al., 2023; Kronrod & Danziger, 2013; Lebow, 2023; Moore, 2015; Stephen, 2016)
Social Values	(Kamboj & Matharu, 2021; Lin & Niu, 2018; Menard, 2015; Vieyt, 2022)
Beliefs and Attitudes	(Geiger et al., 2019; Kamboj & Matharu, 2021; Riskos et al., 2021; Wei et al., 2018; X. Zhang & Dong, 2020)
Purchase Decision	(Abutaleb & El-Bassiouny, 2020; Dapas et al., 2019; Y. H. Kim & Chung, 2011; Meskaran et al., 2013; Schiffman & Kanuk, 2015)

As per the Table 3.1, it is consisted with a summary of variables selected for the study along with the sources from past researchers who have highlighted that particular variable is important to consider in a similar study.

3.3 Research Design

Under research design, this is consisted with the discussion on how the plan was being made about collection of data, measurement and data analysis (Saunders et al., 2019; Scheaffer et al., 2012; Sekaran & Bougie, 2016). Positivism was used as the research

philosophy. The Deductive approach was selected as the factors of the study are based on theories and previous literature findings. Moreover, methodological choice of this research was mono-method which is in quantitative format (Seuring et al., 2021). As the strategy for this research, online survey method was selected to collect quantitative data using a structured questionnaire. Furthermore as the time horizon of the research, cross sectional time frame was selected. Based on the time horizon, data were collect at one time point (Ker Xin et al., 2019).

3.3.1 Population

Population of this research is people who purchase or consume personal care products in Western province Sri Lanka. In addition, any potential customers who are willing to purchase personal care products have also been considered for the study under the population. Therefore, people who are in age 18 or above in the Western province was considered for the population of this research. According to the Statistical department at Central bank reports, target population at Western province is over 6Mn people (Central Bank of Sri Lanka, 2024b; Department of Census and Statistics, 2025). The population can be considered as an infinite population. As per the recent statistical data available regarding Western province, there are 2.4Mn people in Gampaha district, 2.3Mn in Colombo and 1.3Mn in Kaluthara district.

3.3.2 Sample

A representative group of customers and potential set of customers from the population were selected as the sample of the study. There were 325 number of customers were considered and an online structured questionnaire was given to each participant of the study. Online sample size calculator was used to decide the number of individuals that are going to be considered in this research. As proportionate figures from population, 137 responses were collected from Gampaha district, 122 responses from Colombo and 66 responses from Kaluthara.

3.4 Methods of Data Collection

The research was designed as quantitative research where rest of the data collection and analysis were planned accordingly. This was a cross sectional research where participants with different characteristics were selected as a sample from the population for the data collection. Data were collected at one time during the research period. As the research design under the quantitative research approach, survey method was applied for collection of data. A structured questionnaire was designed appropriately by considering the independent variables and dependent variable of the study (Hanaysha, 2018). To meet the purpose of the research, this questionnaire was distributed among the selected sample. Questionnaire was designed as a self-administered questionnaire by reducing any misunderstandings or any difficulty in filling the questionnaire during the data collection.

Western province was aimed as the area of this research under the scope of the study. Therefore, district in western province was selected which has Colombo, Gampaha and Kalutara. Research population was the customers who purchase personal care products and the potential customers who purchase personal care products in Western province, Sri Lanka. Based on statistics published by census and statistics department in Sri Lanka, density of the customers who purchase personal care products in Western province was identified. Thereafter, stratified sampling was used and proportionally collected data. Covering the density of each district, numbers of respondents were gathered and data were collected proportionately. Online questionnaire was circulated among multiple social media platforms. This method was appropriate to choose a representative sample out of the population covering main districts in Western province.

Questionnaire Design

According to objectives of the research, structured questionnaire was developed. Closed ended questions were used. There are mainly two sections in the questionnaire. Section one consisted with the general questions to gather descriptive data regarding the sample. These questions were mainly developed with the idea of using for descriptive analysis. Multiple choice questions were given to gather demographic characteristics of the sample. There were few ranking questions included to understand the preferences related to sustainability.

Section two questions were designed for inferential statistical analysis purpose which is included with questions relate to independent variables as well as about dependent variable. For these variables, several sub-questions were included to understand consumers' responses. These questions were constructed in accordance with sub variables identified in operationalization table. Further, adaption method was used when developing the questionnaire. Questions from past researches were adapted and several adjustments were made to make those questions appropriate for the study (Dash & Paul, 2021; Vallejo-Medina et al., 2017). The items under each variable developed for inferential analysis was based on five-point Likert scale where Strongly Disagree = 1 and Strongly Agree = 5.

Data analysis was carried out by utilizing the collected data from survey. IBM SPSS Statistics 26 version of the software and IBM SPSS AMOS software was utilized for data analysis. Summary of the output from SPSS and AMOS software were presented in the report for interpretation.

3.5 Methods

3.5.1 Pre-Study and Pilot Study

As the first step for the data collection, a Pre-study was performed. Pre-study or the preliminary study was executed to plan, refine and check the feasibility of the method of data collection (Smith et al., 2015). Pre-study was done through distribution the initial questionnaire to five experts in academia and in the field of industry. Based on the comments given, few adjustments were made to the plan and items in the questionnaire.

Based on comments received from pre-study, a pilot study was designed. There are many benefits in conducting pilot study. It helped in identifying unclear and ambiguous items in the questionnaire (Mocorro, 2017). After revising the questionnaire according to the feedback given by experts, this pilot study was performed. Online questionnaire was distributed among 15 numbers of participants in order to collect responses. This pilot study was performed prior to the actual data collection. The collected data from the pilot study was taken for the reliability and validity test for each variable included in the questionnaire. Reliability test was performed for the data collected for pilot study. This test was performed using SPSS software. Finalized online questionnaire is included in Appendix A.

3.5.2 Reliability Test

Under the reliability test, Cronbach's Alpha value was measured for each and every variable separately. Tested whether the Cronbach's alpha value is greater than the value 0.7 or not (Hair et al., 2017). For each sub question included under the main variables were carefully checked whether the values are greater than 0.7. Otherwise required changes and amendments were done and retested the Cronbach's alpha value before the actual data collection. Cronbach's alpha is calculated based in formula 1.

$$\alpha = \frac{k}{(k-1)}\left(1 - \frac{\sum_{i=1}^{k}\sigma_i^2}{\sigma_t^2}\right) - - - - - (1)$$

Where α is Cronbach's alpha, k is number of items, σ_i^2 is the variance of each individual item and σ_t^2 is variance of the total score.

3.5.3 Reliability Test for the Pilot Study

The reliability is a measurement that is used to identity to which extent the questions in the questionnaire are without bias and maintaining the consistency across time in various situations. Reliability is a measurement used to test both consistency and stability of given set of items (Hair et al., 2017; Sekaran & Bougie, 2016). Similarly, it is expected to identify how far the respondents of the questionnaire have been understood the given questions. If the questions are consistent and reliable then same question should be answered in the same way even if it is given in two different time frames. This reliability was measured from data gathered during the pilot study. The coefficient was considered to measure the reliability is Cronbach's alpha value. Further, values above 0.7 are considered as a satisfactory level which is considered under the acceptable level (Hair et al., 2017).

3.5.4 Validity Test

The Validity is discussed about, to what extend the scores of the particular variable represent it. There are different types of validity measures available for a researcher to choose based on the study. Factorial validity, Criterion related validity, Convergent validity and Discriminant validity are some of the measures. Among those different validity

criterions, face validity is a measurement which expected to understand the construct of interest. In other words, this is expected to measure about human behavior in terms of how they respond to a questionnaire and how well respondents reflect them self as a person with good qualities (Chiang et al., 2020). During the pre-study, this validity of questionnaire was discussed with experts.

3.5.5 Actual Data Analysis

Actual data collection was done after conducting the pilot study. Online questionnaire was distributed and 325 of responses were collected. Using these collected data, descriptive and inferential analysis was performed using SPSS and AMOS software.

Descriptive analyses were done based on the data collection under questions mentioned in the general section of the questionnaire. Different graphs and charts were used to present the findings and based on the results, interpretations were made. Descriptive analysis was carried out with the intention of describing characteristics of the sample that was responded to the study.

Measurement Models

Individual measurement models were drawn for all the unobserved constructs separately with the purpose of checking the factor loadings. These measurement models are important to understand how well each constructs explains its indicators before preparing the full model.

Factor Loading

IBM AMOS is used to measure the factor loading of items of each construct. These factor loadings has to be greater than 0.5. However, if the factor loadings are greater than 0.7 it is denoted a good indication (Collier, 2020). Direct effect of unobservable constructs on their indicators is estimated in factor loadings. If there is any factor loading below 0.5 then those items have to be excluded (Pahlevan Sharif et al., 2021; Puriwat & Tripopsakul, 2021).

Standardized regression weights were derived using formula 2.

$$\beta = \frac{Cov(X,Y)}{\sigma_X . \sigma_Y} \quad -----(2)$$

Where β is the standardized regression weight, σ_X and σ_Y are standard deviations of X and Y. $Cov\ (X,Y)$ is the covariance between the latest variable X and the indicator Y.

After the analyzing individual measurement models, the analysis was focused on confirmatory factor analysis.

Confirmatory Factor Analysis and Structural Equation Modeling

Structural Equation Modeling (SEM) is a method that is widely popular among many researchers due to its flexibility and generality (Mueller & Hancock, 2018). This method of analysis is even suitable for complex types of models to assess causal relationship among unobserved constructs (Hayes et al., 2017). Measurement model is mainly focused on identifying how latent variables are represented by observed indicators. Besides, structural model is attempted to specify the causal relationships between unobserved constructs (Leonard, 2005; Segumpan & McAlaney, 2023).

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is preformed to assess the model developed using latent variables and observed indicators. Independent variables are known as unobserved constructs or latent variables. CFA model can be presented as formula 3.

$$y = \Lambda\eta + \varepsilon \quad -----(3)$$

Where, y is a vector with manifest observed variables, Λ is a matrix of factor loadings corresponding to the latent variables in η. The ε is a matrix of specific variances which is unique to each manifest variable y. Further, this can be expanded as formula 4.

$$\begin{bmatrix} y_1 \\ y_2 \\ \dots \\ y_p \end{bmatrix} = \begin{bmatrix} \lambda_{11} & \lambda_{12} & \dots & \lambda_{1m} \\ \lambda_{21} & \lambda_{22} & \dots & \lambda_{2m} \\ \dots & \dots & \dots & \dots \\ \lambda_{p1} & \lambda_{p2} & \dots & \lambda_{pm} \end{bmatrix} . \begin{bmatrix} \eta_1 \\ \eta_2 \\ \dots \\ \eta_m \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \dots \\ \varepsilon_p \end{bmatrix} -----(4)$$

There are certain model assumptions such as $\eta \sim N(0, \psi), \varepsilon \sim N(0, \Theta), Cov(\varepsilon, \eta) = 0$.

This CFA analysis is done based on already available factors which were identified through empirical data and literature. Model fit obtained as the AMOS output of the CFA are used to evaluate the measurement model (Dash & Paul, 2021; Hair Jr et al., 2020).

Structural Equation Modeling (SEM)

The classic structural equation model is represented from the formula 5.

$$\eta = B\eta + \Gamma\xi + \zeta \quad -----(5)$$

Where η = vector of latent endogenous variables, ξ= vector of latent exogenous variables, ζ = a vector of latent errors, B = coefficient matrix for latent endogenous variables and Γ = coefficient matrix for latent exogenous variables (Denis, 2016).

Assumptions of SEM

Normality: Under this assumption, normality of the observations is checked using skewness and kurtosis of data.

Missing data: There should not be any missing values in the dataset under each variable used for the analysis.

Measurement and sampling errors: Use of biased tools and techniques can cause errors in measurement and sampling. This can be affected on the normality of the dataset. Therefore, past studies have highlighted the requirement of pre-test to reduce measurement and sampling errors.

Model fit indices: There are several model fit indices which suitable to select the best fitted model prior in conducting SEM. Under the absolute fit, Chi-square, CMIN are commonly used. Comparative fit index (CFI), Goodness of fit index (GFI), adjusted goodness of fit (AGFI), root mean square error of approximation (RMSEA) are other fit indices which are used to assess the model (S. Kumar & Upadhaya, 2017).

Assessment of Full Model

Factor Loading

IBM AMOS is used to measure the factor loading of items of each construct. These factor loadings have to be greater than 0.5. The direct effect of unobservable constructs on their indicators is estimated in factor loadings. If there is any factor loading below 0.5 then those items have to be excluded (Collier, 2020; Pahlevan Sharif et al., 2021).

Model Fit Indices

Under the CFA, it is important to test model fit of the model developed and select the best model before moving to Structural equation modeling. There are many different model fit indices and threshold values given to choose the most suitable model under both Absolute fit indices and Incremental fit indices. An absolute fit index does not develop to interpret by comparing with another model which was done in incremental fit indices. Out of the list of fit indices, Chi-Squared test, CMIN/df, GFI, AGFI, CFI and RMSEA are the most commonly used model fit indices that are being used to evaluate a model (Bentler & Bonett, 1980; Christou et al., 2021; Dash & Paul, 2021; Denis, 2016; Hooper et al., 2008; Maziriri, 2018).

Chi-square: Overall model fit can be assessed through this fit index. However, sample size has an impact on the chi-square value therefore to overcome this impact the normed Chi-square value (CMIN/df) is used. This value should be less than 3.0 to fit a best model (Hooper et al., 2008).

$$CMIN = \frac{\chi^2}{df} \quad -----(6)$$

In the formula 6, χ^2 = Chi suare and df = degrees of freedom

Goodness of fit statistic (GFI): This fit index is an alternative index calculation to Chi-Square test. The proportion of variance accounted by the estimated population of covariance is estimated by this fit index. The threshold value for this index is 0.9 or greater which is indicated as well fitting model (Jöreskog & Sörbom, 1998).

$$GFI = 1 - \frac{Residual\ Sum\ of\ Squares}{Total\ Sum\ of\ Squares} \quad -----(7)$$

Adjusted goodness of fit statistics (AGFI): Under this index, it is the adjusted GFI with the degrees of freedom. The generally accepted values are 0.9 or greater which is considered as a well fitted model (Dash & Paul, 2021; Hooper et al., 2008; Shi & Maydeu-Olivares, 2020).

$$AGFI = 1 - \left(\frac{(1 - GFI).df_m}{df_b}\right) \quad -----(8)$$

In the formula 8, df_m = the degrees of freedom of the model and df_b = the degrees of freedom of baseline model.

Root mean square error of approximation (RMSEA): This fit index found the optimal number of parameters. This is to fit the covariance matrix of final population. The acceptable level for the index is 0.08 or less than that value (Hooper et al., 2008; Steiger & Lind, 1980).

$$RMSEA = \sqrt{\frac{1}{(n-1)}\left(\frac{\chi_m^2 - df_m}{df_m}\right)} \quad -----(9)$$

Where χ_m^2 = Chi square for model in formula 8.

Comparative fit index (CFI): This index is mainly focused on latent factors rather than indicators. The threshold value for this index is 0.9 or a greater value for a good model fit (Dash & Paul, 2021; Hair Jr et al., 2020).

$$CFI = 1 - \frac{\max(\chi_m^2 - df_m, 0)}{\max(\chi_b^2 - df_b, \chi_m^2 - df_m, 0)} \quad -----(10)$$

Where χ_m^2 = Chi square for model and χ_b^2 = Chi square for the null model (baseline model with independence)

Reliability and Validity

Under Structural equation model process, it is necessary to check reliability and validity. Construct reliability and constrict validity was tested. Construct reliability is performed to check the consistency of indicators which measure the underlying latent construct(Igarashi, 2019). For this purpose, composite reliability was calculated which measure the internal

consistency of a set of item on its construct. This composite reliability value should be greater than 0.7 in order to consider as an acceptable range for internal consistency.

$$Composite\ Reliability = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + (\sum \varepsilon_i)^2} \quad -----(11)$$

Where $\lambda =$ the standardized factor loading for item i and $\varepsilon =$ the respective error variance for item i in formula 11. Further, $\varepsilon_i = 1 - \lambda_i^2$.

Thereafter, Construct validity was tested under convergent validity and discriminant validity. The convergent validity is about measuring whether items in a specific construct share a high proportion of variance in common. Further, Discriminant validity is regarding to what extent a construct is truly distinct from other constructs (Gefen et al., 2000; Puriwat & Tripopsakul, 2021). Convergent validity was measured using Average variance extracted (AVE) value which has to be greater than 0.5 (Bagozzi & Yi, 1988).

$$AVE = \frac{\sum_{i=1}^{n} \lambda_i^2}{n} \quad -----(12)$$

Where standardized factor loadings are represented by λ in formula 12.

Discriminant validity was tested by Heterotrait – Monotrait ratio of correlations (HTMT) which has to be less than 0.9 values. Criterion of Fornell-Larcker (CFL) value were also texted to measure discriminant validity (Anderson & Gerbing, 1988).

$$HTMT_{ij} = \frac{\overline{\sigma_{ij}}}{\sqrt{\overline{\sigma_i} \times \overline{\sigma_j}}} \quad -----(13)$$

Where σ_{ij} explains the average heterotrait correlation between item i and j. Further σ_i and σ_j represent the average monotrait of item i and item j respectively in formula 13.

For the Criterion of Fornell-Larcker (CFL) value, $\sqrt{AVE}$ for each construct has to be calculated. Thereafter, those calculated values are compared with correlation values of other constructs. Discriminant validity is confirmed when $\sqrt{AVE}$ > correlations of other constructs (Ronkko & Cho, 2022).

The Process of the Analysis of SEM using Data

Analysis of this research has been focused towards inferential analysis using SPSS AMOS. In order to check the required hypotheses of the research, Structural equation modeling method was performed. As the first step, any missing values and outliers were checked and adjusted accordingly thereafter the data was cleaned as there were no any missing values presented in the dataset. Further, prior to the structural equation modeling method, measurement models were developed for individual independent variables between those latent variables and its items. Similarly, a separate measurement model was developed for the dependent variable. Moreover, model fit was tested for each model with the intention of

improving the latent construct and its relation with the items. After the measurement model was improved by checking factor loadings, model fit, modification indices, and Confirmatory factor analysis was performed. Both convergent and discriminant validity was measured to evaluate the nature of the measurement model. Thereafter, the analysis was preceded to Structural equation modeling. The SEM is focused on the relationship among constructs and the structural linkages developed according to literature. Further, this structural model is used to test validity of the model, model fit and analyze the regression. Finally, conclusions are given according to the results. Suitable recommendations are made based on statistical findings (Dash & Paul, 2021; Denis, 2016).

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Reliability Test for the Pilot Study

4.1.1 Reliability Test for the Variable Environmental Consciousness (X1)

Table 4. 1: Reliability statistics for environmental consciousness (X1)

Cronbach's Alpha	Number of Items
0.823	4

As per the Table 4.1, Cronbach's alpha value for the environmental consciousness variable is 0.823 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 2: Item – Total statistics for environmental consciousness (X1)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Environmental Consciousness Q1	0.868
Environmental Consciousness Q2	0.654
Environmental Consciousness Q3	0.71
Environmental Consciousness Q4	0.849

As per the Table 4.2, Cronbach's alpha values received for each sub question is almost closer to or greater than 0.7. Even if a question is removed from the questionnaire such as Q1 or Q4, there is only a slight increase in the overall Cronbach's alpha value. Therefore, these four sub-questions were kept in the questionnaire without removal. The conclusion can be made as the questions which asked to measure the variable environmental consciousness is reliable. Overall measurement of the variable is reliable.

4.1.2 Reliability Test for the Variable Product Packaging (X2)

Table 4. 3: Reliability statistics for product packaging (X2)

Cronbach's Alpha	Number of Items
0.897	3

As per the Table 4.3, Cronbach's alpha value for the product packaging variable is 0.897 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 4: Item – Total statistics for product packaging (X2)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Product Packaging Q1	0.852
Product Packaging Q2	0.865
Product Packaging Q3	0.843

As per the Table 4.4, Cronbach's alpha values received for each sub question is greater than 0.7. If a question is removed from the questionnaire, then overall Cronbach's alpha value can get reduced. Therefore, the three sub-questions were kept in the questionnaire without removal. The conclusion can be made as the questions which asked to measure the variable product packaging is reliable. Overall measurement of the variable is reliable.

4.1.3 Reliability Test for the Variable Awareness about Sustainability (X3)

Table 4. 5: Reliability statistics for awareness about sustainability (X3)

Cronbach's Alpha	Number of Items
0.746	3

As per the Table 4.5, Cronbach's alpha value for the awareness about sustainability variable is 0.746 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 6: Item – Total statistics for awareness about sustainability (X3)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Awareness about Sustainability Q1	0.676
Awareness about Sustainability Q2	0.631
Awareness about Sustainability Q3	0.690

As per the Table 4.6, Cronbach's alpha values received for each sub question is greater than 0.7. If a question is removed from the questionnaire, then overall Cronbach's alpha

value can get reduced. Therefore, the three sub-questions were kept in the questionnaire without removal. The conclusion can be made as the questions which asked to measure the variable awareness about sustainability is reliable. Overall measurement of the variable is reliable.

4.1.4 Reliability Test for the Variable Green Advertising (X4)

Table 4. 7: Reliability statistics for green advertising (X4)

Cronbach's Alpha	Number of Items
0.817	3

As per the Table 4.7, Cronbach's alpha value for the green advertising variable is 0.817 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 8: Item – Total statistics for green advertising (X4)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Green Advertising Q1	0.752
Green Advertising Q2	0.676
Green Advertising Q3	0.812

As per the Table 4.8, Cronbach's alpha values received for each sub question is greater than 0.7. If a question is removed from the questionnaire, then overall Cronbach's alpha value can get reduced. Therefore, the three sub-questions were kept in the questionnaire without removal. The conclusion can be made as the questions which asked to measure the variable green advertising is reliable. Overall measurement of the variable is reliable.

4.1.5 Reliability Test for the Variable Social Media Usage (X5)

Table 4. 9: Reliability statistics for social media usage (X5)

Cronbach's Alpha	Number of Items
0.728	3

As per the Table 4.9, Cronbach's alpha value for the social media usage variable is 0.728 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 10: Item – Total statistics for social media usage (X5)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Social Media Usage Q1	0.627
Social Media Usage Q2	0.626
Social Media Usage Q3	0.675

As per the Table 4.10, Cronbach's alpha values received for each sub question is greater than 0.7. If a question is removed from the questionnaire, then overall Cronbach's alpha value can get reduced. Therefore, the three sub-questions were kept in the questionnaire without removal. The conclusion can be made as the questions which asked to measure the variable social media usage is reliable. Overall measurement of the variable is reliable.

4.1.6 Reliability Test for the Variable Social Values (X6)

Table 4. 11: Reliability statistics for social values (X6)

Cronbach's Alpha	Number of Items
0.845	3

As per the Table 4.11, Cronbach's alpha value for the social values variable is 0.845 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 12: Item – Total statistics for social values (X6)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Social Values Q1	0.667
Social Values Q2	0.865
Social Values Q3	0.777

As per the Table 4.12, Cronbach's alpha values received for each sub question is greater than 0.7. Even if Q2 question is removed from the questionnaire, there is only a slight increase in the overall Cronbach's alpha value. Therefore, the three sub-questions were kept in the questionnaire without removal or any change. The conclusion can be made as the questions which asked to measure the variable social value is reliable. Overall measurement of the variable is reliable.

4.1.7 Reliability Test for the Variable Beliefs and Attitudes (X7)

Table 4. 13: Reliability Statistics for beliefs and attitudes (X7)

Cronbach's Alpha	Number of Items
0.841	3

As per the Table 4.13, Cronbach's alpha value for the beliefs and attitudes variable is 0.841 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 14: Item – Total statistics for beliefs and attitudes (X7)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Beliefs and Attitudes Q1	0.699
Beliefs and Attitudes Q2	0.758
Beliefs and Attitudes Q3	0.882

As per the Table 4.14, Cronbach's alpha values received for each sub question is greater than 0.7. Even if Q3 question is removed from the questionnaire, there is only a slight increase in the overall Cronbach's alpha value. Therefore, three sub-questions were kept in the questionnaire without removal or any change. The conclusion can be made as the questions which asked to measure the variable beliefs and attitudes is reliable. Overall measurement of the variable is reliable.

4.1.8 Reliability Test for the Variable Purchase Decision (Y)

Table 4. 15: Reliability statistics for purchase decision (Y)

Cronbach's Alpha	Number of Items
0.949	7

As per the Table 4.15, Cronbach's alpha value for the purchase decision variable is 0.949 which is greater than 0.7. Further results were checked about the reliability using the Item-total statistics table.

Table 4. 16: Item – Total statistics for purchase decision (Y)

Sub Questions under Main Variable	Cronbach's Alpha if Item Deleted
Purchase Decision Q1	0.937
Purchase Decision Q2	0.934
Purchase Decision Q3	0.942
Purchase Decision Q4	0.948
Purchase Decision Q5	0.940
Purchase Decision Q6	0.937
Purchase Decision Q7	0.945

During the pilot study there were 11 sub- questions under the purchase decision. Those questions were tested based on pilot study data. According to the results received for the Table 4.16, overall Cronbach's alpha value was 0.938. As per the available statistical results on Item-Total Statistics, certain sub variables were removed. Due to this change overall Cronbach's alpha value has increased to the value 0.949.

As per the above Item-total statistics table, Cronbach's alpha values received for each sub question is greater than 0.7. Therefore, seven sub-questions were kept in the questionnaire without further removal. The conclusion can be made as the questions which asked to measure the variable purchase decision is reliable. Overall measurement of the variable is reliable.

4.2 Actual Data Analysis: Descriptive Analysis

The data analysis chapter has been sectioned to mainly two areas as descriptive analysis and inferential analysis. There were total of 325 data were gathered for the analysis which were carried out under different methods of statistical analysis using SPSS. Summary of the results were presented.

Graphical representation was done to describe the characteristics of the sample and related questions given to the respondents.

4.2.1 Gender

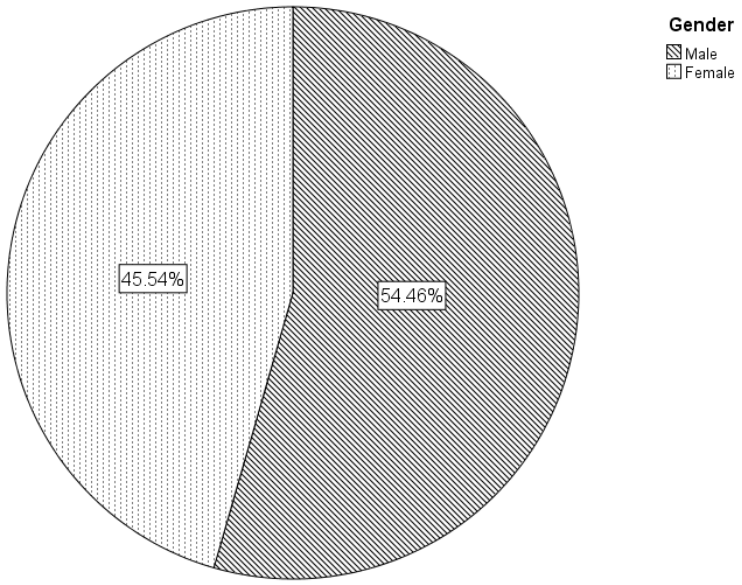

Figure 4. 1: Gender of the respondents

As per the Figure 4.1, higher numbers of responses were received from Male category which was reported as 54.46%. The female responses were marked as 45.54% as the response rate for the questionnaire of the study.

4.2.2 Age

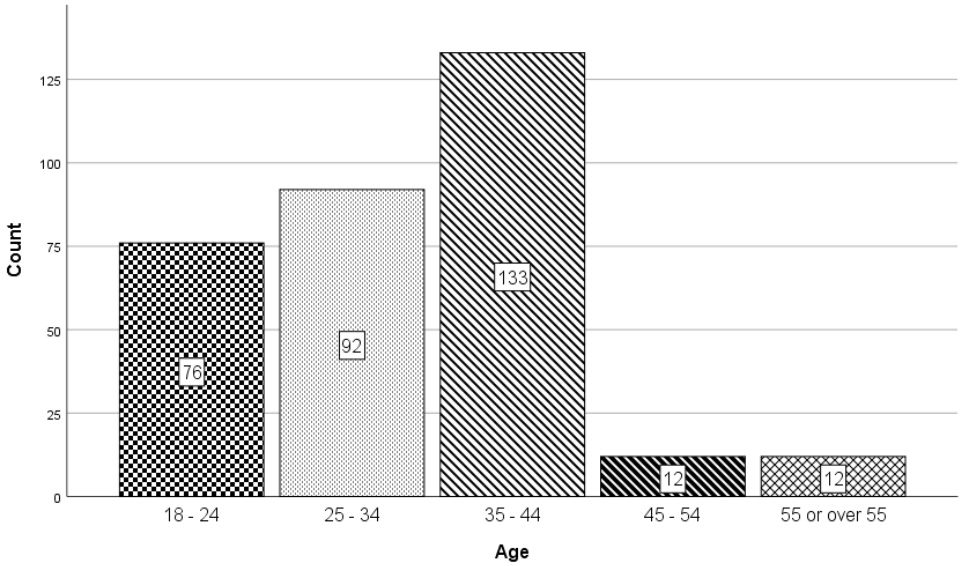

Figure 4. 2: Age distribution of respondents

According to Figure 4.2, the higher numbers of respondents of the research are in the age range from 35 to 44 years. Thereafter, the next highest considerable levels of responses were received from customers of FMCG products and potential customers in the age range from 25 to 34 and from 18 to 24 respectively. Among all the responses, the lowest levels of responses were given from two age categories. That can be identified as age 45 to 54 and age 55 or above category. Since majority of the responses are between ages 18 to 44, there is a high expectation that the outcome of this research through inferential analysis can be used for future decision making as results are achieved based on responses from majority of young generation.

4.2.3 Highest attained Educational Level

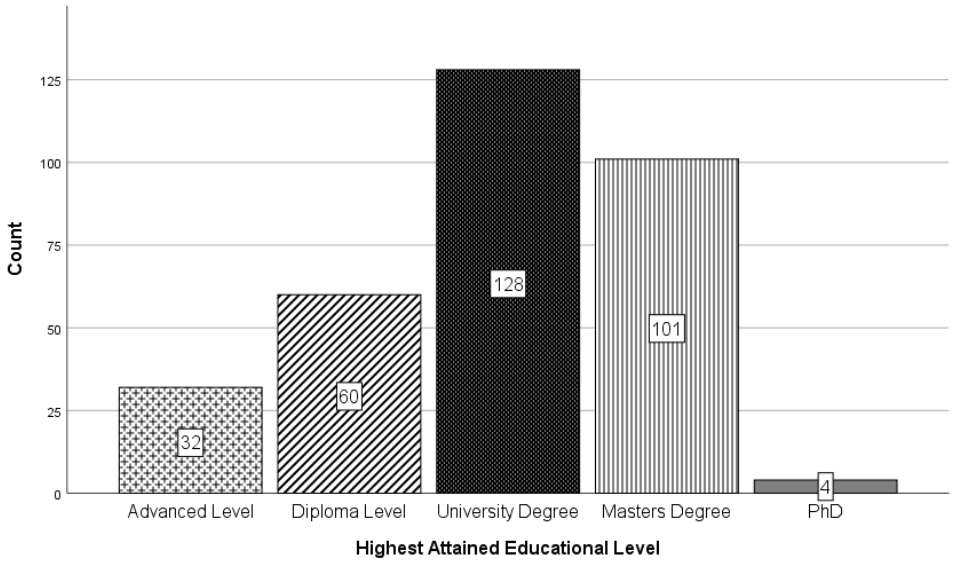

Figure 4. 3: Highest attained educational level of respondents

Majority of the participants of the study have obtained a university degree as their highest qualifications. As per the Figure 4.3, Master level degree is the second highest educational qualification obtained by another set of participants of the study. There were around 60 participants who had diploma level qualifications. Very minimum level of participants from PhD category was represented in this study. This indicate that majority of the participants of this research are knowledgeable.

4.2.4 District

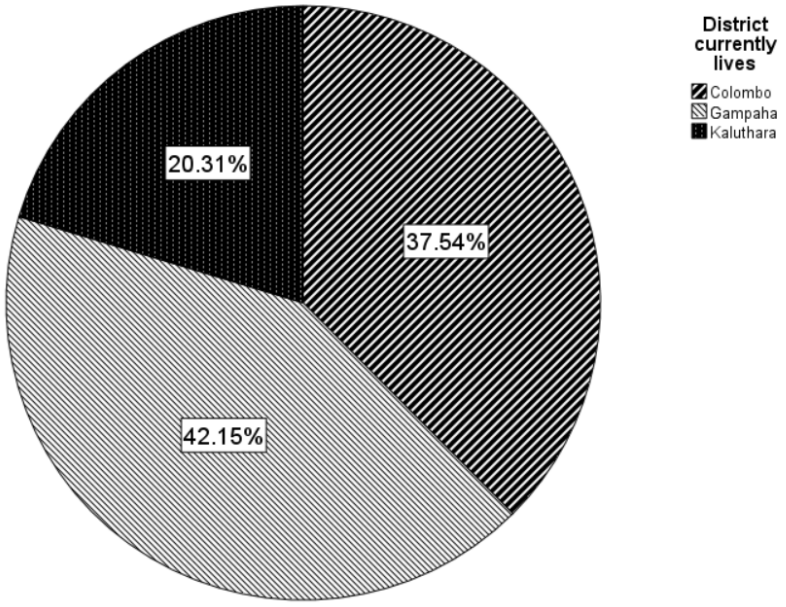

Figure 4. 4: District of respondents currently lives

According to Figure 4.4 and the responses received from the participants in western province, higher numbers of responses are from Gampaha district and it was recorded as 42.15% from the total responses. The second highest responses were obtained from respondents in Colombo district which was recorded as 37.54%. The least responses were obtained from Kaluthara district which was 20.31%.

4.2.5 Job Status

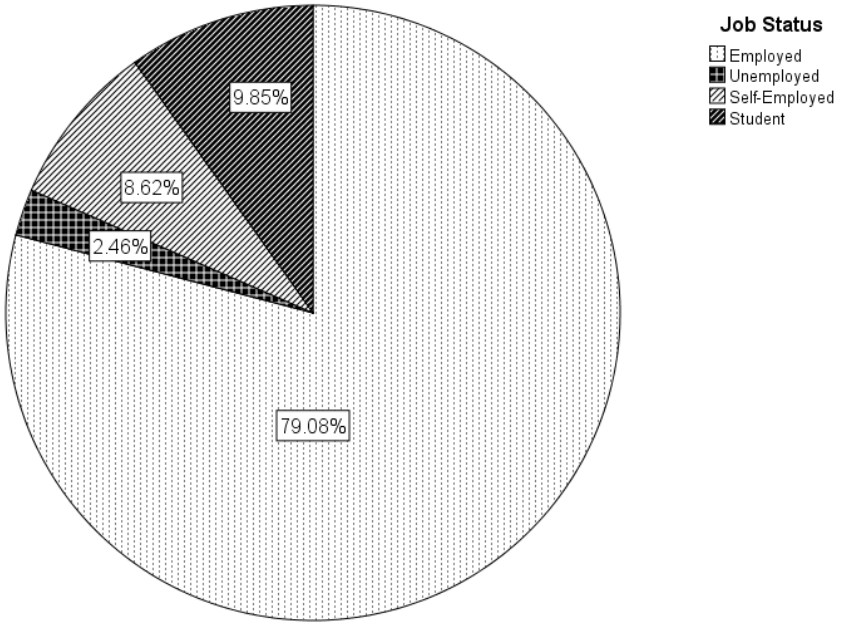

Figure 4. 5: Job status of the respondents

Referring to Figure 4.5, majority of the participants are employed and it is considered as 79.08% from the total count. There were approximately equal level of participants from Self-employed and Student category which was 8.62% and 9.85% respectively. Further, there were 2.46% of the responses received from Unemployed category.

4.2.6 Frequency of Purchase Products from Personal Care Category

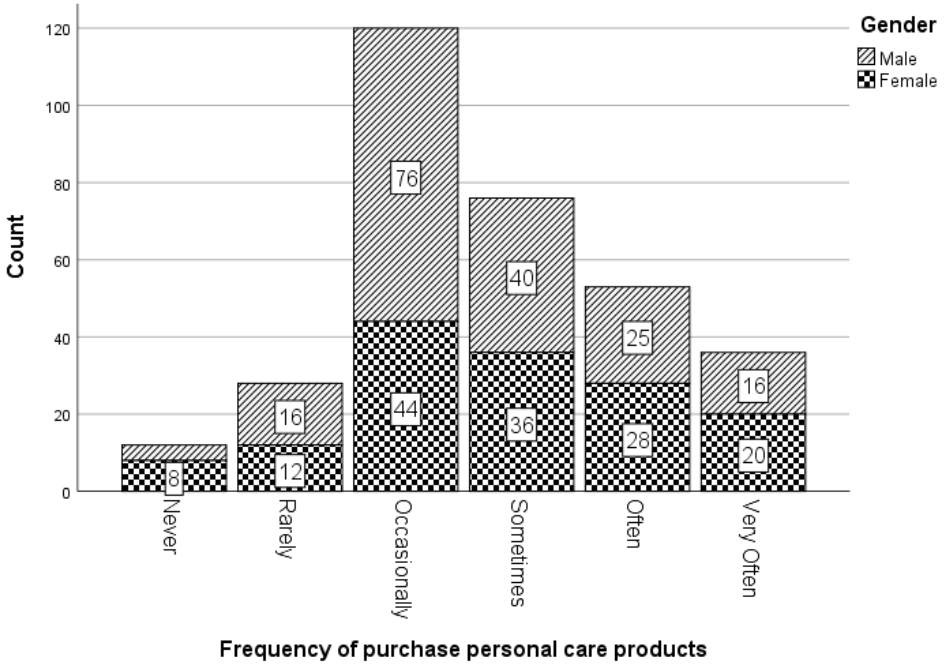

Figure 4. 6: Frequency of purchases in personal care product category

Figure 4.6 was drawn by considering the responses received for the questionnaire regarding the frequency of purchase of personal care products and it was further clustered from gender. Frequency of purchase has been categorized under six main categories such as Very Often, Often, Sometimes, Occasionally, Rarely and Never. Very often is a category which considered customers who purchase personal care products in multiple times during a week. Often category is referred as once a week purchase. Sometimes category has focused on 2-3 times purchase in a month. Further, occasionally category is referred as purchases of once a month frequency. Moreover, rarely category is focused on purchases less than once a month. In other words, those who purchase personal care products in a frequency purchase duration of more than a month. Never is a category where those respondents have not yet purchased any personal care products. However, those are the customers who are potential to purchase personal care products in future. Further, responses were analyzed the frequency of purchase related to the gender category. As per the outcome, majority of the responses were indicated that they purchase personal care products occasionally which reflected as purchase of once a month. Second highest frequency was resulted as Sometimes. The third category of frequency was mentioned as Often. There were another set of respondents in the category of Very often. There were

respondents in the category of Rarely and Never. However, those categories were having lower counts compared to other four categories. Based on the gender categorization, it is visible that majority who responded as occasionally and Sometimes are from male category. This was the highest among other categories. However, most frequent purchases that are under Very often and Often categories are from female respondents. Irrespective of the gender, majority are preferred to purchase personal care products once a month or two to three times per month.

4.2.7 Aspects of Sustainability at the Point of Purchase

When consumers make a decision about personal care products at the time of purchase, there are different factors which can impact. Among those factors there are certain sustainability related aspect which can be highlighted at the point of purchase such as Use of environmental friendly materials, reduction of environmental impact, animal welfare and cruelty free practices, social & ethical practices and certifications & levels relate to sustainability.

Below bar charts were drawn considering each sustainability related aspects which considered at the point of purchase and how respondents consider those as most important to least important ratings.

Use of Environmental Friendly Materials

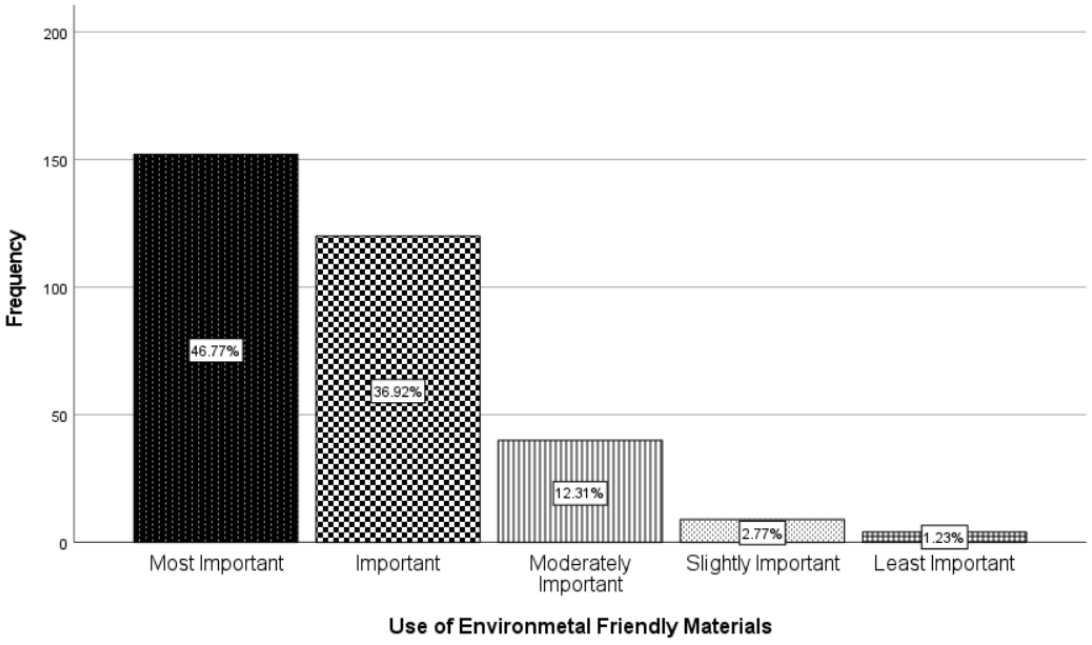

Figure 4. 7: Consideration of the use of environmental friendly materials at the point of purchase

As per the Figure 4.7, higher number of respondents have emphasized that use of environmental friendly materials are one of their most important consideration at the point of purchase. This was resulted as 46.77% from the total responses. Very low numbers of respondents have mentioned environmental friendly materials as a least concerned aspect which was indicated as 1.23%.

Reduction of Environmental Impact

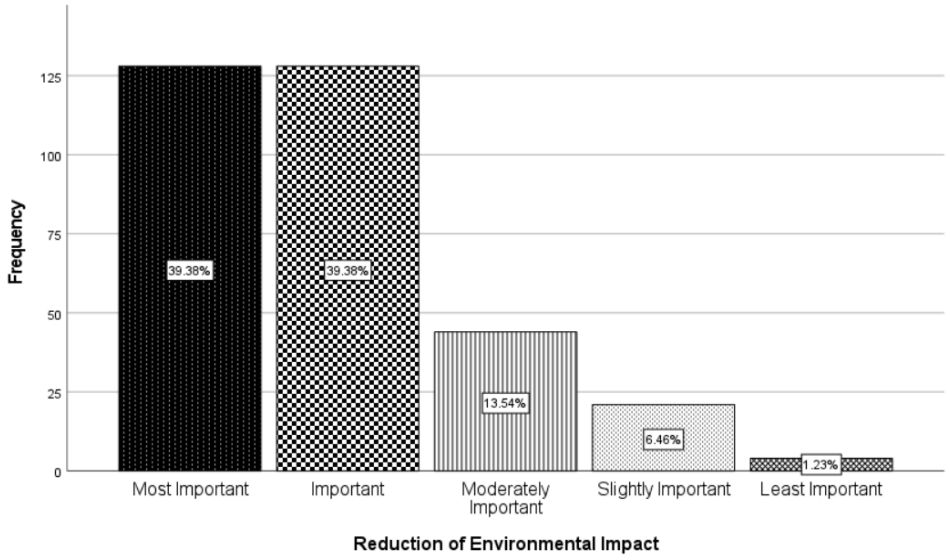

Figure 4. 8: Consideration of the reduction of environmental impact from the product at the point of purchase

As per the Figure 4.8, equal amount of respondents stated that reduction of environmental impact can be considered as most important or just an important consideration at the point of purchase which indicated as approximately closer to 40% for each category . There are very less number of participants mentioned that reduction of environmental impact is considered as least important which was 1.23%.

Animal Welfare and Cruelty Free Practices

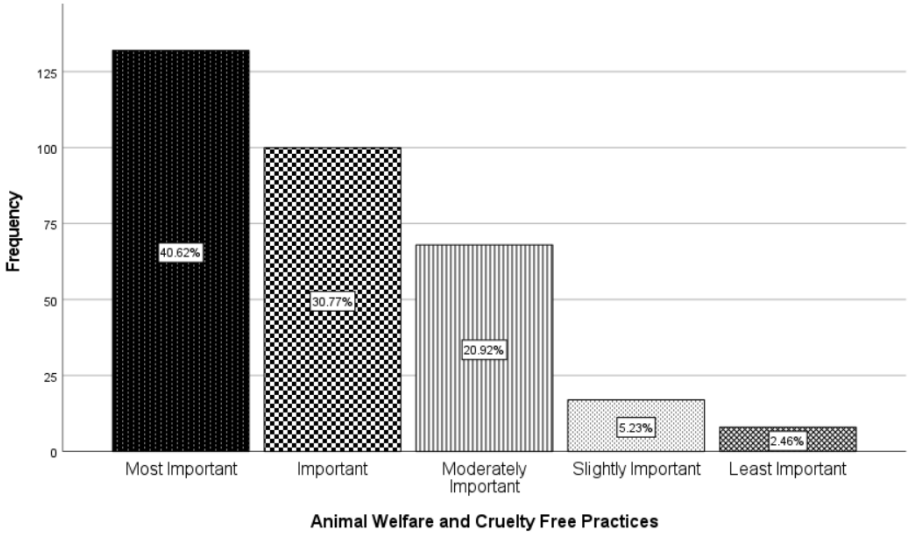

Figure 4. 9: Consideration of animal welfare and cruelty free products at the point of purchase

According to the Figure 4.9, Animal welfare, cruelty free practices were considered important under three categories as most important, important and moderately important in a consecutive order. Still the higher percentage of 40.62% indicated as this factor is most important in consideration at the point of purchase. There are approximately 8% respondents who have categorized this aspect as slightly important and least important factor as well.

Social and Ethical Practices

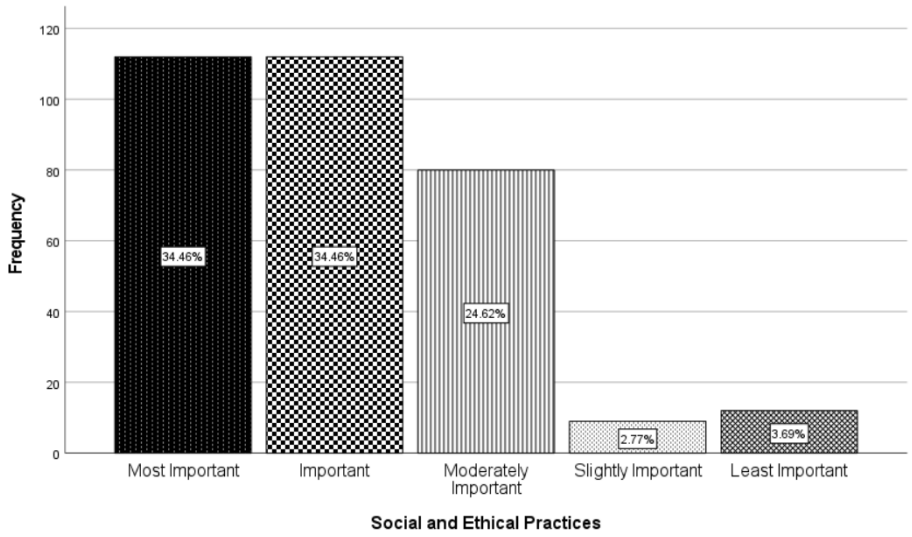

Figure 4. 10: Consideration of social and ethical practices relate to product at the point of purchase

As per the Figure 4.10, many of the respondents have mentioned that Social and ethical practices can be considered as most important, important or moderately important category. Compared to the previous aspects and its responses, considerably higher number of respondents have mentioned that Social and ethical practices were stated as a least important category at the time of purchase which was 3.69%.

Certifications and Labels relate to Sustainability

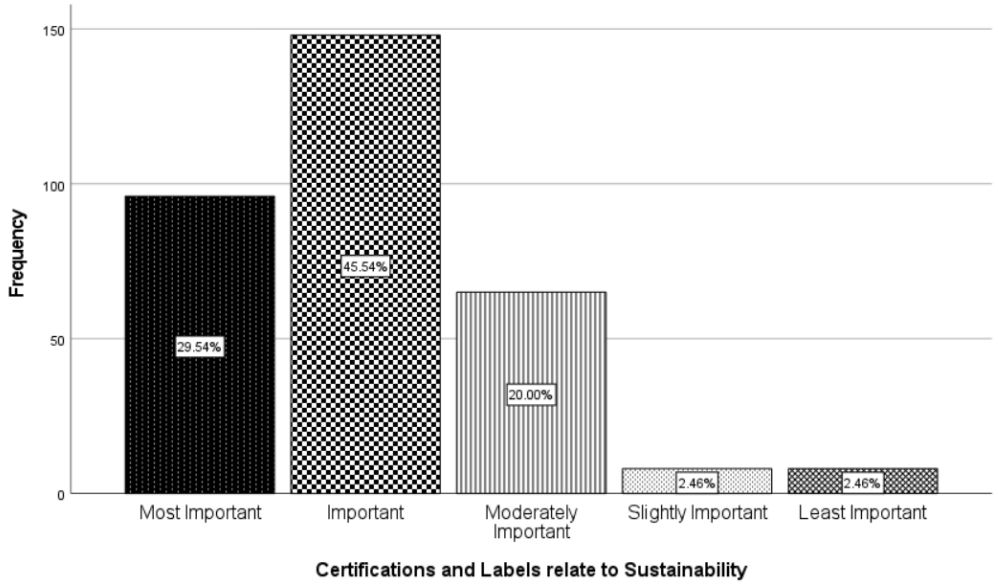

Figure 4. 11: Consideration of certifications and labels relate to sustainability at the point of purchase

Certifications and labels relate to sustainability aspects were not categorized under most important aspect by majority of respondents. This was displayed in Figure 4.11. They have mentioned it as important but not a most important category which implies that it is not one of the most considered factor at the point of purchase.

Out of all the sustainability related aspect which can be considered at the point of purchase such as Use of environmental friendly materials, reduction of environmental impact, animal welfare and cruelty free practices, social & ethical practices and certifications & levels relate to sustainability, Use of environmental friendly materials were stated as the most important aspect by majority of respondents of the study. Further when considering the combination of responses under most important and important category, very high numbers of responses were received for use of environmental friendly materials. Next highest responses for combination of most important and important categories were obtained for reduction of environmental impact. The least combination of percentage for most important and important category responses was received for social & ethical practices.

4.3 Inferential Statistical Analysis

Inferential analysis is related to the detailed analyses which have been collected for the study. Data were analyzed under the method of structural equation modeling using IBM AMOS. Prior to the structural equation modeling, measurement models were drawn individually for each construct.

4.3.1 Measurement Models

Individual measurement models were drawn for each construct separately with its relevant indicators to understand whether each construct is measured well with its indicators. It is important to check whether all items are loaded significantly on the construct before drawing the full model.

Environmental Consciousness (EC)

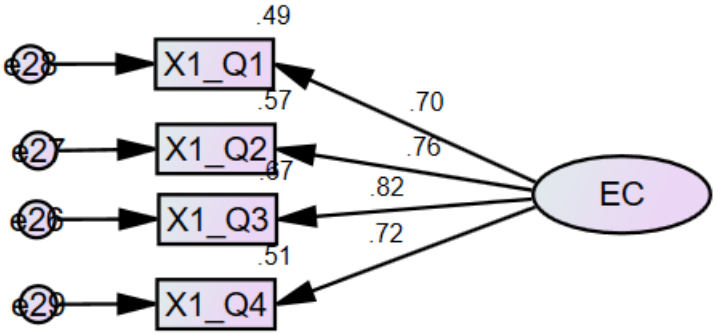

Figure 4. 12: Individual measurement model for environmental consciousness

Figure 4.12 was drawn for the environmental consciousness construct with its four items.

Table 4. 17: Standardized regression weights for environmental consciousness

Standardized Regression Weights	Estimate
X1_Q1 <--- Environmental Consciousness	0.701
X1_Q2 <--- Environmental Consciousness	0.758
X1_Q3 <--- Environmental Consciousness	0.818
X1_Q4 <--- Environmental Consciousness	0.716

As per the Table 4.17, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Product Packaging

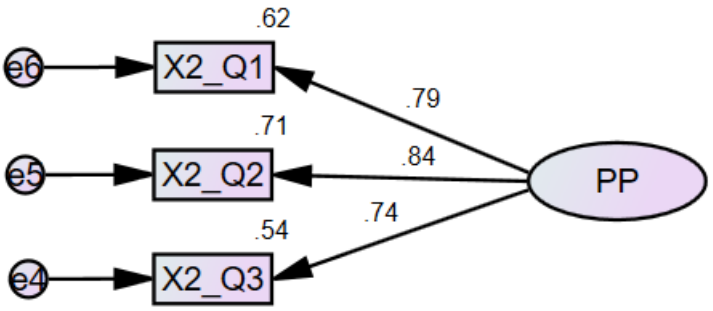

Figure 4. 13: Individual measurement model for product packaging

Figure 4.13 was drawn for the product packaging construct with its three items.

Table 4. 18: Standardized regression weights for product packaging

Standardized Regression Weights	Estimate
X1_Q1 <--- Product Packaging	0.786
X1_Q2 <--- Product Packaging	0.841
X1_Q3 <--- Product Packaging	0.736

As per the Table 4.18, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Awareness about Sustainability

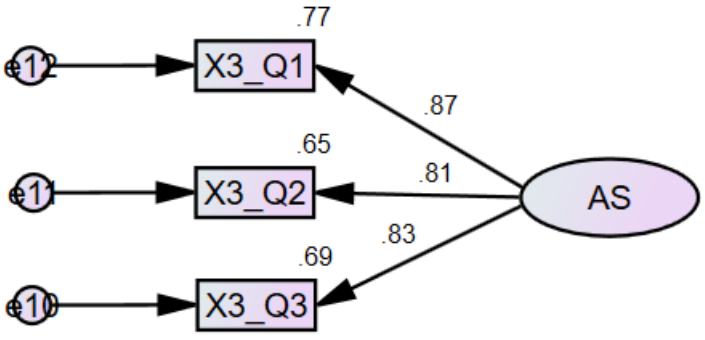

Figure 4. 14: Individual measurement model for awareness about sustainability

Figure 4.14 was drawn for the awareness about sustainability construct with its three items.

Table 4. 19: Standardized regression weights for awareness about sustainability

Standardized Regression Weights	Estimate
X1_Q1 <--- Awareness about Sustainability	0.875
X1_Q2 <--- Awareness about Sustainability	0.806
X1_Q3 <--- Awareness about Sustainability	0.829

As per the Table 4.19, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Green Advertising

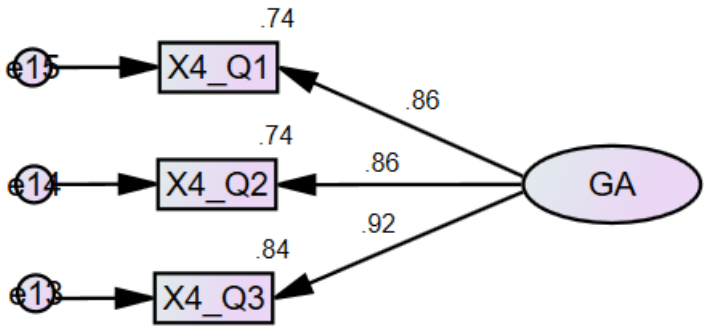

Figure 4. 15: Individual measurement model for green advertising

Figure 4.15 was drawn for the green advertising construct with its three items.

Table 4. 20: Standardized regression weights for green advertising

Standardized Regression Weights	Estimate
X1_Q1 <--- Green Advertising	0.862
X1_Q2 <--- Green Advertising	0.863
X1_Q3 <--- Green Advertising	0.917

As per the Table 4.20, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Social Media Usage

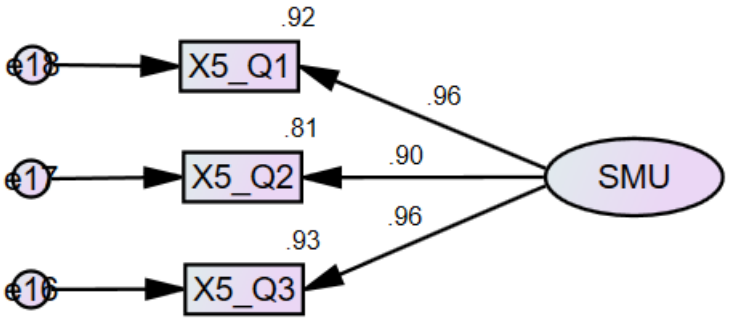

Figure 4. 16: Individual measurement model for social media usage

Figure 4.16 was drawn for the social media usage construct with its three items.

Table 4. 21: Standardized regression weights for social media usage

Standardized Regression Weights	Estimate
X1_Q1 <--- Social Media Usage	0.957
X1_Q2 <--- Social Media Usage	0.898
X1_Q3 <--- Social Media Usage	0.963

As per the Table 4.21, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Social Values

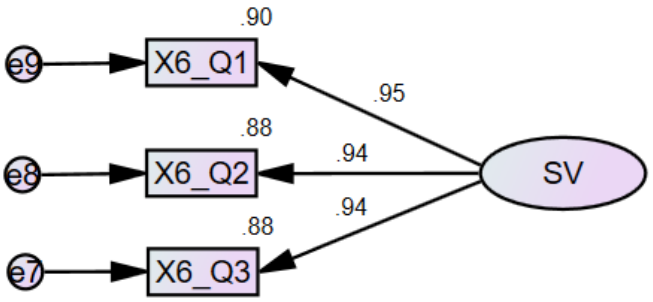

Figure 4. 17: Individual measurement model for social values

Figure 4.17 was drawn for the social values construct with its three items.

Table 4. 22: Standardized regression weights for social values

Standardized Regression Weights	Estimate
X1_Q1 <--- Social Values	0.947
X1_Q2 <--- Social Values	0.938
X1_Q3 <--- Social Values	0.940

As per the Table 4.22, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Beliefs and Attitudes

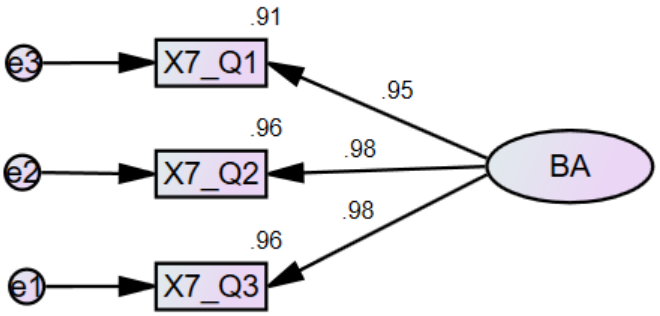

Figure 4. 18: Individual measurement model for beliefs and attitudes

Figure 4.18 was drawn for the beliefs and attitudes construct with its three items.

Table 4. 23: Standardized regression weights for beliefs and attitudes

Standardized Regression Weights	Estimate
X1_Q1 <--- Beliefs and Attitudes	0.955
X1_Q2 <--- Beliefs and Attitudes	0.979
X1_Q3 <--- Beliefs and Attitudes	0.978

As per the Table 4.23, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

Purchase Decision

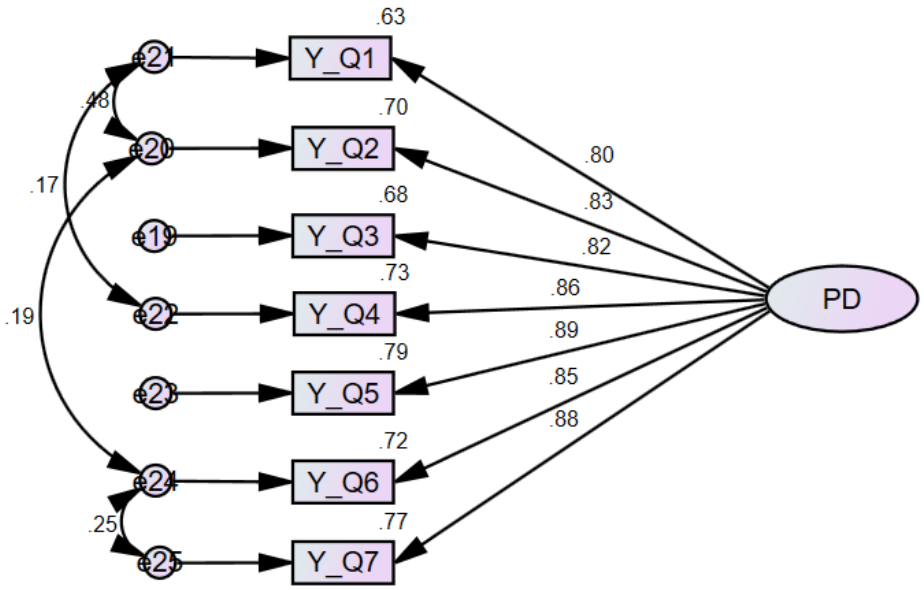

Figure 4. 19: Individual measurement model for purchase decision

Figure 4.19 was drawn for the purchase decision construct with its seven items.

Table 4. 24: Standardized regression weights for purchase decision

Standardized Regression Weights	Estimate
X1_Q1 <--- Purchase Decision	0.797
X1_Q2 <--- Purchase Decision	0.834
X1_Q3 <--- Purchase Decision	0.824
X1_Q4 <--- Purchase Decision	0.857
X1_Q5 <--- Purchase Decision	0.889
X1_Q6 <--- Purchase Decision	0.850
X1_Q7 <--- Purchase Decision	0.875

As per the Table 4.24, all standardized factor loadings are greater than 0.7 which is indicated as unobserved variable explained more than 70% of the variation of indicators.

4.3.2 Confirmatory Factor Analysis

Under the confirmatory factor analysis, it analyzes how well the indicators measures unobserved constructs and if the unobserved constructs are uniquely different from one another (Dash & Paul, 2021). This below model is consisted with variables which Environmental consciousness (EC), Product packaging (PP), Awareness about

sustainability (AS), Green advertising (GA), Social media usage (SMU), Social values (SV), Beliefs and attitudes (BA) and Purchase decision (PD).

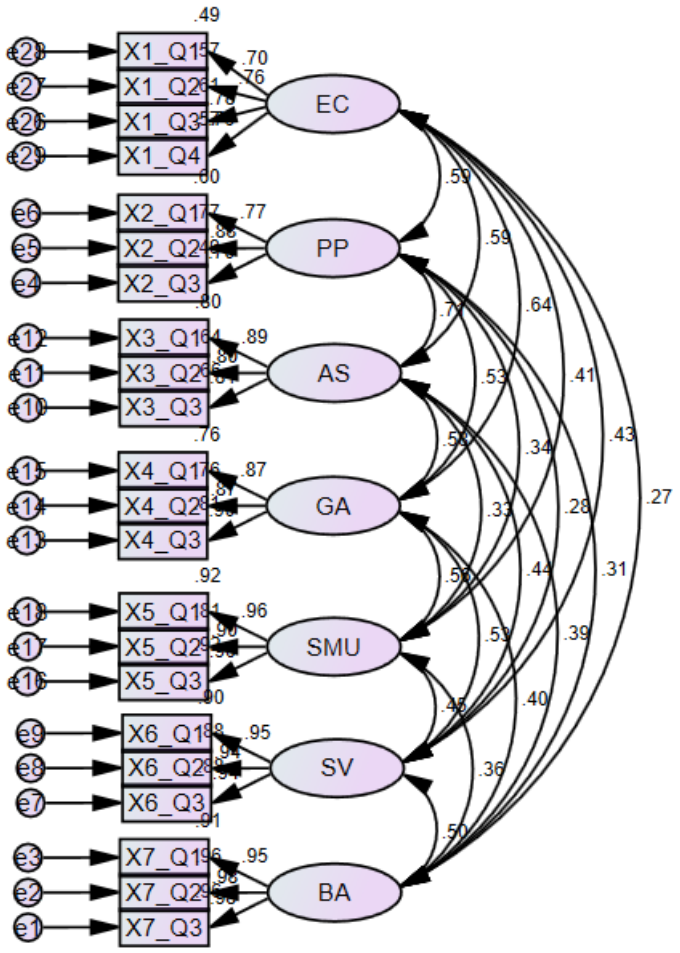

Figure 4. 20: Full model for confirmatory factor analysis

Full model was drawn using all the unobserved constructs and their relevant indicators to calculate confirmatory factor analysis as per the Figure 4.20. Covariance was drawn between each construct. Thereafter, factor loadings were tested to estimate the direct effect of unobserved constructs on their indicators.

Table 4. 25: Standardized regression weights

	Estimate
X7_Q3 <--------- Beliefs and Attitudes	0.979
X7_Q2 <--------- Beliefs and Attitudes	0.979
X7_Q1 <--------- Beliefs and Attitudes	0.955
X2_Q3 <--------- Product Packaging	0.702
X2_Q2 <--------- Product Packaging	0.876
X2_Q1 <--------- Product Packaging	0.773
X6_Q3 <--------- Social Values	0.937

X6_Q2 <--------- Social Values	0.939
X6_Q1 <--------- Social Values	0.948
X3_Q3 <--------- Awareness about Sustainability	0.812
X3_Q2 <--------- Awareness about Sustainability	0.801
X3_Q1 <--------- Awareness about Sustainability	0.893
X4_Q3 <--------- Green Advertising	0.900
X4_Q2 <--------- Green Advertising	0.871
X4_Q1 <--------- Green Advertising	0.872
X5_Q3 <--------- Social Media Usage	0.961
X5_Q2 <--------- Social Media Usage	0.899
X5_Q1 <--------- Social Media Usage	0.959
X1_Q3 <--------- Environmental Consciousness	0.783
X1_Q2 <--------- Environmental Consciousness	0.575
X1_Q1 <--------- Environmental Consciousness	0.698
X1_Q4 <--------- Environmental Consciousness	0.756

Table 4.25 is consisted with results obtained for standardized regression weights. These factor loadings are reported to compare the weights of the indicators as these values are in the scale between values 0 to 1. The values which are listed under estimates in the above table are almost closer or greater than 0.7 which has implied that each item is representing its underline construct adequately.

Further to above, correlation values between different latent variables were also checked to understand whether there are any multicollinearity issues between variables. However, all most all the estimated values are not significantly high to consider as an issue. Therefore, there was no any sign of multicollinearity issues in the dataset among variables. Further details are included in Appendix B.

Model fit was tested to check whether the data actually fits the proposed model.

Table 4. 26: Model fit indices

Fit Indices - Default Model	**Value**
CMIN/DF	2.500
GFI	0.885
CFI	0.958
RMSEA	0.068

According to the model fit output stated in Table 4.26, normed Chi-Square value is less than 3.0 and GFI value is approximately closer to 0.9. Further the value for CFI is greater than 0.9. Moreover, RMSEA value is less than 0.08. All of these model fit indices are in the acceptable level. Further results are attached in Appendix B.

4.3.3 Reliability and Validity

Reliability and validity was tested in the full model with all the constructs and their relevant indicators. Reliability is measuring the internal consistency of constructs. The Cronbach's Alpha value was preformed for the full model with all the variables using SPSS and the Cronbach's Alpha value is 0.950 which is greater than 0.7 ($\alpha = 0.950 > 0.7$). The detailed SPSS output is attached in Appendix C. This indicates that the constructs are consistent.

In addition, the composite reliability was also calculated using SPSS AMOS.

Table 4. 27: Composite reliability values

Construct	**Composite Reliability**
Environmental Consciousness	0.836
Product Packaging	0.829
Awareness about Sustainability	0.875
Green Advertising	0.912
Social Media Usage	0.958
Social Values	0.959
Beliefs and Attitudes	0.980
Purchase Decisions	0.947

As per the summary in Table 4.27, all the values of composite reliability are greater than 0.7 which implies that the above constructs are consistent.

Moreover, construct validity was measured by using both convergent validity and discriminant validity.

Table 4. 28: Average variance extracted values

Construct	**Average Variance Extracted (AVE)**
Environmental Consciousness	0.560
Product Packaging	0.619
Awareness about Sustainability	0.700
Green Advertising	0.776
Social Media Usage	0.883
Social Values	0.886
Beliefs and Attitudes	0.942
Purchase Decisions	0.717

According to the calculated average variance extracted (AVE) values for each construct, all these values are greater than 0.5 which is indicated as items in each construct share a higher proportion of variance in common.

Table 4. 29: Heterotrait – Monotrait ratio (HTMT) of correlation values

Correlation between constructs	**HTMT Ratio**
Environmental Consciousness - Product Packaging	0.590
Environmental Consciousness - Awareness about Sustainability	0.592
Environmental Consciousness - Green Advertising	0.640
Environmental Consciousness - Social Media Usage	0.412
Environmental Consciousness - Social Values	0.432
Environmental Consciousness - Beliefs and Attitudes	0.272
Environmental Consciousness - Purchase Decisions	0.472
Product Packaging - Awareness about Sustainability	0.710
Product Packaging - Green Advertising	0.531
Product Packaging - Social Media Usage	0.336
Product Packaging - Social Values	0.280
Product Packaging - Beliefs and Attitudes	0.310
Product Packaging - Purchase Decisions	0.460
Awareness about Sustainability - Green Advertising	0.586
Awareness about Sustainability - Social Media Usage	0.333
Awareness about Sustainability - Social Values	0.443
Awareness about Sustainability - Beliefs and Attitudes	0.388
Awareness about Sustainability - Purchase Decisions	0.604
Green Advertising - Social Media Usage	0.555
Green Advertising - Social Values	0.529
Green Advertising - Beliefs and Attitudes	0.403
Green Advertising - Purchase Decisions	0.722
Social Media Usage - Social Values	0.453
Social Media Usage - Beliefs and Attitudes	0.356
Social Media Usage - Purchase Decisions	0.408
Social Values - Beliefs and Attitudes	0.495
Social Values - Purchase Decisions	0.486
Beliefs and Attitudes - Purchase Decisions	0.434

As per the Table 4.29, the Heterotrait – Monotrait ratio (HTMT) of correlation values calculated based on Heterotrait and Monotrait correlations are less than 0.9.

Further, Fornell & Larcker Criterion (FLC) was also calculated and evaluated.

Table 4. 30: Fornell & Larcker Criterion values

	Environmental Consciousness	Product Packaging	Awareness about Sustainability	Green Advertising	Social Media Usage	Social Values	Beliefs and Attitudes	Purchase Decisions
Environmental Consciousness	0.748	0.588	0.591	0.639	0.412	0.432	0.272	0.476
Product Packaging	0.588	0.786	0.708	0.53	0.335	0.279	0.31	0.464
Awareness about Sustainability	0.591	0.708	0.836	0.586	0.333	0.443	0.388	0.61
Green Advertising	0.639	0.53	0.586	0.88	0.555	0.529	0.403	0.73
Social Media Usage	0.412	0.335	0.333	0.555	0.939	0.453	0.356	0.412
Social Values	0.432	0.279	0.443	0.529	0.453	0.941	0.496	0.491
Beliefs and Attitudes	0.272	0.31	0.388	0.403	0.356	0.496	0.97	0.438
Purchase Decisions	0.476	0.464	0.61	0.73	0.412	0.491	0.438	0.846

As per the results in Table 4.30, all the values in each column are less than the value calculated between the same construct in relevant columns.

Based on above calculated results of Construct validity, there is evidence that items of each construct actually measured the construct.

Therefore by considering all the above reliability and validity results, those results have satisfied the reliability and validity expectations.

4.3.4 Analysis of Structural Equation Modeling (SEM)

The structural equation model was constructed by combining the CFA and path analysis examination. This was initially established using the available literature between constructs and items.

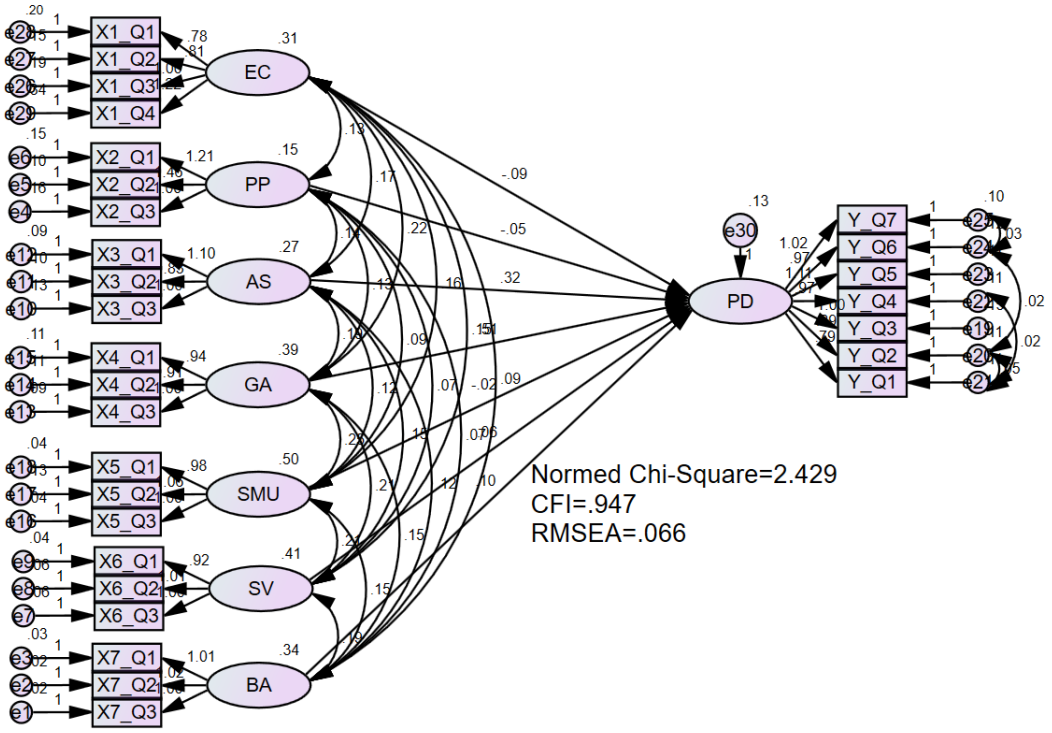

Figure 4. 21: The structural model for structural equation modeling

According to Figure 4.21, multicollinearity issues were checked. If there is any multicollinearity issue then the covariance between variables become more than 0.90. However, as per the analysis results, there is no any value presented greater than 0.90. Therefore, there is no any multicollinearity issues. Moreover, model fit was tested once again before moving to the hypothesis testing.

Table 4. 31: Model fit indices values

Fit Indices - Default Model	Value
CMIN/DF	2.429
CFI	0.947
RMSEA	0.066

According to the model fit output stated in Table 4.31, normed Chi-Square value is less than 3.0. Further the value for CFI is greater than 0.9. Moreover, RMSEA value is less than 0.08. All of these model fit indices are in the acceptable level.

Regression Weights

Once the model fit assessment is completed, regression weights were checked to analyze the hypothesis testing.

Table 4. 32: Regression weights

Regression Weights		
	Estimate	**P Value**
Purchase Decision <----- Environmental Consciousness	-0.088	0.216
Purchase Decision <----- Product Packaging	-0.052	0.624
Purchase Decision <----- Awareness about Sustainability	0.320	<0.05
Purchase Decision <----- Green Advertising	0.512	<0.05
Purchase Decision <----- Social Media Usage	-0.015	0.714
Purchase Decision <----- Social Values	0.058	0.233
Purchase Decision <----- Beliefs and Attitudes	0.101	0.031

Table 4.32 is consisted with the estimated values of regression weights between each independent variable and the dependent variable. As per the p values, there are three regression weights which are significant at 95% confidence level. Out of seven independent variables Awareness about sustainability (β=0.320, P<0.05), Green advertising (β=0.512, P<0.05) and Beliefs & attitudes (β=0.101, P<0.05) are the variables which are significant (P<0.05). These variables are having a significant positive impact towards Purchase decision. Among these significant variables, Green advertising is having a strong positive

impact on Purchase decision than other variables (β=0.512, P<0.05). Rests of the variables are not significant according to the data collected and analysis. The detailed results are attached in Appendix D.

Squared Multiple Correlations

Table 4. 33: Squared multiple correlation value

Squared Multiple Correlation	**Estimate**
Purchase Decision	0.604

As per there results stated in Table 4.33, squared multiple correlation value is 0.604. This indicates than 60.4% of the variation of purchase decision is explained by the above regression model.

CHAPTER 5

CONCLUSION AND DISCUSSION

As per the aim of the study, factors related to consumers' attitude towards sustainability were identified through literature. Thereafter, the analysis was performed to recognize the influence of those factors on purchase decisions in personal care products in Western province.

Objective 1: To identify factors of consumers' attitudes that influence on purchase decisions in personal care products

Through literature review, there were several factors identified as factors related to consumer attitudes which have an influence on purchase decision. Ingredients, packaging, manufacturing processes, supply chain activities, sustainable products, country of manufacture, price, size of the product, sustainable production, quality, environmental impact, ecological impact, social impact, values, technology advancement and ethical considerations are the factors that majority of studies were specified.

Objective 2: To recognize critical factors of consumers' attitudes relate to sustainability on purchase decision

When considering the factors identified under consumers' attitudes relate to sustainability, there were key seven factors recognized through literature. Namely, environmental consciousness, product packaging, awareness about sustainability, green advertising, social media usage, social values and beliefs & attitudes are the factors chosen for the study. As per the findings from the study, there is a significant positive impact from awareness about sustainability, green advertising and beliefs & attitudes on purchase decision. These are the three significant factors which named under consumers' sustainability attitudes. According to data collected, there was no evidence indicated that there is a significant impact from the variables environment consciousness, product packaging, social media usage and social values on purchase decision.

Moreover, when considering the significant factors from the results, green adverting is the factor which has a strong positive impact on purchase decisions. Therefore, it is crucial to focus more on this factor when marketing personal care products to consumers in Western province Sri Lanka. A significant improvement can be made among consumers' purchase decisions if this factor is used effectively.

Objective 3: To provide recommendations relate to consumer attitudes about sustainability and how its contribute in increasing purchase decisions in personal care products

Based on the finding, it is important for personal care product manufacturers to increase the awareness about sustainability aspects of the personal care products to consumers. This can be used to improve a positive impact for the purchase decisions of consumers. When consumers are aware regarding the importance and value of consuming personal care

products with sustainable features then it can be created a significant motivation among consumers to choose sustainable personal care products than other products without sustainable features. Therefore, personal care product manufacturers have to increase the awareness about sustainability and how it is related to its product. Development of consumers' attitude in terms of awareness about sustainability can have a considerable positive impact towards purchase of personal care products.

Further on findings, consumers' attitudes can be improved towards sustainability through green advertising practices. Consumers' thinking patterns can be influenced positively about sustainability through green advertising. Different environmental friendly features of personal care products can be communicated to the consumers through different advertising methods such as TV, radio, social media, bill boards and any other possible communication mediums. Green advertising is useful to communicate health benefit, environmental friendliness and sustainability to consumers whereby it can be used to create a memorable position in consumers mind about the company brand name as a sustainable business. Ultimately, this will develop positive attitudes among consumers about products with sustainable features. When consumer attitudes are improved through green advertising on sustainability, which is positively impact on decision of product purchase of personal care products.

Beliefs & attitudes is the other factor which has a significant influence on purchase decisions. Beliefs & attitudes is a factor which has a direct connection in improving consumers' attitude on sustainability. The way people belief and develop their attitudes on different aspects can have a major influence on their behavior. Consumers have to be educated on the sustainable concepts from every possible method which can help to improve beliefs and attitudes. As the beliefs & attitudes has a significant positive impact on purchase decisions, manufacturers can search for different methods to improve the attitudes incorporating sustainability then that is helpful to create a better country than before with more sustainable future. When beliefs & attitudes are developed that can also be enhanced the consumer level of thinking about society and environment which has a direct impact on sustainable purchase. This development can generate long term benefits. Therefore, improving positive attitude towards sustainability can create a strong impact on their beliefs as well as their general attitudes. Considering this factor, improvement of beliefs & attitudes on sustainability can have a significant positive impact on purchase decision in the category of personal care products.

In contrary expectations, factors such as environmental consciousness, product packaging, social media usage and social values were reported as insignificant factors based on collected data.

As per these finding, objectives of this study has been achieved. Moreover, literature review has also recognized these factors out of many other factors as crucial factors which determine consumer attitudes related to sustainability which can have a significant impact towards consumer purchase behavior.

CHAPTER 6

RECOMMENDATION

As per the finding of the research, there are mainly three factors which can be considered as significant factors of Consumers' attitude towards Sustainability. Awareness about sustainability, Green advertising and Beliefs & attitudes are the three factors which recognized under Consumers' attitudes towards sustainability. Using these findings, personal care products manufacturers can focus on above three main factors in improving consumer knowledge and positive attitudes regarding sustainability aspects. When the consumers' attitudes are enhanced towards sustainability thereafter it can be used to generate more sales through improving consumers' purchase decisions. In other words, Consumer attitudes about sustainability can be enhanced through above three factors. Once the attitudes are improved, consumers will eventually search for more sustainable products at the time of making purchase decision. They will always be motivated to search for sustainable personal care products as their attitudes have been enhanced to understand the benefits and importance of sustainable aspects of products for the benefits of people, society and the environment. Long terms benefits in the purchase of sustainable products can be identified by themselves as the attitudes of consumers have changed through main three factors in a favorable manner.

Companies in Sri Lanka who are selling personal care products in Sri Lanka has to take the sustainability aspects in to consideration in a more serious manner as every individual in the planet has a responsibility in contributing towards sustainability of future world. Therefore, this research finding can be taken in to consideration in developing and promoting personal care products. Comparative to other FMCG product categories, personal care products are staying and using a longer period with consumers than other category products. Therefore, developing sustainable attitudes with personal care products would be more beneficial for businesses, consumers and the country to overcome most of the sustainable related issues prevailing in the country.

In addition to the above, contributing to the Sustainable development goals are one of the important aspects which is expected by manufacturers of all around the globe. Using these research findings, manufacturers can also increase their contribution towards achieving these sustainable development goals in the long run.

6.1 Limitations of the Study

The main limitation of the study was the scope of this research was narrow down only to the area of personal care product category from FMCG products. The reason for selecting this category from all the other FMCG product categories is that personal care products are having a comparatively high price and once the product is purchased it is used for a longer period than other categories of products. Further, the other limitation was the research was

focused only on consumers who purchase personal care products or potential to purchase personal care products in Western province.

6.2 Further Research Opportunities

These research findings would definitely create path for new research opportunities for future researchers. Since there are very limited studies available relate to consumers' attitudes about sustainability on purchase decisions, future studies can be conducted to understand these relationships further with other different categories. There are other FMCG categories such as food category, homecare category and household care category which research can be conducted.

Further, future research can be expanded under the same research topic by considering consumers in the other provinces. This will expand the population of the study. Overall expanded research can be a significant contribution to fulfill research gap in both academic and industrial research arena.

Moreover, this study was mainly focused on how sustainable attitudes of consumers can effect on purchase decision. However, the main product characteristics such as price, quality, and user experience were not considered for this analysis. Future research can be done by taking all these factors in to consideration.

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Appendix A: Questionnaire

Assessing the Effect of Consumers' Attitudes towards Sustainability on Purchase Decisions in Personal Care Products in Western Province Sri Lanka

Dear Participant,

Thank you for taking the time to participate in this survey. Your input is valuable for assessing consumers' attitudes towards sustainability effect on purchasing decisions in the personal care products in Western province Sri Lanka.

Please answer the following questions honestly and to the best of your ability and your responses will remain anonymous and confidential.

Thank you for your participation!

Definitions

Sustainability involves responsibly managing resources, minimizing environmental impact, and promoting social equity to ensure long-term environmental, economic, and social well-being.

Personal care products refer to skincare products, hair care products, cosmetics, and hygiene products like soaps, shampoo, cream, face wash and deodorants.

Sustainable personal care products are those that are designed, produced, and consumed in ways that minimize their environmental impact and promote social responsibility throughout their life cycle. These products aim to reduce the negative effects on the environment, society, and human health.

Section 01

1. Gender

- ◯ Male
- ◯ Female

2. Age

- ◯ 18 - 24
- ◯ 25 - 34
- ◯ 35 - 44
- ◯ 45 - 54
- ◯ 55 or over 55

3. Highest Attained Educational Level

- ◯ Ordinary Level
- ◯ Advanced Level
- ◯ Diploma Level
- ◯ University Degree
- ◯ Masters Degree
- ◯ PhD
- ◯ Professional Qualifications

4. Job Status

- ◯ Employed
- ◯ Unemployed
- ◯ Self- employed
- ◯ Student

5. What District do you currently lives in?

- ◯ Colombo
- ◯ Gampaha
- ◯ Kaluthara

6. How often do you visit shops to purchase personal care products?

- ◯ Never
- ◯ Rarely (less than once a month)
- ◯ Occasionally (Once a month)
- ◯ Sometimes (2-3 times a month)
- ◯ Often (Once a week)
- ◯ Very Often (Multiple times a week)

7. What is important to you when you purchase Personal care products?

	Most Important - 1	2	3	4	Least Important - 5
Design & Features	○	○	○	○	○
Quality	○	○	○	○	○
Price	○	○	○	○	○
Brand Name	○	○	○	○	○
Sustainability Information	○	○	○	○	○

8. How important is Sustainability to you when making purchasing decisions?

- ○ Not Important
- ○ Slightly Important
- ○ Moderately Important
- ○ Important
- ○ Very Important

9. Have you ever chosen one brand over another specifically because of its sustainability practices?

- ○ Yes
- ○ No

10. Which of the following sustainability concerns are most important to you when making purchasing decisions?

	Most Important - 1	2	3	4	Least Important - 5
Use of environmental friendly materials	○	○	○	○	○
Consideration of reduction of waste and packaging, use of renewable energy sources for manufacturing, reduction of carbon footprint	○	○	○	○	○
Animal welfare and Cruelty free practices	○	○	○	○	○
Social and Ethical practices of the company including ethical treatment of workers	○	○	○	○	○
Certifications and Labels indicating sustainability	○	○	○	○	○

Section 02

Express your opinion by marking a tick from the scale from 1 to 5.
1 – Strongly Disagree 2 – Disagree 3 – Neither Agree nor Disagree 4 – Agree
5 – Strongly Agree

Environment Consciousness (X1)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I actively seek information about environmental impact of the product I buy	○	○	○	○	○
I am willing to pay more for personal care products that are environmentally friendly	○	○	○	○	○
I prefer to purchase personal care products which are cruelty free or not doing animal testing	○	○	○	○	○
I feel a personal responsibility to protect the environment through my purchasing choices	○	○	○	○	○

Product Packaging (X2)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I prefer to buy personal care products with recyclable or biodegradable packaging	○	○	○	○	○
I am willing to try new products if they have sustainable packaging	○	○	○	○	○
I believe that companies should use eco-friendly packaging for their products	○	○	○	○	○

Awareness about Sustainability (X3)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am aware of the long terms benefits of using sustainable products for the environment	○	○	○	○	○
I understand the importance of choosing sustainable personal care products	○	○	○	○	○
I keep myself informed about the latest developments in sustainability practices	○	○	○	○	○

Green Advertising (X4)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Green marketing campaigns make me more aware of sustainable product options	○	○	○	○	○
I am more likely to buy from brands that emphasize their environmental efforts in advertising	○	○	○	○	○
Green advertising influences my decision to purchase personal care products	○	○	○	○	○

Exposure to Sustainable Messages through Social Media (X5)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Social media plays a significant role in my awareness of sustainable personal care products	○	○	○	○	○
I follow influencers or brands that on social media that promote sustainability	○	○	○	○	○
I often see advertisements for sustainable products on my social media	○	○	○	○	○

Social Values (X6)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I live a lifestyle that reflects my commitment to environmental sustainability	○	○	○	○	○
I believe that living sustainably is an essential part of my identity	○	○	○	○	○
I actively seek sustainable personal care product options	○	○	○	○	○

Beliefs and Attitudes (X7)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I think that using sustainable products is important for future generations	○	○	○	○	○
I am committed to making environmentally responsible purchasing decisions	○	○	○	○	○
I feel morally obligated to buy sustainable personal care products	○	○	○	○	○

Purchase Decision (Y)

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I always prefer to buy sustainable personal care products	○	○	○	○	○
I always get attracted to buy sustainable personal care product among other personal care products available in the market	○	○	○	○	○
I feel that buying environmentally friendly products contributes to solving sustainability issues such as pollution, waste generation, loss of biodiversity etc	○	○	○	○	○

I feel it is my social responsibility to buy products that are friendly to the environment	○	○	○	○	○
I would recommend sustainable personal care products to my friends and family	○	○	○	○	○
I am willing to switch to a different brand if it offers more sustainable personal care products	○	○	○	○	○
I would definitely be interested in personal care products produced from 100% organic or natural resources	○	○	○	○	○

Additional Comments:

Your answer

Back Submit Clear form

Appendix B: Confirmatory Factor Analysis - Measurement Model SPSS Output

Correlations: (Group number 1 - Default model)

			Estimate
BA	<-->	PP	.310
BA	<-->	SV	.496
BA	<-->	AS	.388
BA	<-->	GA	.403
BA	<-->	SMU	.356
BA	<-->	PD	.438
BA	<-->	EC	.272
PP	<-->	SV	.279
PP	<-->	AS	.708
PP	<-->	GA	.530
PP	<-->	SMU	.335
PP	<-->	PD	.464
PP	<-->	EC	.588
SV	<-->	AS	.443
SV	<-->	GA	.529
SV	<-->	SMU	.453
SV	<-->	PD	.491
SV	<-->	EC	.432
AS	<-->	GA	.586
AS	<-->	SMU	.333
AS	<-->	PD	.610
AS	<-->	EC	.591
GA	<-->	SMU	.555
GA	<-->	PD	.730
GA	<-->	EC	.639
SMU	<-->	PD	.412
SMU	<-->	EC	.412
PD	<-->	EC	.476
e20	<-->	e21	.474
e24	<-->	e25	.256
e20	<-->	e24	.182
e21	<-->	e22	.178

Model Fit Summary

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	90	838.153	345	.000	2.429
Saturated model	435	.000	0		
Independence model	29	9734.325	406	.000	23.976

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	.020	.851	.812	.675
Saturated model	.000	1.000		
Independence model	.182	.163	.103	.152

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.914	.899	.947	.938	.947
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.850	.777	.805
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	493.153	412.090	581.906
Saturated model	.000	.000	.000
Independence model	9328.325	9010.349	9652.670

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	2.587	1.522	1.272	1.796
Saturated model	.000	.000	.000	.000
Independence model	30.044	28.791	27.810	29.792

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.066	.061	.072	.000
Independence model	.266	.262	.271	.000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	1018.153	1036.520	1358.697	1448.697
Saturated model	870.000	958.776	2515.964	2950.964
Independence model	9792.325	9798.243	9902.056	9931.056

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	3.142	2.892	3.416	3.199
Saturated model	2.685	2.685	2.685	2.959
Independence model	30.223	29.242	31.224	30.241

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	151	159
Independence model	16	16

Appendix C: Reliability and Validity Test Results

Cronbach's Alpha Value for Reliability Test

Reliability Statistics

Cronbach's Alpha	N of Items
.950	29

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1_Q1	106.27	146.352	.478	.949
X1_Q2	106.30	145.900	.536	.949
X1_Q3	106.15	145.021	.490	.949
X1_Q4	106.14	140.336	.601	.949
X2_Q1	106.14	145.747	.522	.949
X2_Q2	106.08	144.432	.573	.949
X2_Q3	106.15	148.079	.404	.950
X3_Q1	106.13	143.810	.629	.948
X3_Q2	106.25	145.695	.609	.948
X3_Q3	106.16	143.820	.642	.948
X4_Q1	106.15	141.433	.751	.947
X4_Q2	106.21	142.137	.716	.947
X4_Q3	106.13	141.273	.733	.947
X5_Q1	106.85	142.779	.611	.948
X5_Q2	106.95	142.337	.548	.949
X5_Q3	106.86	142.959	.590	.948
X6_Q1	106.73	143.957	.637	.948
X6_Q2	106.70	143.225	.616	.948
X6_Q3	106.74	143.340	.612	.948
X7_Q1	106.55	145.501	.535	.949
X7_Q2	106.54	145.156	.569	.949
X7_Q3	106.56	145.371	.563	.949
Y_Q1	106.14	144.708	.655	.948
Y_Q2	106.12	143.297	.708	.947
Y_Q3	105.93	141.912	.704	.947
Y_Q4	106.00	142.978	.680	.948
Y_Q5	105.91	141.337	.715	.947
Y_Q6	106.05	142.445	.710	.947
Y_Q7	105.96	142.221	.709	.947

Appendix D: Structural Equation Modeling SPSS Output

Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Label
PD	<---	EC	-.088	.071	-1.238	.216	
PD	<---	PP	-.052	.107	-.490	.624	
PD	<---	AS	.320	.085	3.758	***	
PD	<---	GA	.512	.067	7.601	***	
PD	<---	SMU	-.015	.041	-.367	.714	
PD	<---	SV	.058	.049	1.193	.233	
PD	<---	BA	.101	.047	2.155	.031	
X7_Q3	<---	BA	1.000				
X7_Q2	<---	BA	1.016	.017	58.281	***	
X7_Q1	<---	BA	1.008	.022	46.817	***	
X2_Q3	<---	PP	1.000				
X2_Q2	<---	PP	1.462	.109	13.429	***	
X2_Q1	<---	PP	1.212	.097	12.456	***	
X6_Q3	<---	SV	1.000				
X6_Q2	<---	SV	1.007	.031	32.744	***	
X6_Q1	<---	SV	.919	.027	33.980	***	
X3_Q3	<---	AS	1.000				
X3_Q2	<---	AS	.831	.052	16.098	***	
X3_Q1	<---	AS	1.099	.060	18.188	***	
X4_Q3	<---	GA	1.000				
X4_Q2	<---	GA	.914	.042	22.000	***	
X4_Q1	<---	GA	.937	.042	22.437	***	
X5_Q3	<---	SMU	1.000				
X5_Q2	<---	SMU	1.056	.035	30.582	***	
X5_Q1	<---	SMU	.982	.025	39.659	***	
Y_Q3	<---	PD	1.000				
Y_Q2	<---	PD	.891	.049	18.325	***	
Y_Q1	<---	PD	.789	.047	16.950	***	
Y_Q4	<---	PD	.974	.051	18.967	***	
Y_Q5	<---	PD	1.111	.055	20.174	***	
Y_Q6	<---	PD	.974	.052	18.696	***	
Y_Q7	<---	PD	1.022	.052	19.529	***	
X1_Q3	<---	EC	1.000				
X1_Q2	<---	EC	.806	.060	13.408	***	
X1_Q1	<---	EC	.779	.063	12.320	***	
X1_Q4	<---	EC	1.224	.091	13.425	***	

Squared Multiple Correlations: (Group number 1 - Default model)

	Estimate
PD	.604
X1_Q4	.573
X1_Q1	.487
X1_Q2	.572
X1_Q3	.612
Y_Q7	.761
Y_Q6	.723
Y_Q5	.790
Y_Q4	.732
Y_Q1	.635
Y_Q2	.701
Y_Q3	.683
X5_Q1	.919
X5_Q2	.808
X5_Q3	.924
X4_Q1	.766
X4_Q2	.750
X4_Q3	.813
X3_Q1	.786
X3_Q2	.638
X3_Q3	.676
X6_Q1	.900
X6_Q2	.881
X6_Q3	.878
X2_Q1	.597
X2_Q2	.767
X2_Q3	.493
X7_Q1	.911
X7_Q2	.959
X7_Q3	.958