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**Exploring Consumer Attitudes Towards Sustainable Milk
Packaging in the Kenyan Dairy Industry**

Rita Wairimu Maina

MBA/77543

**Submitted in partial fulfillment of the requirements for the Degree
of Master of Business Administration at Strathmore University**



Strathmore Business School

Strathmore University

Nairobi Kenya

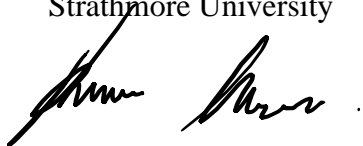
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May 2024

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ABSTRACT

This study investigated consumer perceptions of sustainable packaging within the Kenyan milk industry, focusing on packaging characteristics, demographic influences, and willingness to pay. Guided by the Theory of Planned Behavior (TPB) and the Means-End Theory, it aimed to unravel the complexities of consumer decision-making regarding sustainable milk packaging adoption. The research had three primary objectives: examining the influence of packaging characteristics on consumer attitudes, exploring the relationship between consumer demographics and sustainable packaging preferences, and assessing consumers' willingness to pay a premium for sustainable packaging in the milk industry.

Employing a positivism philosophy and a descriptive approach with a cross-sectional survey design, the research aimed to unravel the complexities of consumer decision-making concerning the adoption of sustainable milk packaging. It targeted a population of 3 million in Nairobi County, Kenya, with a sample size of 400 consumers, ensuring robustness and representativeness in the findings.

The study's significance lay in its broad scope, covering Nairobi County, Kenya, a pivotal area for sustainable practices given its large population and initial adaptation to a circular economy. Considering the substantial contribution of the dairy sector to Kenya's agricultural GDP and high per capita milk consumption, the findings were relevant for academia, policymakers, environmentalists, and businesses in the milk industry, offering insights into sustainable business practices and consumer choices.

The research underscored the importance of environmental impact as a key driver of consumer preference in milk packaging, while also highlighting the nuanced interplay between functionality, convenience, and aesthetics. It emphasized the need for the dairy industry to prioritize sustainable packaging solutions that address environmental concerns while catering to evolving consumer preferences. Additionally, the study provided insights into how consumer demographics influence preferences for sustainable packaging, offering valuable knowledge for developing targeted strategies. While there was considerable alignment between the study results and existing literature on consumer attitudes towards sustainable packaging, nuanced differences and areas of divergence were also observed, underscoring the complexity of consumer behavior and preferences.

In conclusion, this dissertation contributed comprehensive insights into consumer attitudes towards sustainable packaging in the Kenyan dairy industry, offering recommendations for stakeholders to align with consumer preferences, address cost concerns, and promote sustainability in milk packaging.

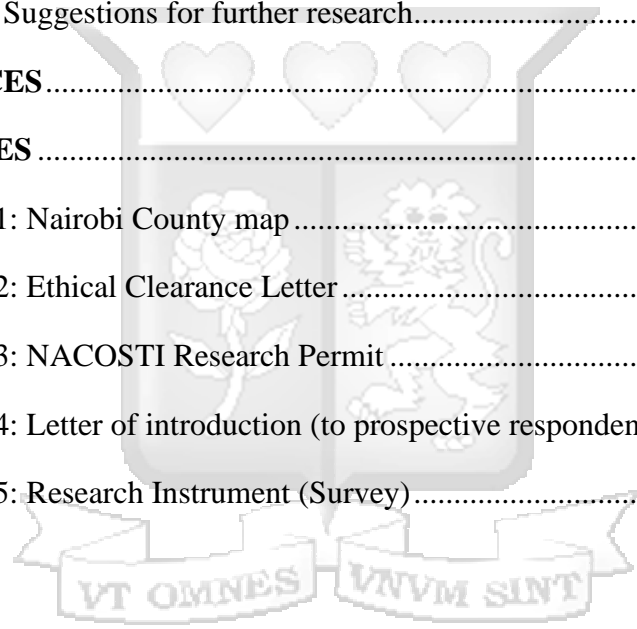
Key words: Dairy industry, sustainable packaging , consumer attitudes

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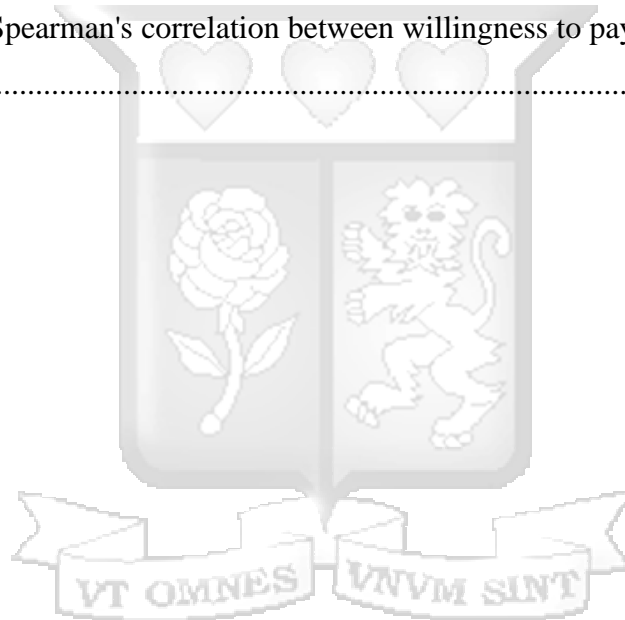
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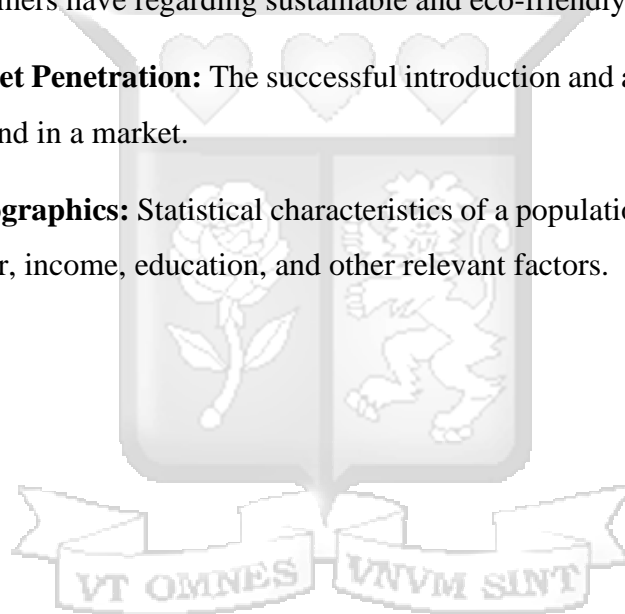
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GLOSSARY OF TERMS

1. **Circular Economy:** An economic model that promotes the continual use and recycling of resources to minimize waste and environmental impact.
2. **Sustainability:** The practice of meeting current needs without compromising the ability of future generations to meet their own needs.
3. **Environmental Impact:** The effect of human activities and processes on the natural environment, encompassing ecological, social, and economic consequences.
4. **Single-Use Plastics:** Disposable plastic items designed for one-time use, contributing significantly to environmental pollution and waste.
5. **Dairy Sector:** The segment of the agricultural industry involved in the production and processing of dairy products, including milk.
6. **Per Capita Consumption:** The average amount of a product consumed per person within a specific population or region.
7. **Descriptive Research Approach:** A research strategy focused on describing the characteristics of a phenomenon without manipulating variables.
8. **Cross-Sectional Surveys:** Research method involving data collection from participants at a single point in time to provide a snapshot of attitudes and behaviors.
9. **Positivism Philosophy:** A philosophical approach emphasizing the use of empirical evidence and scientific methods to gain objective knowledge.
10. **Environmental Conservation:** Practices and policies aimed at protecting and preserving the natural environment.
11. **Eco-friendly Practices:** Actions and behaviors that are environmentally sustainable and minimize harm to the ecosystem.
12. **Waste Generation:** The creation of waste materials during the production, use, and disposal of products.
13. **Market Differentiation:** The process of distinguishing a product or brand from others in the market to attract consumers.

14. **Life Cycle Assessment (LCA):** A comprehensive analysis of the environmental impact of a product or system throughout its entire life cycle.
15. **Greenhouse Gas Emissions:** Gases released into the atmosphere, contributing to the greenhouse effect and climate change.
16. **Energy Use:** The consumption of energy in various stages of a product's life cycle, including production, distribution, and disposal.
17. **Water Use:** The amount of water utilized in the production and use of a product.
18. **Consumer Awareness:** The level of knowledge and understanding that consumers have regarding sustainable and eco-friendly practices.
19. **Market Penetration:** The successful introduction and acceptance of a product or brand in a market.
20. **Demographics:** Statistical characteristics of a population, often including age, gender, income, education, and other relevant factors.



DEDICATION

I dedicate this work to my family. To my husband, whose unwavering support and understanding allowed me to pursue this academic endeavor. To my children, whose laughter and love provided a much-needed source of joy during this process. And to my parents, who instilled in me a lifelong love of learning and the perseverance to achieve my goals.



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CHAPTER ONE:INTRODUCTION TO THE STUDY

1.1 Introduction

Sustainable milk packaging is centered on reducing the utilization of non-recyclable plastic in milk packaging. This approach encourages the reuse and recycling of materials, such as glass jars or paperboard containers, alongside the increasing popularity of biodegradable options, particularly for plant-based milk (Berg et al., 2020). Various strategies exist to enhance the sustainability of milk packaging, including the adoption of reusable containers like glass jars, the utilization of recycled paperboard for cartons, and the incorporation of bioplastics and biodegradable plastics to diminish plastic waste accumulation in landfills. Moreover, companies are increasingly focusing on integrating renewable energy into their production processes and implementing carbon labeling to inform consumers about the carbon footprint associated with packaging materials (Peters, 2021). Additionally, the adoption of compostable materials, such as plant-based plastics, is gaining traction in the food packaging industry.

Evaluation of fluid milk delivery systems in the United States by Burek et al. (2018) provides insights into the environmental sustainability of different milk packaging methods. Through a life cycle assessment (LCA), the researchers compared three delivery systems: traditional plastic gallon jugs, plastic pouches, and reusable glass bottles. The LCA scrutinized the environmental impacts of each system, encompassing greenhouse gas emissions, energy usage, water consumption, and waste generation. Findings indicate that while reusable glass bottles exhibit the lowest environmental impact concerning greenhouse gas emissions and energy usage, they entail higher water usage. Conversely, plastic pouches demonstrate the lowest water usage impact but register higher greenhouse gas emissions and energy consumption. The authors advocate for comprehensive life cycle assessments to ensure the environmental sustainability of milk delivery systems and recommend the adoption of reusable glass bottles as a more sustainable alternative to plastic jugs and pouches.

Political factors play a crucial role in shaping sustainable packaging practices within the milk packaging industry. Regulatory initiatives, such as government policies on plastic usage and waste management, significantly influence packaging strategies adopted by milk producers. For instance, legislation mandating the reduction of single-

use plastics may prompt companies to explore alternative, more sustainable packaging materials for milk products. Additionally, political pressure from environmental advocacy groups and public stakeholders may drive policymakers to enact stricter regulations, further incentivizing the adoption of eco-friendly packaging solutions in the milk supply chain (Kumar et al., 2021).

Economic considerations are paramount in evaluating the feasibility of sustainable packaging initiatives for milk products. While transitioning to sustainable packaging materials may incur initial investment costs for milk producers, long-term economic benefits can be realized through enhanced brand reputation, reduced operational costs, and increased consumer loyalty. Moreover, economic incentives such as tax breaks or subsidies for companies embracing sustainable practices can facilitate the adoption of eco-friendly packaging solutions, making them more financially viable for milk producers (Asim et al., 2022).

Social factors significantly influence consumer preferences and behaviour regarding milk packaging choices. Increasing awareness of environmental issues, particularly plastic pollution and waste, has led to a growing demand for sustainable packaging options among consumers. The rise of eco-conscious consumers who prioritize environmentally friendly products drives market demand for milk packaged in recyclable or biodegradable materials. Companies responding to these social trends by offering sustainable packaging options can gain a competitive edge and enhance brand image in the milk market (Asim et al., 2022).

Technological advancements play a pivotal role in driving innovation and facilitating the adoption of sustainable packaging practices within the milk packaging industry. Emerging technologies enable the development of novel packaging materials that are both environmentally friendly and functional, such as bio-based plastics or compostable packaging solutions. Furthermore, technological innovations in packaging design and manufacturing processes enhance efficiency and reduce waste, contributing to overall sustainability efforts in the milk supply chain (Asim et al., 2022).

Environmental considerations are central to the discourse on sustainable packaging in the milk industry. The detrimental environmental impacts of conventional packaging materials, particularly plastic, have prompted stakeholders to seek alternative, more

eco-friendly solutions. Sustainable packaging options, such as recyclable, biodegradable, or compostable materials, help mitigate the environmental footprint associated with milk packaging, reducing plastic waste and pollution while conserving natural resources. Embracing environmentally sustainable packaging practices is imperative for mitigating the ecological impact of milk packaging and promoting environmental stewardship (Kumar et al., 2021).

Legal factors encompass a range of regulations and standards governing milk packaging practices, ensuring product safety, quality, and compliance with environmental laws. Milk producers must adhere to stringent food safety regulations and packaging standards established by regulatory authorities to maintain consumer trust and confidence. Additionally, legal frameworks aimed at reducing plastic waste and promoting recycling efforts may influence milk packaging strategies, necessitating compliance with packaging material restrictions and labelling requirements. Establishing comprehensive legal frameworks that promote sustainable packaging practices and enforce accountability throughout the milk supply chain is essential for fostering a more environmentally responsible packaging industry (Kumar et al., 2021).

By considering these political, economic, social, technological, environmental, and legal factors, stakeholders in the milk industry can collaboratively develop more sustainable and responsible packaging solutions for the future.

1.2 Background of the study

1.2.1 Sustainable Milk Packaging

Sustainable milk packaging is a critical aspect of the dairy industry's efforts to reduce its environmental footprint while meeting consumer demand for eco-friendly products. By utilizing innovative materials and design strategies, dairy companies can minimize the environmental impact of milk packaging throughout its lifecycle. For instance, the adoption of recyclable or compostable materials can help reduce plastic waste and promote a circular economy (Rejeesh & Anto, 2023). Furthermore, lightweight packaging options and optimized packaging designs can lower transportation-related emissions and energy consumption, contributing to overall sustainability efforts.

The packaging of milk products plays an important role in the dairy industry. It helps to preserve the product, increase its shelf life, maintain the quality and taste, and reduce

food waste. Additionally, it enables easier transport and storage of milk products, aiding their distribution to the market and increasing their availability. Furthermore, the use of packaging materials such as plastics, cardboard, and aluminum foil creates jobs in the manufacturing sector, thus contributing to economic growth.

The packaging of milk products also makes it easier for customers to identify the product and make a decision on which one to buy. For example, attractive labeling and packaging help to differentiate products and create brand loyalty. This in turn leads to greater sales, resulting in higher revenues for dairy companies. Furthermore, if the packaging is designed correctly it can help to increase the shelf-life of the product and reduce spoilage, saving costs for producers and retailers (FAO, 2019). The packaging of milk also has an environmental impact. For example, using lighter-weight containers or recycled materials can reduce the amount of energy needed to transport them and reduce waste. This in turn helps to protect the environment.

Finally, the packaging of milk products is a regulatory requirement. Regulations for milk packaging vary from country to country and even from region to region, and producers must comply with local laws when it comes to labeling and packaging. This ensures that milk products are safe for consumers, which is of paramount importance. In conclusion, the packaging of milk products has a direct and indirect impact on the economy by enhancing the quality of the product, reducing waste, and creating jobs. It also helps to distinguish products and create brand loyalty, as well as helping to protect the environment (Muehlhoff et al., 2013). Properly complying with regulatory requirements is also essential.

1.2.2 Kenya Dairy Industry

In Kenya, milk production is a critical source of income for over two million households, and dairy products are essential for national nutrition and health (Gade & Thomas, 2015). The sector boasts significant potential for future smallholder development, ranking among the most developed in Sub-Saharan Africa. Regional market advantages and untapped production capacity position Kenya for further growth. However, to capitalize on this potential and meet rising domestic demand, the Kenyan dairy value chain needs an upgrade. This includes increased productivity, reduced inefficiencies, lower production and processing costs, and improved milk quality that meets international standards. Harmonization of dairy product

specifications by the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA) further necessitates these advancements (Gade & Thomas, 2015).

Rural communities in Kenya play a key role in the development of the dairy industry. Dairy farmers in rural areas and small towns rely on their resources to produce milk (D'Alessandro et al., 2015). They are dependent on traditional and sustainable practices, such as crossbreeding of indigenous cattle breeds with exotic breeds, for which Kenya is well-known. A cow-keeping culture dating back many generations plays an important role in the production of milk in these areas. With growing awareness of the benefits of dairy products, consumption is also on the rise within the urban middle class, in addition to rural households.

The government of Kenya has taken initiatives to increase dairy productivity, such as the provision of subsidies and the introduction of better veterinary services. Several private sector initiatives are aiming to improve dairy production and supply, such as introducing improved milking techniques, providing technical assistance and training services, establishing product brand names to create market differentiation, and starting up dairy processing plants. Kenya has also implemented several policies to support the industry, such as the Kenya Dairy Master Plan and the Dairy Industry Development Strategy (Oloo, 2016). These initiatives are helping to promote dairy development in the country.

Consumers are increasingly becoming key influencers in driving the adoption of eco-friendly practices (Gao & Shao, 2022). The global emphasis on reducing non-recyclable plastic usage has spurred interest in alternatives such as reusable containers, recycled paperboard, and biodegradable plastics. Understanding the nuances of consumer attitudes is essential, not just for the industry's economic growth but also for aligning practices with environmental sustainability goals. As the study unfolds, it aims to unravel the intricacies of consumer decision-making within the Kenyan dairy landscape.

1.3 Problem definition

Kenya, a significant consumer of milk and milk products, faces an escalating challenge concerning the environmental impact of conventional packaging materials such as cartons, plastic pouches, and bottles (Gade & Thomas, 2014). The disposal of these

materials in garbage dumps contributes to environmental degradation, necessitating a shift towards sustainable packaging alternatives (Berg et al., 2020). Despite the apparent need for eco-friendly solutions, the existing body of research on consumer attitudes towards sustainable milk packaging is notably limited, creating a critical gap that requires exploration.

Internationally, studies such as the one conducted by Burek et al. (2018) in the United States evaluated the environmental sustainability of different milk delivery systems, emphasizing the importance of considering the entire life cycle of packaging materials. While this sheds light on environmental concerns, it doesn't comprehensively address consumer preferences and attitudes.

Regionally in Africa, a South African study by Mbokane & Modley. 2024 highlighted a significant relationship between income and faculty, showing that these factors influenced the participants' level of awareness regarding green consumerism. The purchasing behavior of the participants is mostly influenced by the price and quality of products instead of the impact of a product on the environment. However, this regional perspective may not fully capture the nuanced preferences of Kenyan consumers with distinct sociodemographic characteristics and cultural contexts.

At the local level, research by Oloo. 2016 emphasized the economic significance of the Kenyan dairy industry but did not specifically delve into consumer attitudes towards sustainable packaging. This local context is crucial for understanding the unique dynamics shaping consumer choices in the Kenyan dairy market.

The scarcity of comprehensive studies exploring the multifaceted factors influencing consumer attitudes towards sustainable milk packaging in the Kenyan context underscores the research problem. There is a notable gap in understanding how factors such as consumer preferences, demographics, and willingness to pay intersect in influencing the adoption of eco-friendly packaging solutions in the Kenyan dairy industry. This research aims to bridge this gap by providing a holistic and nuanced understanding of consumer behavior, thereby informing industry stakeholders and policymakers in their pursuit of sustainable and market-responsive packaging alternatives.

This research focuses on identifying specific attributes of milk packaging that impact consumer perceptions of sustainability. Understanding which packaging features

resonate most with consumers can guide dairy companies in developing effective sustainable packaging strategies. Similarly, a study by Yung. 2023 highlights the significance of packaging aesthetics, functionality, and environmental claims in shaping consumer attitudes towards sustainable packaging. By examining these characteristics, this objective aims to provide insights into how relevant stakeholders can design packaging that aligns with consumer preferences and sustainability goals.

It also focuses understanding the demographic factors that influence consumer preferences for sustainable packaging is essential for developing targeted marketing strategies and product offerings. Research by Shweta Kumar. 2023 suggests that demographic variables such as age, income, and education level can significantly impact consumer attitudes towards sustainability and environmental issues. For instance, younger consumers and those with higher education levels tend to exhibit greater concern for environmental issues and may be more receptive to sustainable packaging options. Investigating these relationships can help relevant stakeholders tailor their packaging strategies to different demographic segments, thereby enhancing market relevance and consumer engagement.

It also focuses on the economic aspect of sustainability by examining consumers' willingness to pay for environmentally friendly packaging. Understanding consumers' willingness to pay for sustainable packaging is critical for evaluating the economic feasibility of investing in sustainable packaging initiatives and pricing strategies. Research by De Canio. 2023 suggests that consumers are generally willing to pay a premium for products with sustainable attributes, including eco-friendly packaging. However, the magnitude of willingness to pay may vary depending on factors such as product innovation, price, consumer perceptions of environmental benefits, and individual knowledge. By assessing consumers' willingness to pay for sustainable packaging options in the dairy milk industry, this objective aims to provide insights into the market potential and economic viability of sustainable packaging initiatives.

1.4 Research objectives

The overall objective of this study is to explore consumer attitudes towards sustainable packaging in the Kenyan dairy milk industry: -

- a) To examine the characteristics of the milk products packaging that influence consumer attitudes.

- b) To investigate the relationship between consumer demographics (age, income, gender, etc.) and their preference for sustainable packaging options.
- c) To assess the willingness of consumers to pay more for sustainable packaging options in the dairy milk industry.

1.5 Research questions

In order to address the above-stated objectives, the study sought to answer the following specific questions: -

- a) What are the characteristics of the milk products packaging that influence consumer attitudes?
- b) What is the relationship between consumer demographics (age, income, gender, etc.) and their preferences for sustainable milk packaging?
- c) To what extent are consumers willing to pay more for sustainable milk packaging?

1.6 Scope of the study

This study is designed to probe into the intricate dynamics of consumer attitudes towards sustainable milk packaging within the Kenyan dairy industry, particularly in the context of the largest population center, Nairobi County (KNBS). Conceptually, it embarks on a comprehensive exploration, delving into various factors that intricately shape consumer behavior, including preferences for specific milk product attributes, the diverse demographics of consumers, and their willingness to invest in sustainable packaging solutions.

In terms of temporal scope, this research operates within a contemporary timeframe, aiming to capture the ongoing shifts in consumer preferences and attitudes. It acts as a snapshot, shedding light on the current landscape and serving as a timely exploration into the transition from conventional to sustainable milk packaging in the year 2023.

The locational focus of this study centers on Nairobi County, Kenya, acknowledging its significance as the country's most populous region and its pioneering steps into a circular economy. The study recognizes the unique sociodemographic fabric of the inhabitants, adding depth to the exploration and acknowledging the diverse consumer landscape within the county.

The dairy sector's substantial contribution, accounting for approximately 14% of the country's agricultural GDP, adds an economic dimension to the study. With smallholder dairy farmers generating about 56% of the total output, representing approximately 80% of all producers, and large commercial farmers contributing the remaining 44%, the study gains insights into the sector's structure and dynamics (Njeru, 2022).

In terms of milk consumption, Kenya boasts the highest per capita consumption in sub-Saharan Africa, with each individual consuming approximately 110 liters of milk. As of 2022, the demand for milk stands at 8 billion liters, projecting a further increase as the population grows. This consumption context sets the stage for understanding the nuances of consumer attitudes towards sustainable packaging in a high-demand, consumption-intensive environment.

Methodologically, the study adopts a descriptive research approach, utilizing a cross-sectional survey as the primary tool for data collection. This method aligns with the overarching goal of capturing a comprehensive snapshot of consumer attitudes within a specific timeframe. The study's underpinning philosophy of positivism emphasizes the reliance on empirical evidence, emphasizing scientific observation and experimentation as essential elements in comprehending consumer behavior.

In navigating these distinct scopes, the study aspires to offer a holistic understanding of consumer attitudes towards sustainable milk packaging, focusing specifically on Nairobi County, Kenya. Through this, the research aims to contribute valuable insights to the broader discourse on eco-friendly packaging solutions within the dairy industry.

1.7 Significance of the study

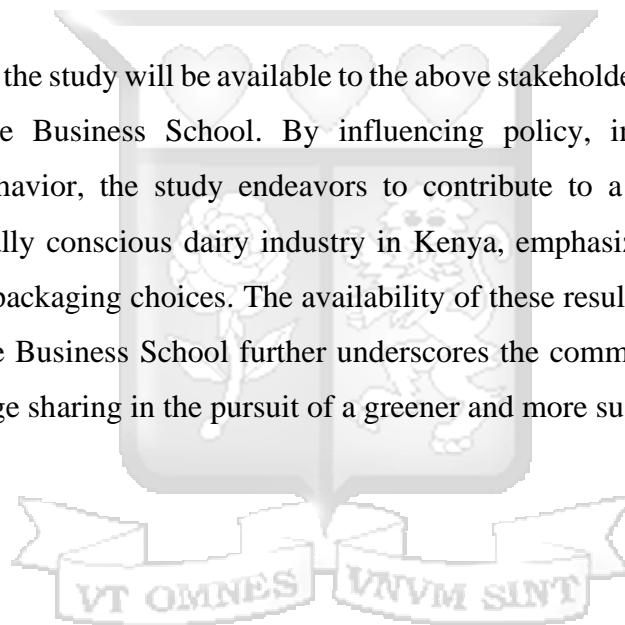
The outcomes of this study will hold significant value for the academic community. Researchers and scholars will have the opportunity to delve into a comprehensive analysis of consumer attitudes and emerging sustainable business practices within the milk industry. This research can serve as a foundational resource for future academic investigations into these topics, facilitating a deeper understanding of the subject matter.

This study's findings carry substantial implications for policymakers, environmentalists, and individuals dedicated to environmental conservation. Through this research, valuable insights will be gained into strategies for mitigating the

environmental impact of waste. Policymakers can use this knowledge to inform and refine legislation, while environmentalists will find new perspectives on how to advocate for greener practices and policies.

The significance of this study extends to a wide range of business stakeholders in the milk industry. Milk processors and retailers will have the opportunity to learn from the study's insights regarding consumer attitudes and sustainable business practices. These insights can potentially guide them in making informed decisions to enhance their operations and environmental impact. Additionally, consumers will gain awareness about the choices they make and how they influence the industry, thus empowering them to make more informed and sustainable choices as they engage with milk products.

The results of the study will be available to the above stakeholders in the public domain of Strathmore Business School. By influencing policy, industry practices, and consumer behavior, the study endeavors to contribute to a more sustainable and environmentally conscious dairy industry in Kenya, emphasizing the importance of eco-friendly packaging choices. The availability of these results in the public domain of Strathmore Business School further underscores the commitment to transparency and knowledge sharing in the pursuit of a greener and more sustainable future.



CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews scholarly literature related to consumer preferences and attitudes to sustainable packaging in the milk industry in Kenya. It includes a theoretical review, an empirical review, a critique of the existing literature research gap, and a summary of the chapter.

2.2 Theoretical Review

This section introduces two guiding theoretical frameworks for the study: the Theory of Planned Behavior (TPB) and the Means-End Theory. Developed by Ajzen, TPB explores behavior through attitudes, subjective norms, and perceived control. Armitage and Conner, (2001) meta-analysis confirms its effectiveness, emphasizing the role of attitudes and perceived control. The Means-End Theory, by Gutman and Reynolds, posits that consumers choose products based on underlying values and goals. Studies by Tzimas et al. (2017), Leitner et al. (2008), and Martine & Mary. (2003) illustrate its application, highlighting consumers' prioritization of practical and emotional benefits. Together, these frameworks provide a strong basis for analyzing consumer attitudes toward sustainable milk packaging in the study.

2.2.1 Theory of Planned Behavior

This study was guided by the theory of planned behavior which is a social psychological model that explains how behavior is determined by people's attitudes, subjective norms, and perceived behavioral control (Ajzen, 2012). The Theory of Planned Behavior (TPB) was originally proposed by Icek Ajzen, a social psychologist and professor emeritus at the University of Massachusetts Amherst, in 1985. Since then, it has become a widely used framework for understanding human behavior in various fields, including psychology, marketing, and public health. The TPB builds on earlier theories, including the Theory of Reasoned Action (TRA), also developed by Ajzen, and aims to provide a more comprehensive model for predicting and explaining behavior. It suggests that a person's beliefs about what others think about their proposed behavior and the perceived ease or difficulty of engaging in the behavior will affect how likely it is that they will engage in the behavior. TPB proposes that a person's intention to engage in a specific behavior is influenced by three key factors: attitude, subjective norm, and perceived behavioral control.

The research examined how characteristics of milk packaging influenced consumer attitudes. TPB posits that a person's attitude towards a behavior is shaped by their beliefs about the outcomes of that behavior. In this context, the characteristics of milk packaging became the "outcomes" that consumers evaluate. For example, packaging features like recyclability and biodegradability could positively influence attitudes if consumers believed they benefit the environment. Similarly, features that enhance product protection, freshness, and ease of use could also contribute to a positive attitude by aligning with consumer preferences for convenience and functionality.

By employing TPB, the research explored the relationship between various packaging characteristics and consumer attitudes. This analysis provided valuable insights for the dairy industry to design packaging that not only promotes sustainable practices but also aligns with consumer preferences for functionality and convenience.

The research also investigated the relationship between consumer demographics and sustainable packaging preferences through the lens of TPB. The concept of subjective norm focuses on the perceived social pressure to engage in a specific behavior. In this study, it related to how consumers perceived the attitudes of significant others (family, friends, society) towards sustainable packaging. If consumers believed their social circles value sustainable packaging choices, it could influence their own attitudes and preferences. Additionally, demographic factors like age, income, and gender may influence how consumers perceive social norms regarding sustainability.

By analyzing the relationship between demographics and sustainable packaging preferences through the TPB lens, the research identified potential variations in consumer attitudes based on social circles and demographic backgrounds. These insights could guide targeted marketing strategies for different segments within the Kenyan dairy market.

Building on the work of Armitage & Conner. (2001), who found TPB to be an effective model for predicting consumer behavior, this research examined the relationship between consumer attitudes towards sustainable packaging and their willingness to pay for sustainable packaging. This analysis accounted for perceived cost implications and potential barriers associated with adopting sustainable packaging options. The findings could inform strategies to promote sustainable packaging within the Kenyan

dairy industry by addressing affordability concerns and ensuring accessible recycling infrastructure.

In conclusion, the TPB framework provided a robust foundation for investigating consumer attitudes towards sustainable packaging in the Kenyan dairy industry. By analyzing the influence of packaging characteristics, demographics, and perceived behavioral control, this research offered valuable insights for the dairy industry to promote sustainable practices while catering to consumer preferences and addressing potential barriers to adoption.

2.2.2 Means-End Theory

This study was also guided by the Means-End Theory which states that consumers choose products based on their underlying values and goals (Borgardt, 2020). The Means-End Theory was developed by Dr. Gutman and Dr. Reynolds introduced this approach into the field of marketing and consumer research. The Means-End Theory seeks to explain how consumers make decisions based on their underlying values and beliefs. The theory posits that consumers evaluate products and services based on their ability to help them achieve desired outcomes or "ends." Understanding the underlying motivations and goals that drive consumer decision-making can help marketers develop more effective messaging and product positioning strategies.

Consumers make decisions based on the benefits they expect to receive from a product or service. These benefits are linked to personal values and beliefs, known as "end-states," and consumers evaluate different product attributes based on their ability to deliver these end-states. (Tzimas et al., 2017) explore consumer motives during economic recessions by adopting the means-end theory. The means-end theory suggests that consumers choose products based on their underlying values and goals. The study found that during economic recessions, consumers prioritize practical and functional product attributes that can help them save money and meet their basic needs. Additionally, consumers seek emotional benefits such as security and self-esteem through their purchases. Understanding these consumer motives can help marketers develop effective strategies to address consumer needs during economic downturns.

In 2008, Leitner et al. (2008) discusses the use of the means-end theory to identify user values in mobile multimedia. The means-end theory suggests that consumers select products based on their underlying values and goals. The study found that mobile

multimedia users prioritize practical attributes such as ease of use, flexibility, and functionality. Additionally, users seek emotional benefits such as enjoyment, entertainment, and social interaction through their use of mobile multimedia. Understanding these user values can help designers and developers create mobile multimedia products that meet user needs and provide a positive user experience. It can also help understand consumer attitudes and preferences toward sustainable packaging.

Martine & Mary. (2003) applies the means-end chain theory to understand the values and goals of Irish convenience food consumers. The study found that convenience food consumers in Ireland prioritize practical attributes such as ease of preparation, convenience, and affordability. Additionally, consumers seek emotional benefits such as indulgence, pleasure, and relaxation through their consumption of convenience food. The study also identified various product attributes that are important to convenience food consumers, such as taste, quality, and variety which could be similar to consumers purchasing milk in sustainable packaging.

2.3 Empirical Review

In this empirical review, the influence of milk product packaging on consumer attitudes was explored, emphasizing sustainability as a pivotal factor. Studies by Halton et al. (2022) and Boz et al. (2020) underscored the impact of sustainable practices on consumer choices. Packaging characteristics such as environmental considerations, functionality, aesthetics, and safety played crucial roles in shaping preferences. Consumer demographics, as revealed by Pattanaik et al. (2017), Orzan et al. (2018), and Chirilli et al. (2022), proved instrumental in understanding shopping behavior and attitudes towards sustainable packaging. Additionally, willingness to pay, highlighted by studies like Merlino et al. (2020) and Norton et al. (2022), revealed consumers' readiness to pay a premium for innovative, eco-friendly packaging, emphasizing the economic benefits for businesses adopting sustainable practices. The findings collectively illuminated the intricate interplay between packaging characteristics, consumer demographics, and economic considerations in shaping attitudes towards milk product packaging.

2.3.1 **Characteristics of Milk Products Packaging That Influence Consumer Attitudes**

Sustainability considerations play a pivotal role in shaping consumer preferences and behavior. Halton et al. (2022) conducted a discrete choice experiment to investigate the impact of sustainability on consumers' choices when purchasing toothbrushes. Their study encompassed various toothbrush characteristics, including bristle type, handle material, packaging, and price. Notably, sustainability aspects such as the use of biodegradable materials and recyclable packaging emerged as influential factors in consumer decision-making. These findings underscore the potential for promoting sustainable toothbrush options to foster eco-conscious behavior. Moreover, the study highlights the relevance of packaging type and pricing in influencing consumer preferences.

In the sphere of sustainable packaging, a comprehensive review by Boz et al. (2020) synthesized insights from 40 studies published between 2000 and 2019. The review identified three core themes underpinning consumer considerations for sustainable packaging. First, environmental considerations are paramount, with consumers increasingly concerned about the carbon footprint, waste reduction, and recyclability of packaging. They exhibit a preference for packaging constructed from renewable and biodegradable materials that can be easily recycled or reused. Second, functionality considerations are integral to consumer decision-making. Factors such as protection, freshness, and ease of use are vital, and consumers are willing to compromise on environmental aspects to meet functional needs. Third, convenience holds significant sway, and consumers are willing to pay extra for packaging that offers enhanced portability, easy storage, and convenient opening and closing. The review underscores the importance of catering to consumer preferences related to environmental impact, functionality, and convenience when implementing sustainable packaging solutions. It also emphasizes the need for investment in research and development to enhance the technical aspects of sustainable packaging, such as recyclability and functionality, and for communicating the environmental benefits of sustainable packaging to consumers.

Packaging aesthetics and brand identity were additional factors that exert a substantial influence on consumer attitudes. The visual appeal of milk product packaging, characterized by elements like design, color schemes, and overall presentation, has the power to captivate consumers and create positive impressions. Research by Chirilli et

al. (2022) underscored the role of well-designed packaging, featuring attractive labels and logos, in conveying a perception of quality and reliability. It is through this visual appeal that packaging can elevate a product's prominence on retail shelves. Furthermore, branding elements embedded in packaging can evoke feelings of trust and brand loyalty, with consumers often gravitating towards familiar brands associated with positive experiences (Boz et al., 2020).

Ensuring the safety of packaging materials is an imperative characteristic. In the context of food products, such as milk, consumers are increasingly concerned about the safety of packaging materials. Packaging materials must rigorously adhere to food safety standards and regulations to guarantee that they do not leach harmful chemicals or substances into the consumables they house (Chirilli et al., 2022).

The concept of sustainability transcends materials to encompass the entire lifecycle of packaging. Consumers place considerable value on packaging that is conceived with sustainability as a fundamental principle, extending from the manufacturing process through to disposal. Packaging that minimizes waste, reduces energy consumption, and mitigates carbon emissions during production garners favor among eco-conscious consumers. Additionally, clear recycling instructions enhance the consumer experience and facilitate participation in eco-friendly practices. It is thus evident that sustainable packaging practices that span the entirety of a product's lifecycle wield considerable influence over consumer attitudes and preferences (Boz et al., 2020).

2.3.2 Consumer Demographics

Consumer demographics are instrumental in shaping shopping behavior and consumer attitudes towards sustainable packaging. A study by Pattanaik et al. (2017) delved into the nexus between consumer demographics and shopping behavior among Indian consumers. The survey incorporated participants from diverse age groups, income strata, and geographic regions in India. The results illuminated the significant disparities associated with age and income levels. Younger consumers exhibited a proclivity for online shopping, while their older counterparts favored brick-and-mortar stores. Furthermore, higher-income consumers displayed a penchant for premium products and were more frequent shoppers. This demographic influence extends to consumer preferences for sustainable packaging options.

In the Romanian context, Orzan et al. (2018) explored consumer behavior regarding sustainable packaging. The study involved an online survey with 454 Romanian consumers. The findings underscored the general concern among consumers about the environmental impact of packaging, although knowledge about sustainable packaging was relatively limited. Within the realm of demographics, younger individuals, those with higher education, and those with greater incomes exhibited a heightened interest in sustainable packaging. Notably, women displayed a more elevated level of concern regarding the environmental impact of packaging compared to men. The study underscores the significance of educating consumers about sustainable packaging and the necessity of providing affordable sustainable options to nurture eco-friendly consumer behavior.

A comprehensive investigation by Chirilli et al. (2022) delved into consumers' awareness, behavior, and expectations concerning the environmental sustainability of food packaging. The study placed a special emphasis on the influence of socio-demographic characteristics in shaping these factors. The research elucidated the diverse dimensions of consumer awareness, revealing that socio-demographic attributes such as age, educational attainment, income, and environmental concern play a pivotal role in shaping consumer understanding of sustainability issues tied to packaging. Younger consumers and those with higher educational backgrounds demonstrated greater awareness of environmental sustainability and a heightened likelihood of considering it in their purchasing decisions. Increased income levels were also associated with enhanced awareness and a greater readiness to opt for sustainable packaging solutions. The research illustrates that socio-demographic factors wield considerable influence over consumer behavior concerning the sustainability of food packaging. For example, individuals who exhibit heightened environmental concern are more inclined to actively seek out and prefer sustainable packaging options. Conversely, some socio-demographic groups may prioritize other factors, such as convenience or price, over sustainability when selecting food products. Additionally, consumer expectations concerning sustainable packaging are multifaceted, encompassing desires for clear and transparent information about packaging materials, recycling instructions, and the overall environmental impact of packaging. Consumers also express a preference for packaging that is reusable, recyclable, constructed from renewable resources, or biodegradable. The findings underscore the need for

businesses and policymakers to consider these socio-demographic dynamics when developing strategies to promote sustainable packaging.

Consumer attitudes and preferences can also be influenced by family composition and lifestyle. Families with young children may prioritize packaging that offers convenience and ease of use, such as resealable packaging or single-serve options. In contrast, single individuals or childless couples may exhibit a greater willingness to explore eco-friendly packaging solutions. An understanding of the diversity in family structures and lifestyles within specific consumer demographics is vital for companies seeking to tailor their packaging offerings to meet consumer needs (Chirilli et al., 2022).

2.3.3 Willingness to Pay

The impact of milk packaging innovation on consumer perception and their willingness to pay was the focal point of Maria Merlino et al. (2020) study. This investigation, involving 1,000 Italian consumers, unearthed the notable willingness of consumers to pay a premium for milk with innovative packaging. Significantly, consumers expressed a heightened willingness to pay extra for milk featuring eco-friendly packaging and convenient options. Furthermore, the study illuminated the positive influence of product visibility on consumer perception and their readiness to pay. These findings emphasize the effectiveness of milk packaging innovation in augmenting consumer satisfaction and their willingness to pay more.

In the Indian context, Mrs. N.Santhamani & Dr. P.S.Selva Tharangini. (2021) conducted a study aimed at analyzing consumer attitudes towards dairy products in Erode district. The research, comprising a sample of 300 respondents randomly selected from various areas within the district, revealed a predominantly positive attitude towards dairy products. Milk emerged as the most commonly consumed dairy product. The majority of consumers considered dairy products essential for maintaining good health and expressed a readiness to pay a premium for high-quality items. The study also underscored the significance of factors such as taste, freshness, and price in influencing consumer purchasing decisions. Nevertheless, a prominent barrier to adoption emerged in the form of limited awareness about new dairy products. The findings emphasize the positive consumer attitudes towards dairy products and a willingness to experiment with new offerings perceived as beneficial.

Consumer perceptions of sustainable packaging options within the e-commerce industry were the subject of Lukman et al. (2016) investigation. The study surveyed online shoppers, unveiling varying levels of awareness about sustainable packaging options and corresponding disparities in willingness to pay more for eco-friendly packaging. Notably, participants with heightened environmental consciousness and prior experience with sustainable packaging exhibited a greater inclination to pay a premium. The study advocates for e-commerce companies to prioritize sustainable packaging options to cater to the growing demand from environmentally-conscious consumers. Moreover, it underscores the importance of educating consumers about the advantages of sustainable packaging and its positive environmental impact.

Vrabič Brodnjak & Jestratičević. (2022) explored sustainable packaging solutions in the footwear and apparel industry, with a focus on materials, design, and logistics. The study identified various barriers to the adoption of sustainable packaging, including perceptions that it is costlier and less durable than conventional alternatives, along with a lack of awareness regarding the benefits and options available. The study proposed strategies to increase the adoption of sustainable packaging, including consumer education and improved communication among stakeholders.

In the Romanian context, Orzan et al. (2018) found that consumers were willing to pay more for sustainable packaging, provided the premium did not exceed 10% of the product's price.

The understanding and perception of sustainable food packaging among UK consumers were explored by Norton et al. (2022). The research indicated that a significant proportion of consumers possessed a robust grasp of the concept of sustainable packaging, with awareness of the environmental benefits of such materials being widespread. The majority of respondents expressed a willingness to pay more for products featuring sustainable packaging and a preference for brands that employed sustainable packaging materials. These findings underscore the increasing awareness among UK consumers of the environmental impact of packaging materials and their readiness to support brands endorsing sustainable alternatives. Moreover, the research pointed to the potential for consumers to switch to different brands if their current choice did not offer sustainable packaging options

2.4 Summary of the Research Gaps

The following table, Table 2. 1, provides a structured overview of key research findings and research gaps in the domain of exploring consumer attitudes towards sustainable milk packaging. This comprehensive review is based on empirical studies that investigate the critical factors influencing consumer choices and behaviors in the context of sustainable packaging.

Table 2. 1: Summary of Research Gaps

Section	Study	Main Finding	Research Gap
Characteristics of Milk Products Packaging That Influence Consumer Attitudes	Halton et al. (2022)	Sustainability aspects significantly influence consumer preferences and behavior.	Further investigation is needed to explore the extent of the influence of sustainability aspects in consumer preferences and behavior.
	Boz et al. (2020)	Environmental considerations, functionality, and convenience are paramount in consumer preferences for sustainable packaging.	Future research should delve into the interplay of these factors and how they affect consumer choices in the packaging industry.
	Chirilli et al. (2022)	Packaging aesthetics and brand identity play a substantial role in influencing consumer attitudes.	A more in-depth analysis is required to understand how packaging aesthetics and brand identity interact to influence consumer attitudes.
		Packaging material safety is crucial for consumer confidence.	Further research should explore the specific safety concerns consumers have related to packaging materials.
		Sustainable packaging practices across the entire lifecycle significantly impact consumer attitudes.	Future studies should delve into the specific aspects of the lifecycle where consumers place the most value in

Section	Study	Main Finding	Research Gap
			sustainability practices.
Consumer Demographics	Pattanaik et al. (2017)	Consumer demographics, such as age and income, influence shopping behavior and preferences for sustainable packaging.	Research is needed to explore the mechanisms through which these demographic factors exert their influence on consumer choices.
	Orzan et al. (2018)	Younger individuals, those with higher education, and higher-income consumers exhibit greater interest in sustainable packaging.	More research is required to understand the reasons behind the differences in sustainable packaging preferences among demographic groups.
	Chirilli et al. (2022)	Socio-demographic factors play a vital role in shaping consumer awareness, behavior, and expectations regarding sustainable packaging.	Further exploration is needed to understand the specific aspects of socio-demographics that exert the most influence and why.
		Family composition and lifestyle influence consumer preferences for packaging.	Deeper analysis is required to understand the specific lifestyle and family-related factors that impact packaging choices.
Willingness to Pay	Maria Merlino et al. (2020)	Consumers are willing to pay more for milk with innovative packaging, particularly eco-friendly and convenient options.	Research should investigate the extent to which consumers are willing to pay extra for different types of innovative packaging.
	Vrabič Brodnjak & Jestratijević. (2022)	Educating consumers and improving communication among stakeholders	Explore if educating consumers and improving communication among stakeholders

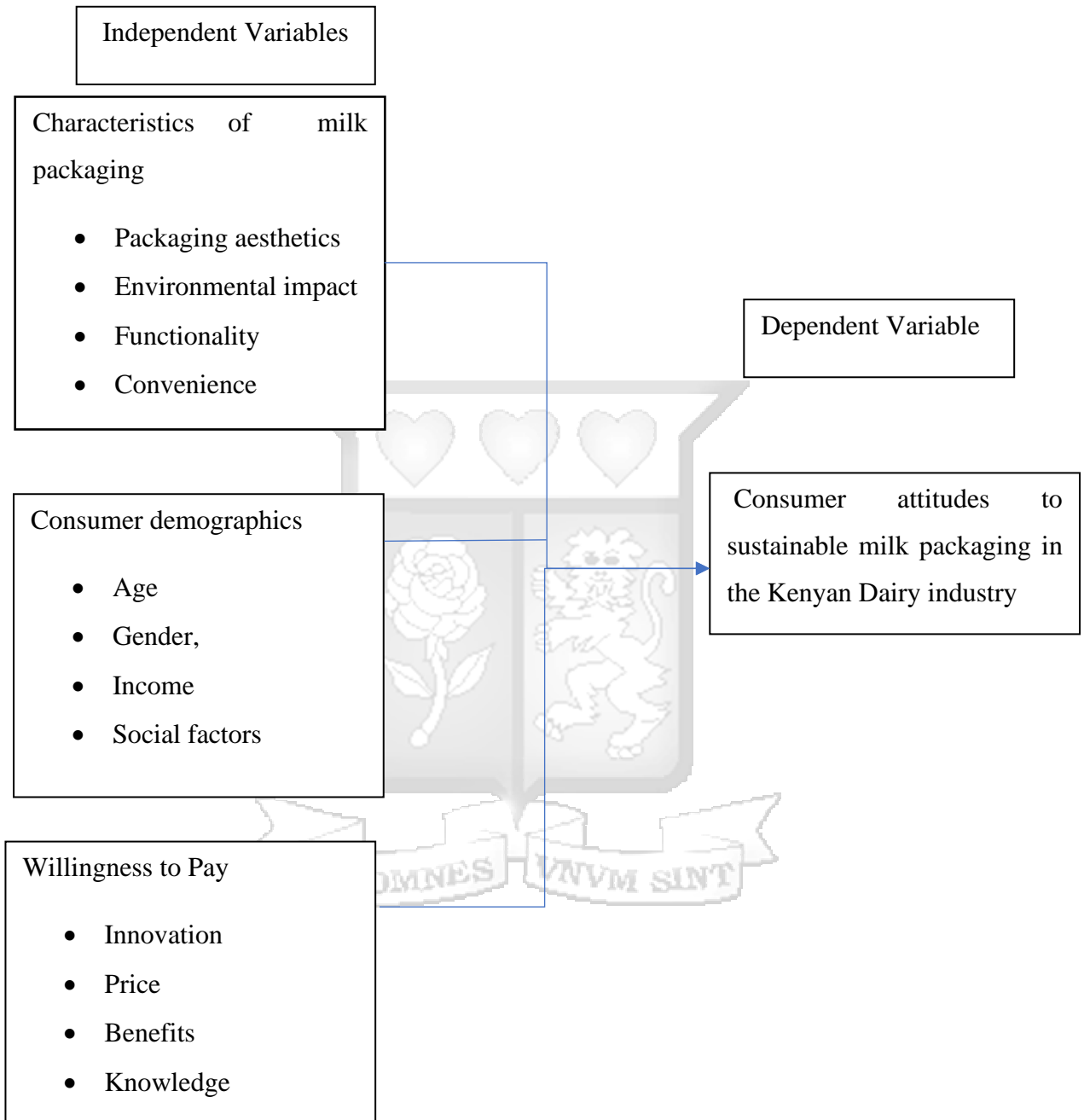
Section	Study	Main Finding	Research Gap
		can help increase the adoption of sustainable packaging in the industry.	significantly influence the adoption of sustainable milk packaging in Kenya.
	Lukman et al. (2016)	Willingness to pay more for sustainable packaging varies based on environmental consciousness and prior experience.	Future studies should explore the specific factors that contribute to consumers' willingness to pay more for sustainable packaging.
	Vrabič Brodnjak & Jestratijević. (2022)	Perceptions that sustainable packaging is costlier and less durable act as barriers to its adoption.	More in-depth analysis is required to understand the extent of these perceptions and how they impact consumer choices.
	Norton et al. (2022)	UK consumers have a robust understanding of sustainable packaging and are willing to pay more for such products.	Further research should explore how consumer preferences for sustainable packaging may differ among different regions and demographics.

Source: Researcher (2023)

2.5 Conceptual Framework

A conceptual framework is a set of ideas and rules that outline how to approach and solve a problem. It provides researchers with a structure for organizing their thoughts and helps to guide analysis. Variables are an important part of any conceptual framework. Variables refer to the factors or elements that can be measured, observed, and changed in order to understand a problem better. These variables can be used to analyze the problem in depth, allowing for more accurate conclusions to be drawn. Additionally, these variables can be used to identify relationships between different elements or components of a problem, allowing for better decision-making (Svinicki, 2010). Variables are an essential part of any conceptual framework, as they allow researchers to gain a greater understanding of the problem and develop more effective solutions. For this research Figure 2. 1, below has been developed to show how the independent variables affect the dependent variable.

Figure 2. 1: Conceptual Framework



Source: Researcher (2023)

The conceptual framework presented above presented the researcher's hypothesized relationship between several indicators that affect consumer attitudes and preference for sustainable packaging in the dairy industry. The study variables were operationalized and measured as indicated in Table 2. 2 below.

Table 2. 2: Operationalization and Measurement of Variables

Variable	Indicators	Definition	Measurement
Characteristics of milk packaging	Packaging aesthetics	The visual appeal and sensory characteristics of milk packaging, encompassing design, color schemes, presentation, and branding elements that influence how consumers perceive packaging attractiveness, quality, and reliability.	Likert Scale
	Environmental impact	Measure consumers' perception of environmental impact	Likert scale
	Functionality	Assess consumers' evaluation of packaging functionality focusing on aspects like ease of opening, resealability, spill prevention, and protection of milk quality during storage and transportation.	Likert scale
	Convenience	Measure consumers' perception of packaging convenience e.g. "I prefer milk packaging that is easy to handle and pour"	Likert scale
Consumer demographics	Age	Measuring the preferences and attitudes towards sustainable packaging within each age group.	Range
	Gender	Collect information on respondents' gender and compare the preferences for milk sustainable	Range

Variable	Indicators	Definition	Measurement
		packaging between different gender groups.	
	Income	Measure how income influences their preferences for sustainable packaging in the milk industry.	Range
	Social factors	Explore social influences on consumer preferences	Likert scale
Willingness to Pay	Innovation	Assess consumers' willingness to pay for packaging innovations. respondents are presented with different packaging options and asked to indicate their preferred choice and the associated price.	Likert scale
	Price	Investigate consumers' willingness to pay for sustainable packaging by presenting various price points for milk products with sustainable packaging and measure respondents' willingness to pay at different price levels.	Likert scale
	Benefits	Evaluate consumers' perception of the benefits associated with sustainable packaging	Likert scale
	Knowledge	Assess consumers' level of knowledge about sustainable packaging	Likert scale

Source: Researcher (2023)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the different approaches employed in the study are detailed, encompassing the research design, target population, sampling methodology, instrument for data collection, procedures for data collection, processing of data, and analysis of data.

3.2 The Research Design

The research purpose for this study was descriptive, as consumer studies were well established in the literature. Descriptive studies were often used in research to gather information about a group of people or a specific aspect of their behavior or experience. This study uses a survey design approach where data was collected mainly using cross-sectional surveys, which played a crucial role in descriptive research by providing a snapshot of a population's characteristics, allowing comparisons across groups, and serving as a starting point for future research endeavors. They offered a valuable means of gathering data efficiently and describing the current status of a population.

The research was guided by the positivism philosophy that originated in the 19th century and was often associated with the French philosopher Plé. (2000). Auguste Comte believed that positivism, as a philosophical approach, should guide the study of human society and individual well-being. Positivism was based on the belief that knowledge and understanding could only be derived from empirical evidence obtained through scientific observation and experimentation. Positivism emphasized objectivity, rationality, and the pursuit of verifiable facts.

Quantitative data was mainly collected from milk consumers to explore consumer attitudes towards sustainable milk packaging in the Kenyan dairy industry.

3.3 Population and Sampling of the Study

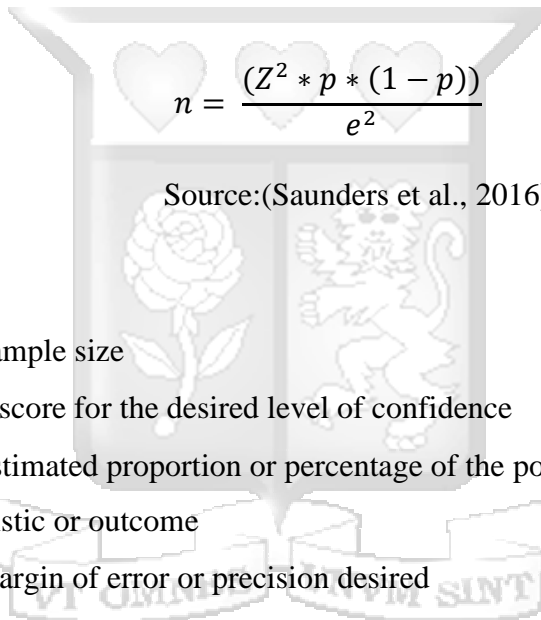
This study explored consumer attitudes towards sustainable milk packaging in the Kenyan dairy industry. The study targeted milk consumers in Nairobi. As of 2019, the estimated population in Nairobi, Kenya is approximately 4.4 million. This figure is based on data from the Kenya National Bureau of Statistics where: -

Table 3. 1: Statistical demographics of the population in Nairobi County (KNBS)

Age Groups (2019)	
0-17 years	1,538,589
18-64 years	2,799,974
65+ years	58,459

Table 3. 1 indicates that the population is roughly 4.4 million, while the estimated target population is around 2.8 million.

The sample size formula can be expressed mathematically using the following equation:



$$n = \frac{(Z^2 * p * (1 - p))}{e^2}$$

Source:(Saunders et al., 2016)

where:

- n is the sample size
- z is the z-score for the desired level of confidence
- p is the estimated proportion or percentage of the population with a certain characteristic or outcome
- e is the margin of error or precision desired

Assuming a desired confidence level of 95%, a margin of error of 5%, and an estimated proportion of 50% (to obtain the largest sample size possible, which is conservative), the sample size would be:

$$n = \frac{(1.96^2 * 0.5 * (1 - 0.5))}{0.05^2} = 384.16$$

Therefore, the sample size for a target population of 3 million, assuming the above parameters, would be approximately 384 individuals. This research used a sample size of 384 consumers to ensure accurate results and representation. For this study, Nairobi County was be divided into 4 parts as shown in Table 3. 2:-

Table 3. 2: Division of Nairobi County

1	North Nairobi	Westlands, Kasarani, Ruaraka, Starehe, Kamukunji
2	South Nairobi	Langata, Kibra, Dagoretti North, Dagoretti South
3	East Nairobi	Makadara, Embakasi North, Embakasi East, Embakasi West, Embakasi South
4	West Nairobi	Roysambu, Mathare, Embakasi Central, Embakasi West

In the pursuit of comprehensive and unbiased research findings, this study strategically divided Nairobi County into the above four distinct sections—North, South, East, and West. The rationale behind this methodological approach stemmed from the recognition of potential variations in demographics, perspectives, and experiences across different regions. The researcher allocated the sample size proportionally to each quadrant based on its population size. This method not only minimized the risk of bias but also allowed for a nuanced understanding of local trends and dynamics. The findings of this study, grounded in an equitable distribution of data collection across all regions, were anticipated to contribute to a more accurate and applicable comprehension of the broader population of Nairobi County, fostering both the precision and generalizability of the research outcomes. Table 3. 3 shows the percentage ratio and number of each sample size required for each of the sections

Table 3. 3: Sample size distribution of the population in Nairobi County (KNBS)

Nairobi City		Sample Size
North Nairobi	43.9%	169
South Nairobi	20.4%	78
East Nairobi	18.5%	71
West Nairobi	17.2%	66

3.4 Data Collection Methods

The main methods of data collection were questionnaires aimed at exploring consumers' attitudes towards sustainable packaging materials. There was only one category of the questionnaire, designed for the consumers.

Our respondents, carefully chosen to represent various consumer segments, were approached both in-person at supermarkets and kiosks and through online channels.

This multi-pronged approach ensured that we tapped into the spectrum of purchasing behaviors, acknowledging the evolving landscape of consumer interactions in both physical and digital realms.

Integral to our data collection strategy were the dedicated research assistants stationed in each of the four quadrants of Nairobi County. These trained professionals administered the questionnaires using Kobo Collect, fostering direct engagement and enriching the data collection process with on-the-ground insights. Their physical presence added a dynamic dimension, facilitating a more immediate and personalized connection with respondents. They assisted any participants incapable of reading, understanding, and signing the written consent form and questionnaire.

The use of questionnaires was beneficial for descriptive studies because they provided a structured way to obtain large amounts of data on a specific subject or research topic (Saliya, 2022). They were also great for gathering data from a variety of sources, including participants, experts, and other stakeholders. Moreover, they were cost and time-effective and could provide insight into the motivations and perspectives of those involved in the descriptive study. The orchestrated presence of research assistants in strategic locations not only enhanced the depth and accuracy of data collection but also contributed to a holistic understanding of the intricate dynamics shaping consumer preferences in the Kenyan dairy industry.

3.5 Data Analysis

The data analysis techniques employed in this study were focused on descriptive data analysis, aimed at providing a comprehensive understanding of consumer attitudes towards sustainable milk packaging in the Kenyan dairy industry. Descriptive data analysis involved summarizing and interpreting the collected data to reveal patterns, trends, and relationships among variables. Specifically, chi-square analysis and Spearman's rank coefficient were utilized to examine the association between different variables and consumer attitudes. Chi-square analysis was employed to assess the relationship between categorical variables, while Spearman's rank coefficient was used to evaluate the strength and direction of associations between ordinal variables (Saunders et al., 2016). These techniques allowed for a thorough exploration of the factors influencing consumer perceptions and preferences regarding sustainable milk packaging, contributing valuable insights to the dairy industry.

3.6 Research Quality

The research quality of the study was maintained through a systematic approach that included rigorous documentation, valid analysis methods, and clear communication of findings. Additionally, valid and reliable analysis techniques, such as descriptive statistics, and graphs were used to ensure the accuracy of the results. Research objectivity was preserved by adhering to ethical principles and employing standard methodologies. All data and results were collected and analyzed in a reliable and consistent manner. The collected data and results were verified against existing research. Additionally, detailed records were maintained throughout the study to ensure the accuracy and reliability of the results.

3.7 Ethical Considerations

The main ethical considerations for this study were protecting the privacy of participants, obtaining informed consent from them, and ensuring that the research design and method were free from bias (Paul & Bandyopadhyay, 2019). The study avoided any potential conflicts of interest, ensured that all participants were treated equally, and avoided any assumptions about the results and outcomes. The participants were adequately informed about the study before agreeing to take part, and their rights and autonomy were respected throughout the research process. Beyond initial informed consent, participants were encouraged to inquire about the research's progress and outcomes. This commitment to ongoing communication respected participants' rights and autonomy, fostering a collaborative and transparent research process that actively engaged those contributing to the study.

The study also ensured that it did not have a negative impact on the lives of the participants. It was also essential that the data collected was handled responsibly and securely. The study also followed an additional set of ethical guidelines throughout the research process. Firstly, ethical clearance was obtained from the Ethical Review Committee of Strathmore University. Additionally, a research license was obtained from the National Commission for Science Technology, and Innovation. The research data was used exclusively for academic purposes, with strict adherence to all institutional guidelines.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the findings arising from an investigation into consumer attitudes towards sustainable milk packaging in the Kenyan dairy industry. The focus here is on quantitative data analysis, utilizing JASP version 0.18.3, maintaining a rigorous and systematic approach to present findings systematically.

This chapter is organized into the following subsections: response rate, demographics information, characteristics of milk packaging, consumer demographics and willingness to pay factors that affect consumer attitudes towards sustainable milk packaging in the Kenyan dairy industry in Nairobi.

4.2 Response Rate

In this study, the pursuit of accurate results and comprehensive representation prompted adherence to a minimum sample size requirement of 400 consumers within the Kenyan dairy industry. The data collection process obtained responses from 461 consumers, surpassing the specified minimum. Post data cleaning and the removal of double counting, a total of 449 valid responses were secured. This outcome not only signifies a robust data collection effort but also aligns with the predefined minimum sample size. Of the 461 consumers approached, 449 provided valid responses as shown in Table 4. 1.

Table 4. 1: Response Rate

	Number of respondents	Percentage (%)
Responses	461	115%
Double counting, missing data	12	3%
Total	449	112%

Source: Survey Data

As noted by Orodho. (2009), a response rate exceeding 50% is considered sufficient for gathering data that can be generalized to represent respondents' opinions about the

study problem. With a response rate of 122%, this study demonstrates a robust level of data reliability and validity, reinforcing the representativeness of the findings within the Kenyan dairy industry context. Despite one section, North Nairobi, exhibiting a lower response rate of 63%, the overall response rate of 122% underscores the strong engagement and participation of respondents across the constituencies surveyed. "The study conducted a comprehensive analysis of consumer attitudes towards milk packaging across different areas in Nairobi, Kenya. The breakdown of respondents according to their usual milk purchasing locations is shown in Table 4. 2 below:

Table 4. 2: Milk purchasing location

Location	Number of Respondents required	Number of respondents received	Percentage (%)
East Nairobi	71	104	23%
North Nairobi	169	106	24%
South Nairobi	78	137	31%
West Nairobi	66	102	23%
Grand Total	384	449	100%

Source: Survey Data

These percentages indicate a relatively balanced distribution of respondents across the different regions of Nairobi. By conducting the research across various geographical areas, the study aimed to provide a comprehensive understanding of consumer preferences and behaviors within Nairobi's diverse urban landscape

4.3 Reliability of the Questionnaire

The evaluation of questionnaire reliability was conducted to ensure the consistency of measurement items. Reliability, as defined by Saunders et al., (2016), pertains to the degree of consistency in measurement or the extent to which an instrument produces similar results when used repeatedly under identical conditions with the same subjects. To gauge reliability, the researcher employed Cronbach's Alpha (α), a widely recognized measure of internal consistency, calculated using SPSS. A recommended cutoff value of 0.7 was utilized to ascertain reliability for this study.

The resulting reliability coefficient (α) ranges from 0 to 1, providing an overall assessment of measurement reliability. A coefficient of 0 suggests complete

independence among scale items, while a value of 1 indicates high covariance among items, implying that they likely measure the same underlying concept. In this study, the standardized Cronbach's alpha, computed based on standardized items, was found to be 0.910, indicating a high level of reliability in the model.

Table 4. 3:Reliability Statistics (Cronbach's Alpha)

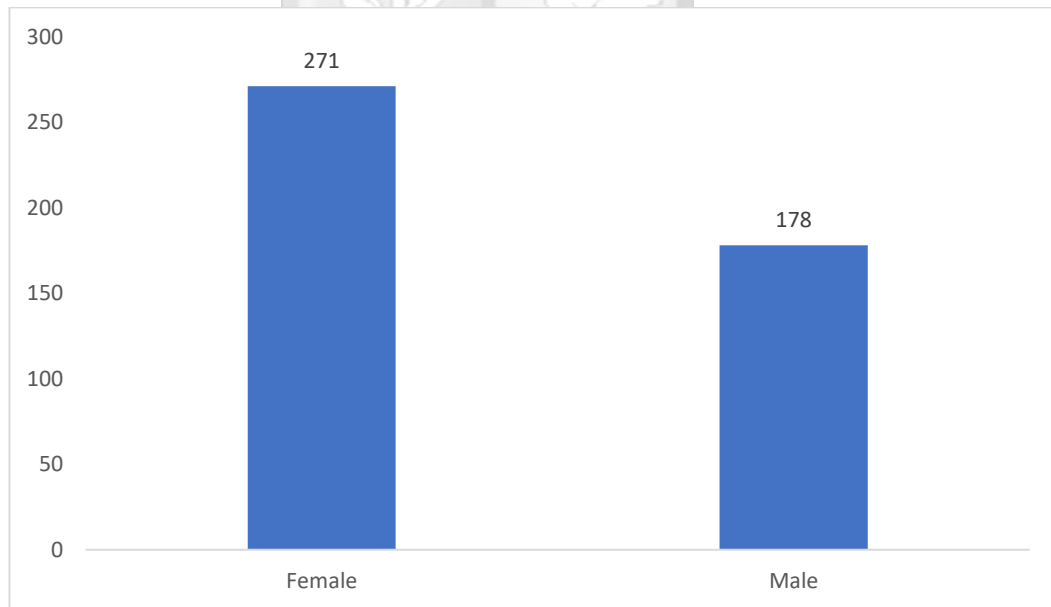
Cronbach's Alpha	No of Items
0.910	45

4.4 Demographic characteristics of respondents

4.3.1 Gender distribution of respondents

The study sought to ascertain the gender distribution among respondents. Analysis revealed that 60.36% of the participants identified as female, while 39.64% identified as male. These findings are based on a total of 449 respondents, with 271 females and 178 males participating in the study.

Figure 4. 1: Gender of the Respondents



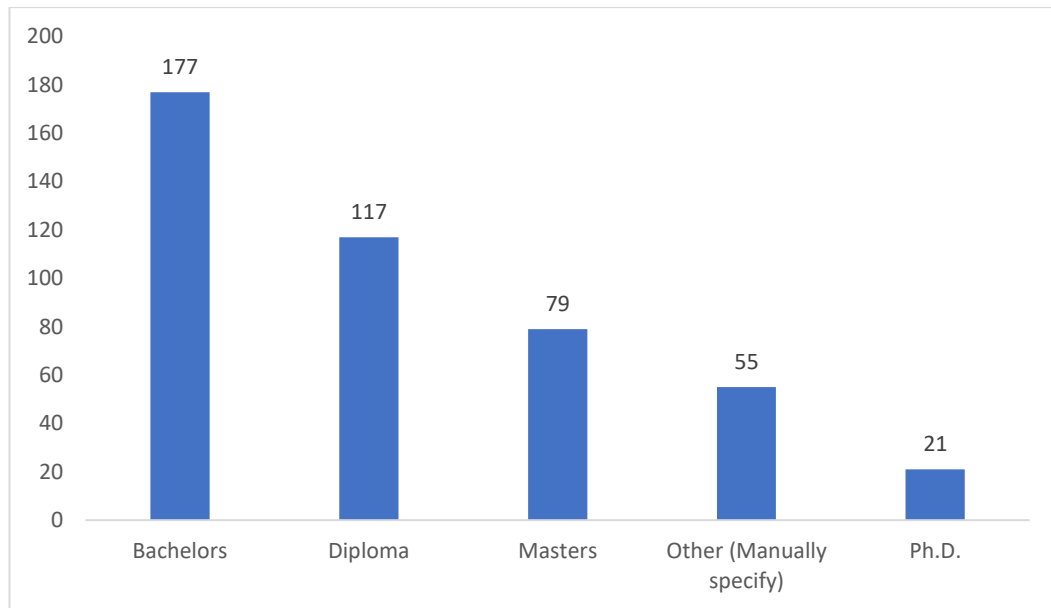
Source: Survey

4.3.2 Educational background

The study aimed to assess the educational backgrounds of the respondents, noting that a majority of managers held undergraduate degrees. Among female participants, 57.4% held bachelor's degrees, 32.4% held diplomas, 27.2% held master's degrees,

19.6% had other specified degrees (including KCSE and KCPE), and 8.9% held Ph.D. qualifications. Among male participants, 46.7% held bachelor's degrees, 29.6% had diplomas, 15.8% held master's degrees, 8.9% had other specified degrees (including KCSE and KCPE), and 3.6% held Ph.D. qualifications. These findings are based on a total of 449 respondents.

Figure 4. 2: Educational Qualification

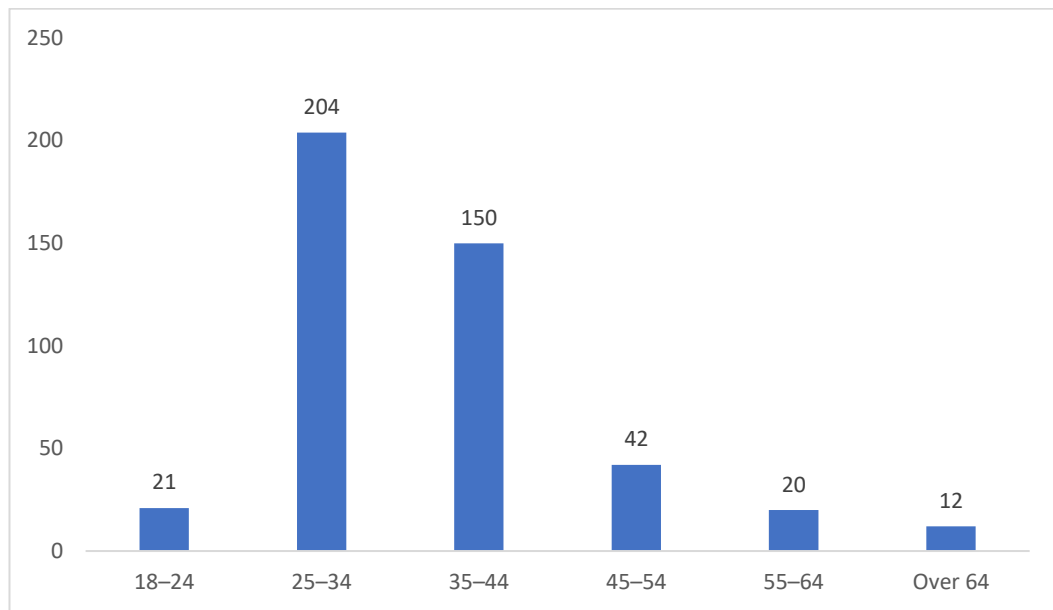


Source: Survey Data

4.3.3 Age distribution of respondents

The study aimed to assess the age distribution of the respondents. Among the participants, 4.7% were aged 18–24, 45.4% were aged 25–34, 33.4% were aged 35–44, 9.4% were aged 45–54, 4.5% were aged 55–64, and 2.7% were over the age of 64. These findings are based on a total of 449 respondents.

Figure 4. 3: Age



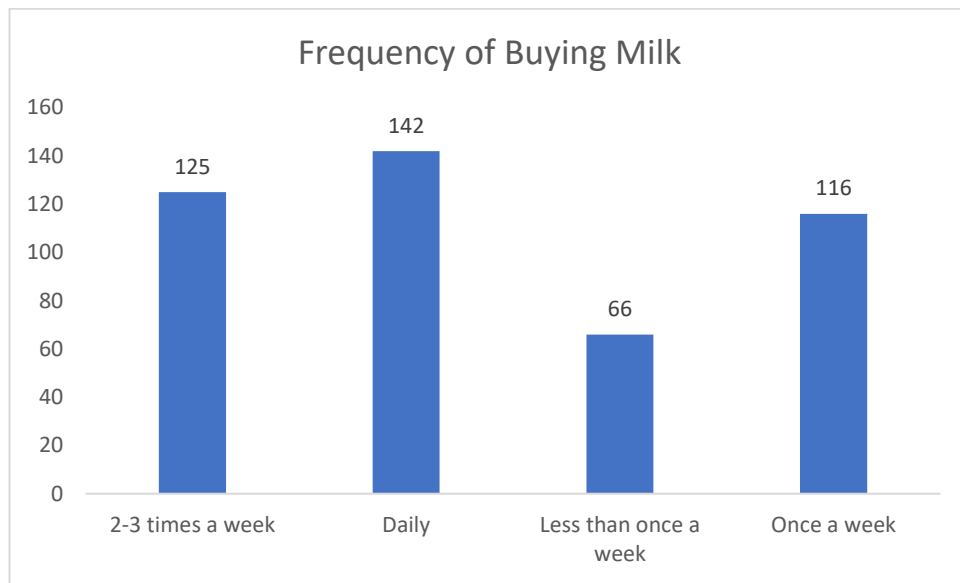
Source: Survey Data

4.5 Description of Results

4.5.1 Frequency of milk purchase

The frequency of milk purchase among respondents varied significantly, reflecting diverse consumption patterns. A substantial portion, roughly 32%, reported buying milk daily. Around a quarter purchased milk weekly (26% and 28% respectively for once a week and 2-3 times). However, a smaller but notable 15% bought milk less than once a week. This highlights the importance of understanding these diverse buying attitudes for the dairy industry to tailor their offerings and strategies effectively.

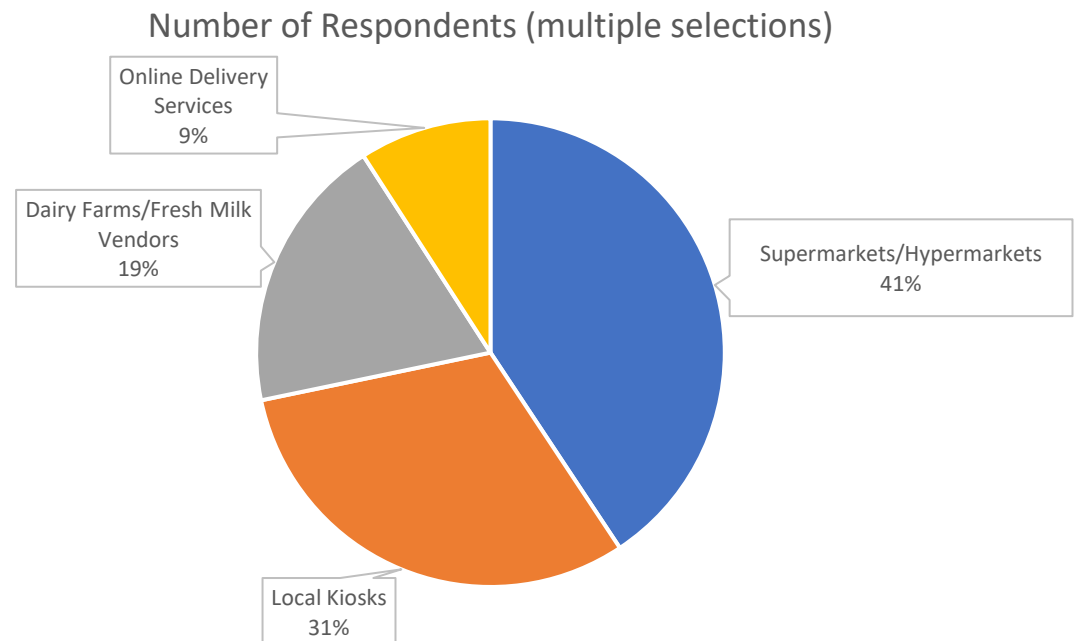
Figure 4. 4: Frequency of Buying Milk



4.5.2 Milk purchase options

The respondents were permitted to select multiple options for purchasing milk, leading to a comprehensive view of their shopping preferences. The data reveals a significant inclination towards purchasing milk from supermarkets/hypermarkets, with 321 respondents indicating these establishments as one of their preferred choices. Local kiosks also garnered considerable attention, with 245 individuals opting for this option. Additionally, a substantial number of respondents, 151 individuals, expressed a preference for sourcing milk directly from dairy farms or fresh milk vendors. Online delivery services emerged as another popular choice, with 72 respondents favoring this convenient method of acquiring milk. The diversity in preferred purchasing locations underscores the importance of offering multiple distribution channels to cater to the varied preferences and convenience of consumers in accessing milk products as shown in Figure 4. 5 .

Figure 4. 5: Preferred purchasing locations

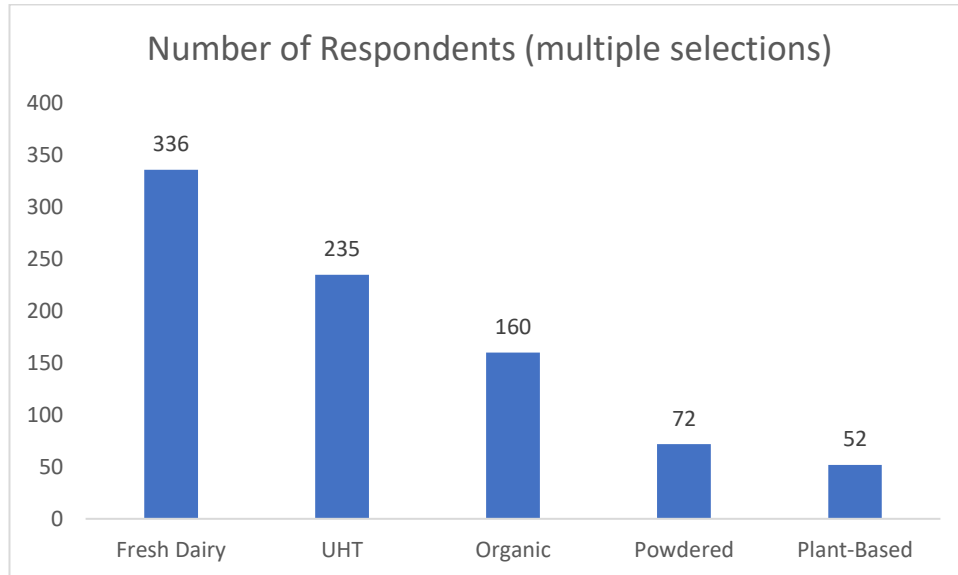


In addition to the prominent choices highlighted in the data, it's noteworthy that two respondents specified fewer common sources for purchasing milk. Specifically, two individuals mentioned acquiring milk from the Gatamaiyu Co-op Society, indicating a localized preference for cooperative societies as a source of dairy products. Additionally, another respondent mentioned obtaining milk from a rural area, reflecting a preference for more traditional or locally sourced options. These unique responses add nuance to the broader patterns observed in the data, suggesting a range of preferences and access points for milk procurement among the respondents.

The data underscores the diversity in milk preferences among the respondents, highlighting their ability to select multiple types of milk based on individual preferences and dietary considerations. Fresh dairy milk emerges as the most popular choice, with 336 respondents indicating a preference for this traditional option. Following closely behind is UHT milk, chosen by 235 respondents, showcasing the convenience and longer shelf life associated with this variety. Organic milk, selected by 160 respondents, reflects a growing trend towards health-conscious and environmentally sustainable choices. Meanwhile, powdered milk and plant-based alternatives, with 72 and 52 respondents respectively, represent niche preferences catering to specific dietary needs or lifestyle choices. This array of options underscores the importance of catering to diverse consumer preferences in the milk market, where

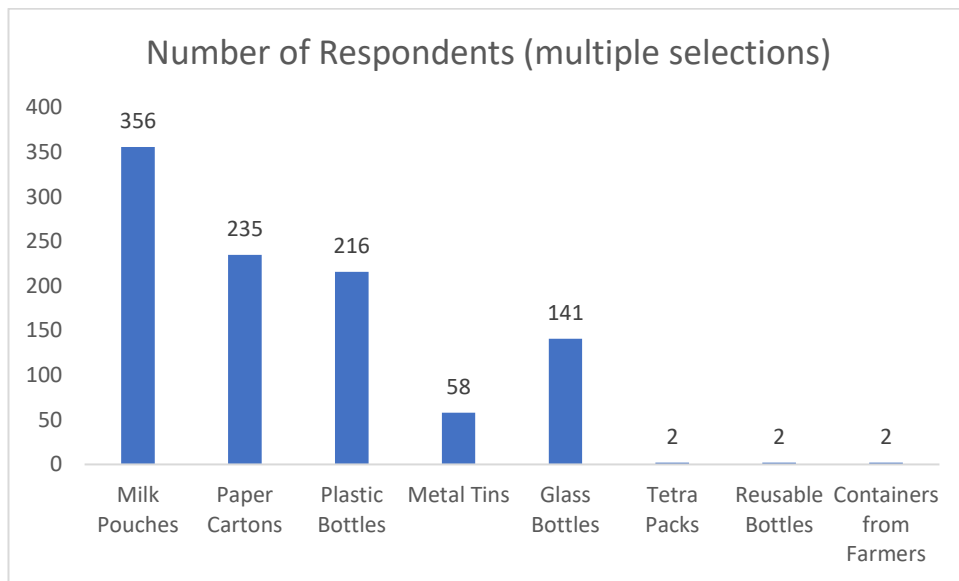
individuals seek products aligned with their health, taste, and ethical considerations as show in Figure 4. 6 .

Figure 4. 6: Type of Milk purchased



The data reveals that respondents exhibit a diverse range of preferences when it comes to the types of milk packaging that they purchase. With the option to select multiple packaging types, respondents demonstrate varied consumer behaviors and preferences. Milk pouches emerge as the most popular choice, with 356 respondents favoring this convenient and cost-effective packaging option as shown in Figure 4. 7. Paper cartons and plastic bottles also garner significant attention, with 235 and 216 respondents respectively opting for these packaging types. Metal tins and glass bottles, chosen by 58 and 141 respondents respectively, represent alternatives favored by those who prioritize durability or sustainability. Additionally, it's worth noting that two respondents each indicated the use of Tetra packs, reusable bottles, and containers from farmers, indicating a niche preference for alternative packaging solutions or direct sourcing from local producers. This diversity underscores the importance of offering a variety of packaging options to cater to the differing needs and preferences of consumers in the milk market.

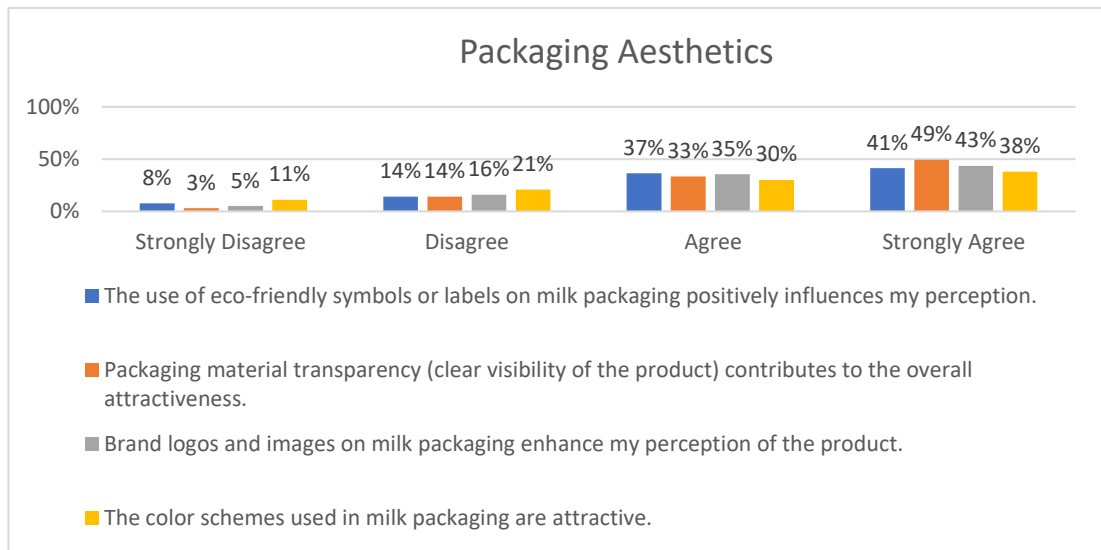
Figure 4. 7: Type of Milk packaging



4.6 Characteristics of the milk products packaging that influence consumer attitudes

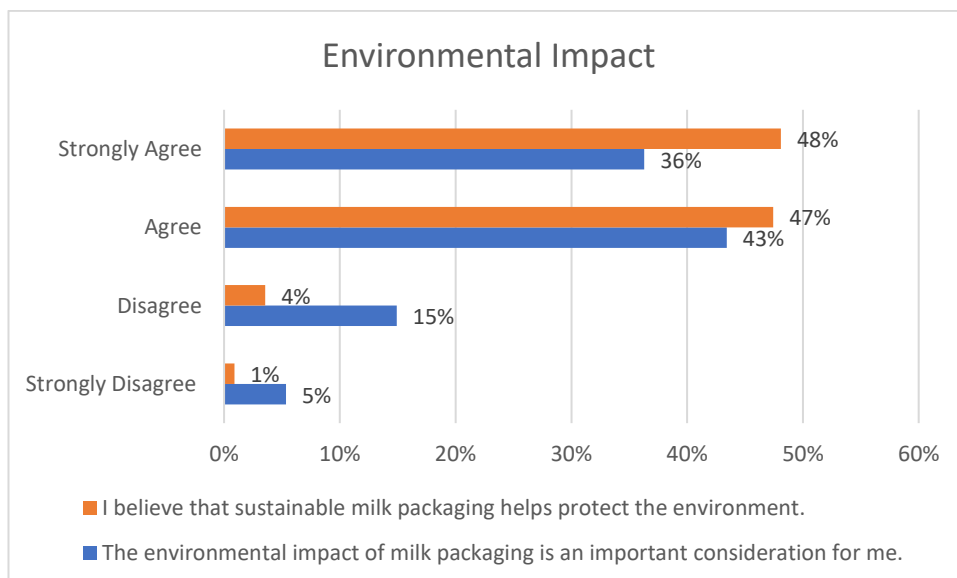
The results from the questionnaire on the characteristics of milk packaging reveal interesting insights across various dimensions. In the section focusing on packaging aesthetics, respondents demonstrated a positive response to eco-friendly symbols or labels, with 78% either agreeing or strongly agreeing that these elements positively influence their perception. Similarly, transparency in packaging material, brand logos, and attractive color schemes also garnered favorable responses, suggesting that visual appeal plays a crucial role in shaping consumers' perceptions of milk packaging as shown in Figure 4. 8.

Figure 4. 8: Survey results on characteristics of milk packaging (packaging aesthetics)



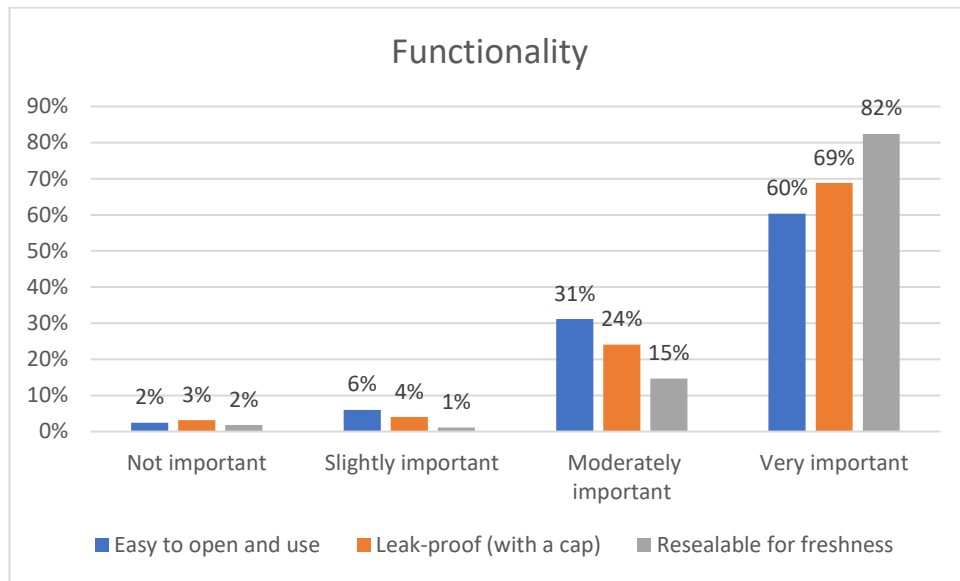
Moving to the environmental impact section, a significant majority of respondents (86%) expressed that the environmental impact of milk packaging is an important consideration for them. Additionally, an overwhelming 95% believe that sustainable milk packaging contributes to protecting the environment as shown in Figure 4. 9. These findings underscore a growing awareness and concern among consumers regarding the ecological footprint of the products they choose.

Figure 4. 9: Survey results on characteristics of milk packaging (Environmental Impact)



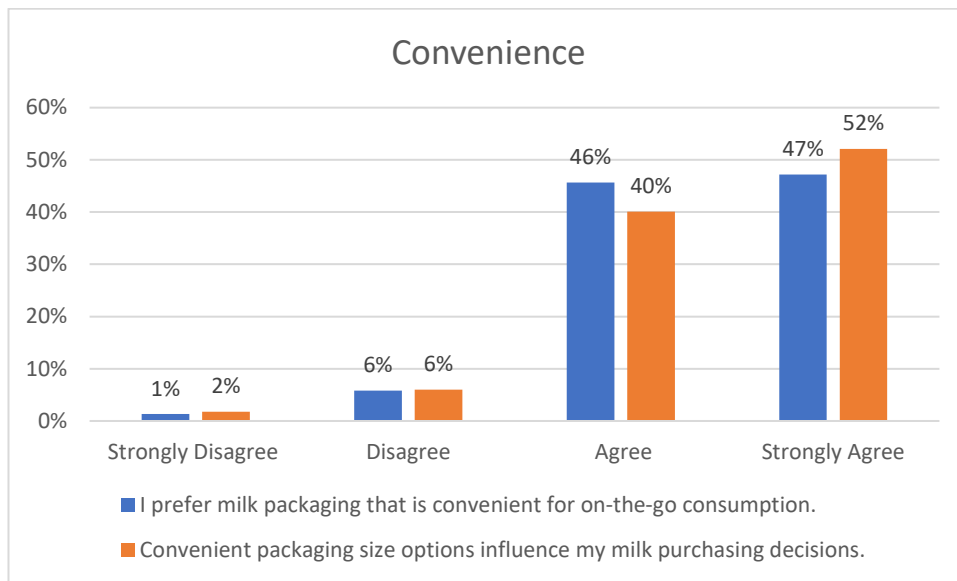
In terms of functionality, respondents emphasized the importance of practical features in milk packaging. A remarkable 91% indicated that easy-to-open and easy-to-use packaging is very important, while an even higher percentage (93%) expressed a preference for leak-proof packaging with a cap. Moreover, an overwhelming 97% considered resealability for freshness as a highly important feature, highlighting the significance of functionality in shaping consumer preferences as shown in Figure 4. 10.

Figure 4. 10: Survey results on characteristics of milk packaging (Functionality)



Lastly, in the convenience section, a substantial 93% of respondents agreed that they prefer milk packaging that is convenient for on-the-go consumption. Additionally, 92% acknowledged that convenient packaging size options influence their milk purchasing decisions as shown in Figure 4. 11.

Figure 4. 11: Survey results on characteristics of milk packaging (Convenience)



Spearman's correlation coefficient, computed at 0.579, signifies a moderate positive correlation between sustainability of milk packaging characteristics and consumer attitudes towards sustainable packaging in the dairy industry. The associated p-value, being less than 0.001, reinforces the statistical significance of this correlation, indicating that the observed relationship is highly unlikely to occur by chance alone as shown Table 4. 4.

Table 4. 4: Spearman's correlation between characteristics of milk packaging and consumer attitudes

Spearman's Correlations							
			n	Spearman's rho	p	Lower 95% CI	Upper 95% CI
Consumer attitudes	-	Characteristics of Milk packaging	449	0.579	< .001	0.514	0.638

The confidence interval, ranging from 0.514 to 0.638, provides a 95% certainty that the true population correlation coefficient falls within this interval. This reinforces the reliability of the Spearman's rho value, underscoring the strength and consistency of the correlation.

Interpreting these findings suggests that consumers who perceive milk packaging characteristics as more sustainable are also more likely to harbor positive attitudes towards sustainable packaging in the dairy industry. This underscores the potential impact of strategic packaging design and promotion, as emphasizing sustainable features can potentially shape consumer preferences and foster the adoption of eco-friendly packaging solutions within the dairy sector.

4.7 Investigating the relationship between consumer demographics and their preference for sustainable packaging options.

4.7.1 Age

The analysis of consumer attitudes, preferences, and behaviors towards milk consumption and sustainable packaging reveals distinct patterns across different age groups. For respondents aged 18-24, there is a notable emphasis on environmental concerns and the importance of sustainable packaging. A significant proportion of this age group expressed agreement with statements indicating a strong environmental consciousness and a preference for milk products with sustainable packaging as shown in Table 4. 5. In contrast, as age increases, there is a gradual decline in the prioritization of sustainability, with fewer respondents in the older age brackets exhibiting strong agreement with similar statements.

Table 4. 5: Influence of Age on several factors influencing consumer attitudes (1)

Age Group	Concern for Environmental Impact	Importance of Sustainability in Milk Choice	Actively Seek Sustainable Milk Packaging	Taste Importance	Freshness Importance	Price Importance	Look Importance	Packaging Sustainability Importance
18-24	High	Moderate	High	Very High	Very High	Moderate	Moderate	Moderate
25-34	Very High	Very High	High	Very High	Very High	Moderate	High	High
35-44	High	Moderate	Moderate	Very High	Very High	Low	Moderate	Moderate
45-54	Moderate	Low	Low	Moderate	Moderate	Low	Low	Low
Over 64	Low	Low	Low	Low	Low	Low	Moderate	Low

Consumer preferences also vary across age groups, with taste and freshness consistently ranking high in importance across all demographics. However, younger respondents appear to place more significance on packaging sustainability compared

to older age groups, indicating a potential generational shift towards environmentally friendly packaging options as shown in Table 4. 6.

Table 4. 6: Influence of Age on several factors influencing consumer attitudes (2)

Age Group	Environmentally Friendly Packaging	Sustainable Packaging Enhances Quality	Support Companies with Sustainable Packaging
18-24	High	High	High
25-34	High	High	High
35-44	High	Moderate	Moderate
45-54	Moderate	Low	Low
Over 64	Low	Low	Low

Regarding specific sustainable packaging types, the data highlights varying degrees of importance assigned by different age groups. Younger respondents demonstrate more knowledge towards environmentally friendly packaging materials such as recyclable, biodegradable, compostable, reusable, and packaging made from recycled materials. In contrast, older respondents show less knowledge in sustainable packaging types, suggesting potential generational differences in consumer behavior and priorities as shown in Table 4. 7.

Table 4. 7: Influence of Age on the knowledge of several sustainability packaging options

Age Group	Recyclable Packaging	Biodegradable Packaging	Compostable Packaging	Reusable Packaging	Packaging Made from Recycled Materials
18-24	High	Low	Low	Moderate	Moderate
25-34	Very High	Moderate	Low	Moderate	High
35-44	Moderate	Low	Low	Moderate	Moderate
45-54	Low	Low	Low	Low	Low
Over 64	Low	Low	Low	Low	Low

Further, a chi-square statistic was used to test the level and significance of the association between age and consumer attitudes towards sustainable packaging in the dairy industry. The chi-squared test did not reveal a statistically significant association ($\chi^2 = 195.9$, $df = 175$, $p = 0.133$) between age groups and consumer attitudes towards sustainable packaging. The common threshold for statistical significance is 0.05, and since the p-value here is above that level, the data doesn't provide strong evidence for a relationship between age and consumer attitudes.

Table 4. 8: Level and significance of the association between consumer attitudes and age

Chi-Squared Tests			
	Value	df	p
X ²	195.947	175	0.133
N	449		

Source: JASP analysis software

Overall, the data underscores the importance of considering age demographics when developing strategies to promote sustainable practices within the milk industry. Tailored approaches are needed to effectively engage diverse consumer segments and address their unique attitudes, preferences, and behaviors towards milk consumption and sustainable packaging.

4.7.2 **Income**

Analyzing survey data reveals a complex interplay between income and consumer attitudes towards sustainable packaging in the dairy industry. While affordability plays a significant role for lower-income earners (under Ksh 20,000), a noteworthy trend emerges. Over half (52%) actively seek out products with sustainable packaging, indicating a clear interest in environmentally friendly options. However, their overall endorsement for such packaging is lower (39% agree it should be used), suggesting other factors, like affordability, may hold greater weight in purchasing decisions.

As income levels rise, particularly in the Ksh 100,001 to Ksh 150,000 range, a stronger preference for sustainable packaging is evident. Over half (54%) of respondents agree on using environmentally friendly packaging, and the importance placed on sustainability also peaks, with 51% considering it very important. This suggests a heightened sensitivity to environmental concerns with increased disposable income.

Interestingly, the data unveils a more nuanced picture among high earners (above Ksh 200,000). While taste and freshness remain paramount, a significant portion (50%) still values and supports companies using sustainable packaging (66%). This suggests an intertwining of environmental consciousness with other priorities, even among higher income brackets, indicating that sustainability remains a relevant factor in purchasing decisions for many consumers.

Table 4. 9: Level and significance of the association between consumer attitudes and Income

Chi-Squared Tests			
	Value	df	p
X ²	286.691	175	< .001
N	449		

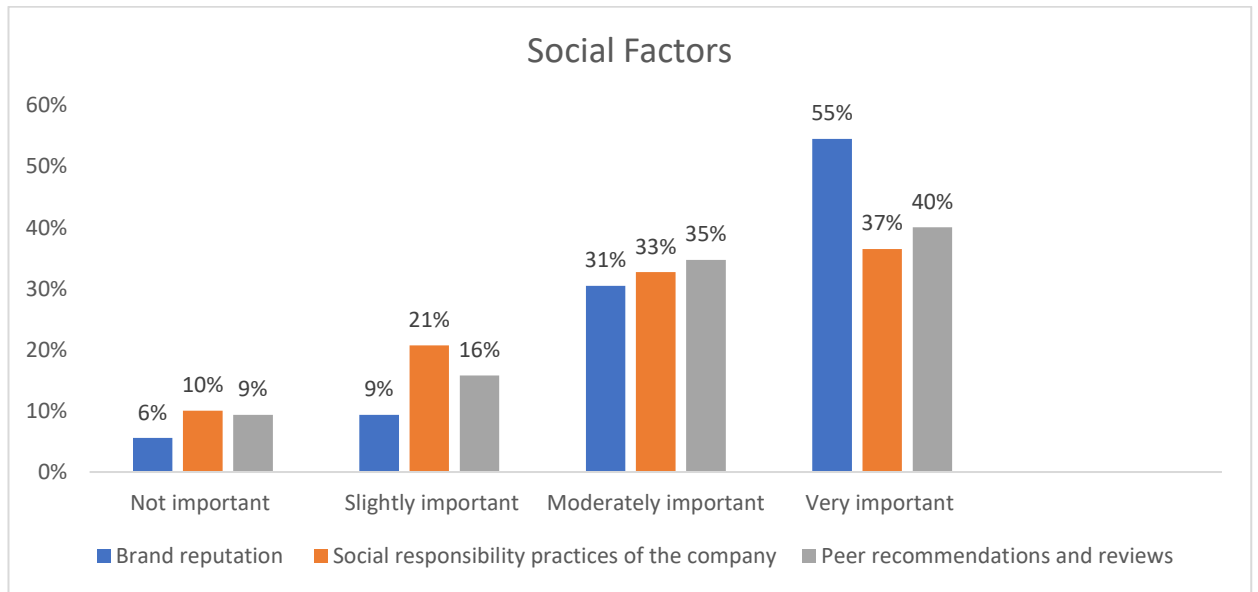
The chi-square test statistic, shown in Table 4. 9, of 286.69 with a p-value less than 0.001 suggests a statistically significant relationship between income and consumer attitudes towards sustainable packaging in the dairy industry.

Overall, the study reveals that income affects consumer attitudes towards sustainable packaging the Kenya dairy industry. While affordability plays a crucial role for lower-income earners, higher income groups demonstrate a stronger preference for sustainable packaging choices. This highlights the evolving consumer landscape and the increasing importance of sustainability across various income levels.

4.7.3 Social factors

The examination of responses from the surveys in regards to the investigation on social factors affects consumer attitudes toward sustainable packaging in the milk industry. A pivotal consideration is the impact of brand reputation, with 86% of respondents rating it as moderately to very important in their purchasing decisions related to milk products. This indicates a significant reliance on consumer perceptions and experiences when evaluating brands, emphasizing the crucial role of reputation in influencing purchasing behaviors. Positive associations with sustainable practices and ethical conduct can bolster consumer trust and loyalty, positioning brands favorably in the competitive market.

Figure 4. 12: Social factors survey responses



Similarly, the perceived social responsibility practices of companies emerge as a key determinant, with 70% of respondents attributing moderate to very high importance to this factor. Consumers increasingly expect businesses to demonstrate commitment to environmental sustainability and social causes. Brands that prioritize eco-friendly initiatives and transparent practices stand to resonate more with socially conscious consumers, potentially driving brand preference and market share.

Moreover, peer recommendations and reviews hold substantial sway over consumer attitudes, with 75% of respondents considering them moderately to very important. This underscores the influence of social networks and online communities in shaping consumer perceptions and purchase decisions. Positive feedback regarding a brand's sustainability efforts can amplify its credibility and appeal, fostering a sense of trust and authenticity among consumers.

Spearman's correlation coefficient, computed at 0.445, signifies a moderate positive correlation between selected social factors and consumer attitudes towards sustainable packaging in the dairy industry. The associated p-value, being less than 0.001, reinforces the statistical significance of this correlation, indicating that the observed relationship is highly unlikely to occur by chance alone as shown in Table 4. 10.

Table 4. 10: Spearman's correlation between social factors and consumer attitudes

Spearman's Correlations							
			n	Spearman's rho	p	Lower 95% CI	Upper 95% CI
Consumer attitudes	-	Social factors	449	0.445	< .001	0.368	0.516

In conclusion, social factors play a pivotal role in shaping consumer attitudes toward sustainable packaging in the milk industry. Brands that prioritize reputation management, demonstrate genuine social responsibility, and leverage the power of peer endorsements stand to gain a competitive advantage in meeting the evolving preferences of environmentally conscious consumers.

4.8 Assessing the willingness of consumers to pay more for sustainable packaging options in the dairy milk industry

A significant portion (70%) of respondents were open to paying more for innovative packaging, showcasing a potential market for sustainable advancements. This aligns with the finding that 85% believed innovative packaging enhances the overall experience, highlighting a link between innovation and consumer preference as shown in Figure 4. 13. While 73% expressed willingness to pay a premium for sustainable packaging, a significant portion (58%) acknowledged price as a major factor in their purchasing decisions as shown in Figure 4. 14. This suggests that although consumers value sustainability, affordability remains crucial.

Figure 4. 13: Survey results on willingness to pay (Innovation)

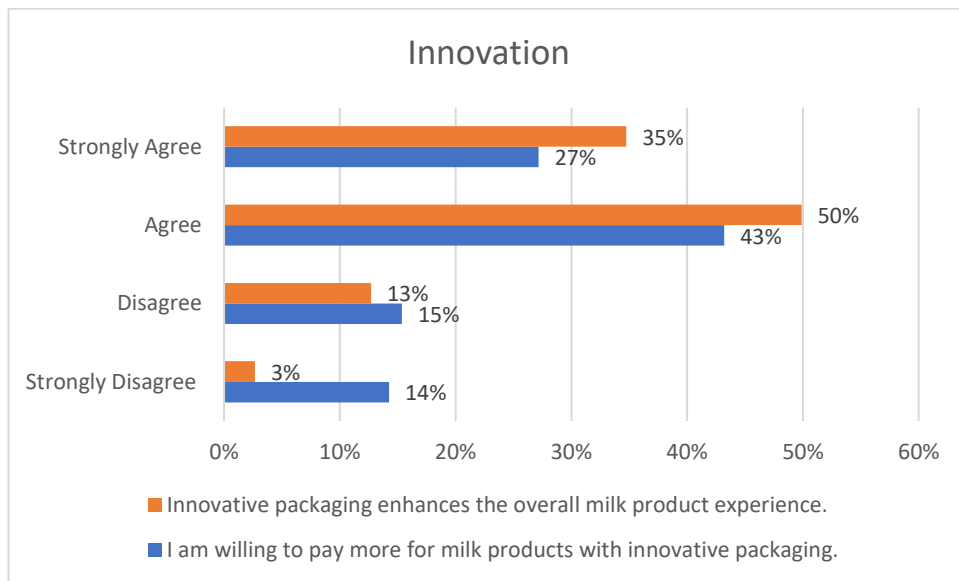
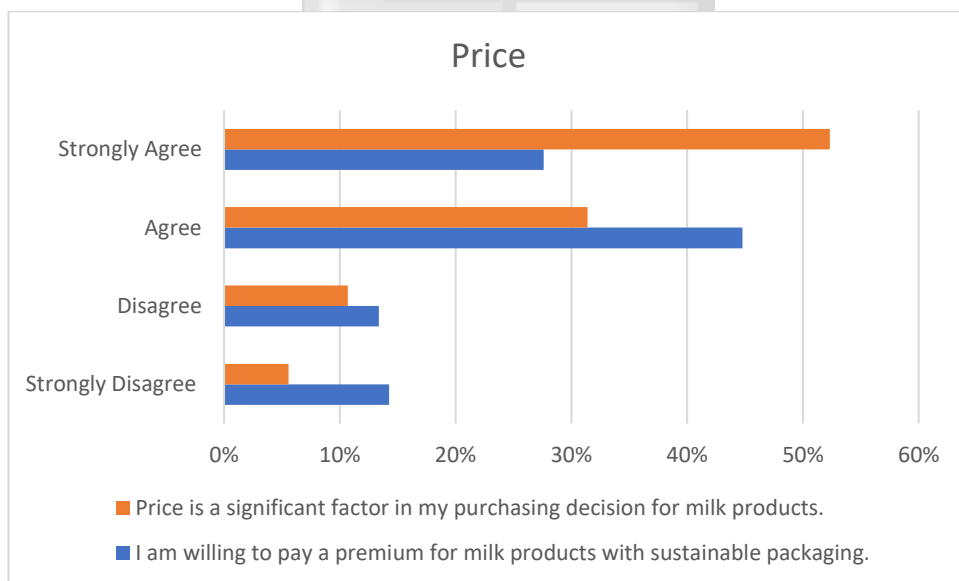


Figure 4. 14: Survey results on willingness to pay (Price)



Reduced environmental impact was highly valued, with 85% considering it very important. Additionally, 98% found improved product safety and freshness crucial, and 91% emphasized the importance of enhanced convenience and usability as shown in Figure 4. 15. This underscores the need for sustainable packaging to maintain these essential qualities. While respondents exhibited moderate knowledge of various sustainable options (over 70% recognizing features like recyclability and reusability), 96% believed more information would positively influence their choices as shown in Figure 4. 16.

Figure 4. 15: Survey results on willingness to pay (Benefits)

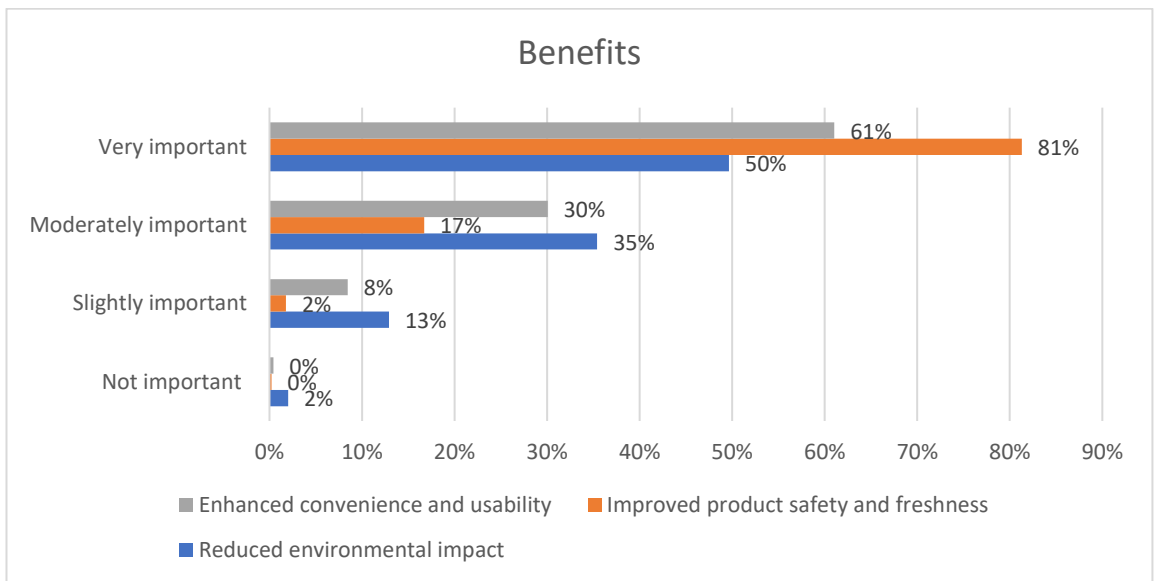
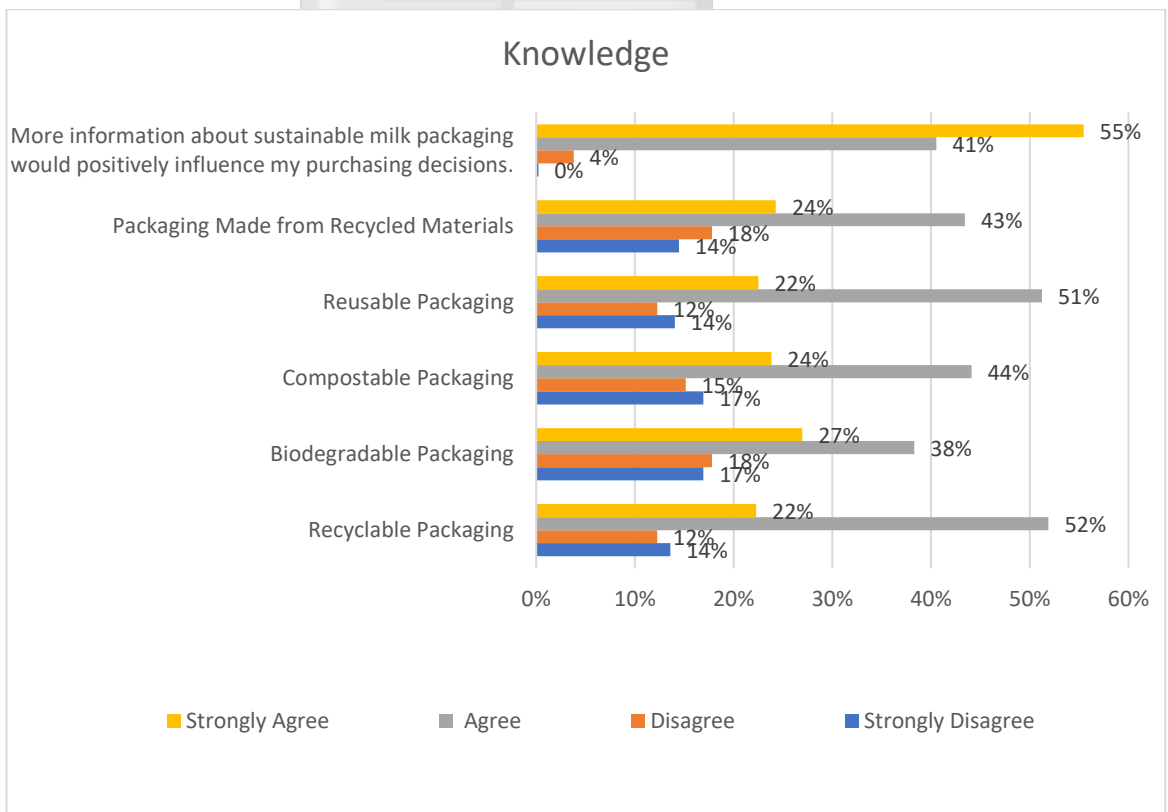


Figure 4. 16: Survey results on willingness to pay (Knowledge)



Spearman's correlation coefficient, computed at 0.808, signifies a very strong positive correlation between willingness to pay and consumer attitudes towards sustainable packaging in the dairy industry. The associated p-value, being less than 0.001,

reinforces the statistical significance of this correlation, indicating that the observed relationship is highly unlikely to occur by chance alone as shown in Table 4. 10.

Table 4. 11: Spearman's correlation between willingness to pay and consumer attitudes

Spearman's Correlations							
			n	Spearman's rho	p	Lower 95% CI	Upper 95% CI
Consumer attitudes	-	Willingness to Pay	449	0.808	< .001	0.774	0.838

Overall, the research reveals a promising trend towards sustainable milk packaging. However, it emphasizes the need for innovative and cost-effective solutions that prioritize essential product features while bridging the knowledge gap through consumer education to empower sustainable choices.



CHAPTER FIVE: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter delves into the key findings of the research on consumer attitudes towards sustainable packaging in the milk industry. It provides a comprehensive discussion of the results, highlighting the complex factors influencing consumer preferences. The chapter then presents concise conclusions summarizing the most significant insights gleaned from the study. Finally, based on these established findings and their broader implications, practical recommendations are offered to the dairy industry, equipping them with actionable strategies to navigate the evolving landscape of consumer preferences and contribute to a more sustainable future for milk packaging.

5.2 Characteristics of Milk Packaging

The first objective of this study was to examine the characteristics of milk product packaging that influence consumer attitudes. The research question driving this objective was: "What are the characteristics of the milk products packaging that influence consumer attitudes?" Drawing on insights from the literature review and the results obtained from the questionnaires, the study explored key aspects that shape consumer perceptions and preferences regarding milk packaging.

Both the literature review and the survey revealed a growing focus on sustainability in milk packaging. The review highlighted studies by Boz et al. (2020) and Halton et al. (2022) which emphasized consumer preference for recyclable, biodegradable materials and packaging with a minimized carbon footprint. The survey results mirrored this, with a significant majority (86%) of respondents indicating environmental impact as a key consideration, and 95% believing sustainable packaging benefits the environment.

Both sources emphasized the importance of functionality as well. The review mentioned Boz et al. (2020) underlining the need for features like protection, freshness, and ease of use. The survey results supported this, with a vast majority valuing easy-to-open (91%), leak-proof (93%), and resealable packaging (97%) for maintaining freshness.

The literature review discussed the role of packaging aesthetics in influencing consumer perception, citing Chirilli et al. (2022)'s research on design and branding. The survey results aligned with this, demonstrating a positive response to eco-friendly symbols (78%), transparency (favourable response), attractive colours (favourable response), and brand logos (presumably familiar and trusted).

While the literature review offered a broader perspective on consumer considerations, the survey results provided a more specific breakdown of consumer preferences within each category (aesthetics, environment, functionality, convenience).

The survey employed Spearman's correlation coefficient, revealing a moderate positive correlation (0.579) between sustainable packaging characteristics and consumer attitudes towards sustainable packaging, with a statistically significant p-value (less than 0.001). This signifies a strong, non-random connection between these factors. The confidence interval (0.514 to 0.638) reinforces the reliability of the correlation.

In conclusion, the discussion demonstrates a strong alignment between the literature review and the survey findings. Both sources highlight the importance of sustainability, functionality, and aesthetics in milk packaging, with consumers increasingly prioritizing eco-friendly features. The statistically significant correlation from the survey further emphasizes the link between sustainable packaging characteristics and consumer attitudes. This underscores the potential for the dairy industry to leverage strategic packaging design to promote sustainable practices and influence consumer behaviour.

5.3 Consumer Demographics

The second objective of this study was to investigate the relationship between consumer demographics (age, income, gender, etc.) and their preference for sustainable packaging options. The research question driving this objective was: "What is the relationship between consumer demographics (age, income, gender, etc.) and their preferences for sustainable milk packaging?" Drawing on insights from the literature review and the results obtained from the questionnaires, the study explored key aspects that shape consumer perceptions and preferences regarding milk packaging.

Both our research and the literature (Chirilli et al., 2022; Pattanaik et al., 2017) highlight the influence of age on consumer behavior. Our findings align with the studies, revealing a stronger emphasis on environmental concerns and sustainable packaging among younger consumers (18-24), compared to older age groups. This suggests a potential generational shift towards prioritizing sustainability when making purchasing decisions. The chi-square test for age groups did not reveal a statistically significant association between age and consumer attitudes towards sustainable packaging in the dairy industry ($\chi^2 = 195.9$, $df = 175$, $p = 0.133$). While there are clear differences in preferences across age groups, the lack of statistical significance suggests that other factors may also contribute to consumer attitudes.

The interplay between income and environmental awareness observed in our study aligns with existing research (Orzan et al., 2018). While lower-income earners (under Ksh 20,000) demonstrate an interest in sustainable packaging, their affordability concerns might weigh more heavily in purchase decisions. As income levels rise, a stronger preference for sustainable packaging emerges, suggesting a heightened sensitivity to environmental concerns with increased disposable income. However, our study also reveals a nuanced picture among high earners, where sustainability remains relevant even though other priorities like taste and freshness hold greater importance. The chi-square test for income levels showed a statistically significant relationship between income and consumer attitudes towards sustainable packaging ($\chi^2 = 286.69$, $df = 175$, $p < .001$). This indicates that income plays a significant role in influencing consumer preferences for sustainable packaging in the dairy industry.

Similar to Chirilli et al. (2022), our study underscores the importance of social factors like brand reputation, perceived social responsibility, and peer recommendations in shaping consumer attitudes. A significant portion of respondents in our study placed high importance on brand reputation (86%) and perceived social responsibility practices (70%), highlighting the influence of these factors on purchasing decisions. Additionally, 75% of respondents considered peer recommendations and reviews important, emphasizing the power of social networks in shaping consumer perceptions. The Spearman's correlation analysis revealed a moderate positive correlation ($\rho = 0.445$) between selected social factors and consumer attitudes towards sustainable packaging.

Overall, consumer demographics, including age, income, and social factors, significantly influence attitudes and preferences towards sustainable packaging in the dairy industry. While age differences may not be statistically significant, income levels and social factors play crucial roles in shaping consumer behavior. This information is valuable for businesses seeking to tailor their packaging offerings to meet the unique needs of different consumer segments, ultimately fostering the adoption of sustainable packaging solutions within the dairy sector.

5.4 Willingness to Pay

This study embarked on a multifaceted investigation aimed at understanding consumer attitudes towards sustainable packaging options in the milk industry. Among the research objectives was the assessment of consumers' willingness to pay more for sustainable milk packaging options. This objective was articulated through the research question: "To what extent are consumers willing to pay more for sustainable milk packaging?"

The results of our study largely align with the findings from the literature, indicating a consistent trend towards consumer willingness to pay more for sustainable milk packaging options. This alignment is particularly evident in the percentage of respondents expressing openness to paying more for innovative packaging, with 70% of participants in our study showcasing a potential market for sustainable advancements. This finding resonates with Merlino et al. (2020), who observed a notable willingness among consumers to pay a premium for milk with innovative packaging, emphasizing the positive impact of packaging innovation on consumer perception and willingness to pay. Additionally, our study found that 73% of respondents expressed willingness to pay a premium for sustainable packaging, echoing the findings of Orzan et al. (2018) in the Romanian context, where consumers were willing to pay more for sustainable packaging options, provided the premium did not exceed 10% of the product's price.

The survey results showcase a fascinating interplay between willingness to pay and other consumer priorities. While 73% expressed a willingness to pay a premium for sustainable packaging, reduced environmental impact (85%), improved product safety and freshness (98%), and enhanced convenience (91%) were all identified as highly

important factors. This suggests that consumers value sustainable packaging, but only if it maintains essential functionalities.

The literature review by Vrabič Brodnjak & Jestratijević (2022) identified a lack of awareness as a barrier to sustainable packaging adoption. The survey results echo this concern, with 96% of respondents believing more information would positively influence their choices regarding sustainable packaging options (Figure 4.16). This highlights the importance of consumer education initiatives by dairy companies and industry stakeholders. By raising awareness about the benefits and functionalities of sustainable packaging, consumers can be empowered to make informed and sustainable purchasing decisions.

The statistically significant Spearman's correlation coefficient (0.808) indicates a very strong positive relationship between consumer attitudes towards sustainable packaging and their willingness to pay a premium. This reinforces the survey's finding that a significant portion of consumers value sustainability and are willing to pay more for it, albeit within a price-sensitive framework.

Overall, the research reveals a promising trend towards consumer acceptance of sustainable packaging in the dairy industry. However, achieving widespread adoption requires a collaborative effort. Dairy companies must develop innovative and cost-effective sustainable packaging solutions that prioritize essential product features. Additionally, consumer education initiatives are crucial to bridge the knowledge gap and empower informed decision-making. By working together, the dairy industry and consumers can create a more sustainable future for milk packaging.

5.5 Conclusion

This dissertation investigated consumer attitudes towards sustainable packaging in the Kenyan dairy industry. The research explored characteristics of milk packaging influencing consumer perception, the relationship between consumer demographics and preferences for sustainable packaging, and consumer willingness to pay for such options. Through an analysis of both the literature review and survey results, valuable insights were gleaned, shedding light on the above.

The characteristics of milk packaging emerged as a critical determinant of consumer preferences, with sustainability, functionality, aesthetics, and convenience playing pivotal roles. Both the literature review and survey results highlighted a growing

emphasis on sustainability, with consumers increasingly prioritizing eco-friendly features such as recyclability and reduced environmental impact. Statistical analyses, including Spearman's correlation coefficient, underscored the significance of these findings, revealing a strong and significant correlation between sustainable packaging characteristics and consumer attitudes.

Consumer demographics, including age, income, and social factors, were identified as influential factors shaping preferences towards sustainable packaging. While age differences may not be statistically significant, income levels and social factors play crucial roles in shaping consumer behaviour. The findings emphasize the importance of tailoring packaging offerings to meet the unique needs of different consumer segments, ultimately fostering the adoption of sustainable packaging solutions within the dairy sector.

Furthermore, the research explored consumers' willingness to pay for sustainable packaging options, revealing a promising trend towards acceptance. While consumers value sustainability, they also prioritize essential functionalities such as product safety, freshness, and convenience. Education initiatives emerged as a key strategy to bridge the knowledge gap and empower consumers to make informed and sustainable purchasing decisions.

In conclusion, this dissertation provides valuable insights and practical recommendations for the dairy industry to navigate the evolving landscape of consumer preferences and contribute to a more sustainable future for milk packaging. By embracing innovative packaging solutions, understanding consumer demographics, and fostering consumer awareness, the dairy industry can play a pivotal role in driving positive environmental change while meeting the diverse needs of consumers.

5.6 Recommendations

5.6.1 Characteristics of milk packaging influencing consumer attitudes

To address the characteristics of milk packaging influencing consumer attitudes, the dairy industry should invest in research and development focused on enhancing the functionality and convenience of sustainable packaging solutions. This includes prioritizing features valued by consumers, such as leak-proof designs and user-friendly opening mechanisms. Exploring innovative materials that balance functionality,

sustainability, and affordability is crucial. Additionally, conducting user testing and incorporating consumer feedback into packaging design iterations can ensure the solutions truly meet consumer needs.

5.6.2 Investigating the relationship between consumer demographics and preferences for sustainable packaging

Developing targeted marketing and communication strategies is essential to resonate with diverse consumer segments within the context of sustainable packaging preferences. This can be achieved by tailoring messaging and visuals to address specific age groups and income levels. Leveraging social media platforms and influencer marketing can reach younger consumers who prioritize sustainability. Partnering with environmental organizations can amplify the sustainability message and build trust with consumers, while highlighting the brand's commitment to social responsibility and ethical sourcing practices can further resonate with specific segments.

5.6.3 Assessing consumer willingness to pay for sustainable milk packaging

Strategies addressing price concerns and incentivizing consumers to choose sustainable options are crucial to overcome the barrier of willingness to pay. Exploring cost-effective solutions that minimize the price premium associated with sustainable packaging is essential. Additionally, offering price incentives or loyalty programs to reward consumers who choose sustainable packaging can further encourage adoption. Collaborating with retailers to implement deposit-return schemes for used packaging can potentially offset costs for consumers, making sustainable options more attractive.

5.6.4 Suggestions for further research

This dissertation has provided valuable insights into consumer attitudes towards sustainable packaging in the milk industry. However, there are opportunities to further explore this evolving landscape through additional research.

Future studies could delve deeper into the environmental impact of various sustainable packaging materials. A Life Cycle Assessment (LCA) would allow for a comprehensive comparison, analyzing the environmental footprint throughout the entire lifecycle, from production and transportation to disposal and recycling. This data would empower consumers to make informed choices about the most environmentally

friendly options and guide dairy companies in selecting sustainable materials for milk packaging.

With the growing interest in circular economies, exploring consumer receptiveness towards reusable packaging systems for milk presents an exciting opportunity. Research could investigate factors influencing consumer adoption, such as deposit schemes, hygiene concerns, and preferred designs for reusable containers. Understanding these factors would be crucial for the development and implementation of successful reusable packaging systems in the dairy industry.

Social media plays a significant role in shaping consumer preferences. Future research could examine how social media campaigns and influencer endorsements influence consumer attitudes towards sustainable milk packaging. This research could explore the effectiveness of various messaging strategies and identify potential partnerships with influencers to promote sustainable practices within the dairy industry.

Government policies and regulations can significantly influence the adoption of sustainable packaging. Future research could explore how these policies impact the dairy industry's approach to packaging and consumer behavior regarding sustainable options. Understanding the impact of these policies would be valuable for stakeholders in the dairy industry as they navigate the evolving landscape of sustainable packaging.



REFERENCES

- Ajzen, I. (2012). The Theory of Planned Behavior. In P. Van Lange, A. Kruglanski, & E. Higgins, *Handbook of Theories of Social Psychology: Volume 1* (pp. 438–459). SAGE Publications Ltd.
<https://doi.org/10.4135/9781446249215.n22>
- Armitage, C. J., & Conner, M. (2001). *Efficacy of the Theory of Planned Behaviour: A meta-analytic review*. <https://doi.org/10.1348/014466601164939>
- Asim, Z., Shamsi, I. R. A., Wahaj, M., Raza, A., Abul Hasan, S., Siddiqui, S. A., Aladresi, A., Sorooshian, S., & Seng Teck, T. (2022). Significance of Sustainable Packaging: A Case-Study from a Supply Chain Perspective. *Applied System Innovation*, 5(6), 117. <https://doi.org/10.3390/asi5060117>
- Borgardt, E. (2020). Means-End Chain theory: A critical review of literature. *Prace Naukowe Uniwersytetu Ekonomicznego We Wrocławiu*, 64(3), 141–160.
<https://doi.org/10.15611/pn.2020.3.12>
- Boz, Z., Korhonen, V., & Koelsch Sand, C. (2020). Consumer Considerations for the Implementation of Sustainable Packaging: A Review. *Sustainability*, 12(6), 2192. <https://doi.org/10.3390/su12062192>
- Burek, J., Kim, D., Nutter, D., Selke, S., Auras, R., Cashman, S., Sauer, B., & Thoma, G. (2018). Environmental Sustainability of Fluid Milk Delivery Systems in the United States: Sustainability of Milk Delivery Systems in the U.S. *Journal of Industrial Ecology*, 22(1), 180–195.
<https://doi.org/10.1111/jiec.12531>
- Chirilli, C., Molino, M., & Torri, L. (2022). Consumers' Awareness, Behavior and Expectations for Food Packaging Environmental Sustainability: Influence of Socio-Demographic Characteristics. *Foods*, 11(16), 2388.
<https://doi.org/10.3390/foods11162388>

D'Alessandro, S. P., Caballero, J., Lichte, J., & Simpkin, S. (2015).

AGRICULTURAL SECTOR RISK ASSESSMENT.

De Canio, F. (2023). Consumer willingness to pay more for pro-environmental packages: The moderating role of familiarity. *Journal of Environmental Management*, 339, 117828. <https://doi.org/10.1016/j.jenvman.2023.117828>

FAO (Ed.). (2019). *Moving forward on food loss and waste reduction*. Food and Agriculture Organization of the United Nations.

Gade, K., & Thomas, S. (2015). *Www.fintrac.com info@fintrac.com*.

Gao, S., & Shao, B. (2022). Why Do Consumers Switch to Biodegradable Plastic Consumption? The Effect of Push, Pull and Mooring on the Plastic Consumption Intention of Young Consumers. *Sustainability*, 14(23), 15819. <https://doi.org/10.3390/su142315819>

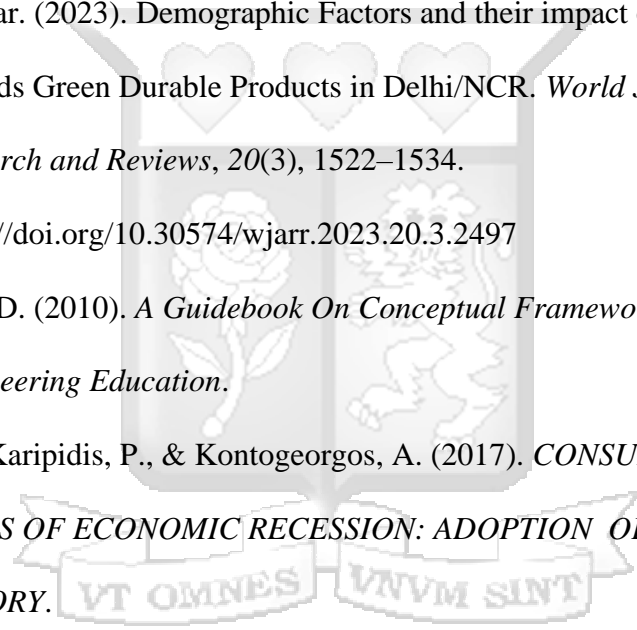
Halton, C., Duane, B., Batey, A. C., Wong, J., Corley, A., Hart, F., Koh, J., & Johnston, B. (2022). How much do consumers consider sustainability when purchasing a toothbrush? A discrete choice experiment. *British Dental Journal*, 233(4), 327–332. <https://doi.org/10.1038/s41415-022-4914-2>

Koech, L. C., Irungu, B. N., Ng'ang'a, M. M., Ondicho, J. M., & Keter, L. K. (2020). Quality and Brands of Amoxicillin Formulations in Nairobi, Kenya. *BioMed Research International*, 2020, 1–14. <https://doi.org/10.1155/2020/7091278>

Kumar, R., Verma, A., Shome, A., Sinha, R., Sinha, S., Jha, P. K., Kumar, R., Kumar, P., Shubham, Das, S., Sharma, P., & Vara Prasad, P. V. (2021). Impacts of Plastic Pollution on Ecosystem Services, Sustainable Development Goals, and Need to Focus on Circular Economy and Policy Interventions. *Sustainability*, 13(17), 9963. <https://doi.org/10.3390/su13179963>

- Leitner, M., Wolkerstorfer, P., Sefelin, R., & Tscheligi, M. (2008). Mobile multimedia: Identifying user values using the means-end theory. *Proceedings of the 10th International Conference on Human Computer Interaction with Mobile Devices and Services*, 167–175.
<https://doi.org/10.1145/1409240.1409259>
- Lukman, R. K., Glavič, P., Carpenter, A., & Virtič, P. (2016). Sustainable consumption and production – Research, experience, and development – The Europe we want. *Journal of Cleaner Production*, 138, 139–147.
<https://doi.org/10.1016/j.jclepro.2016.08.049>
- Martine, D. B., & Mary, M. (2003). *Means-End_Chain_Theory_Applied_to_Irish_Convenienc.pdf*.
- Mbokane, L., & Modley, L.-A. (2024). Green Consumerism in Young Adults: Attitudes and Awareness in University Students in Johannesburg, South Africa. *Sustainability*, 16(5), 1898. <https://doi.org/10.3390/su16051898>
- Merlino, M. V., Brun, F., Versino, A., Blanc, S., & Department of Agricultural, Forest and Food Sciences, University of Turin, Largo Braccini, Grugliasco (TO), Italy. (2020). Milk packaging innovation: Consumer perception and willingness to pay. *AIMS Agriculture and Food*, 5(2), 307–326.
<https://doi.org/10.3934/agrfood.2020.2.307>
- Mrs. N.Santhamani & Dr. P.S.Selva Tharangini. (2021). Consumer Attitude towards Dairy Products – An Empirical Study in Erode District. *International Journal of Engineering and Management Research*, 11(1), 237–247.
<https://doi.org/10.31033/ijemr.11.1.33>

- Muehlhoff, E., Bennett, A., MacMahon, D., & Food and Agriculture Organization of the United Nations (Eds.). (2013). *Milk and dairy products in human nutrition*. Food and Agriculture Organization of the United Nations.
- Njeru, T. N. (2022). *Kenya's dairy sector is failing to meet domestic demand. How it can raise its game*.
- Norton, V., Waters, C., Oloyede, O. O., & Lignou, S. (2022). Exploring Consumers' Understanding and Perception of Sustainable Food Packaging in the UK. *Foods*, 11(21), 3424. <https://doi.org/10.3390/foods11213424>
- Oloo, B. (2016). Lessons in Sustainable Dairy Farming to Kenyan Dairy Sector from the Dutch Dairy Sector. *Advances in Dairy Research*, 04(04). <https://doi.org/10.4172/2329-888X.1000162>
- Orodho, J. (2009). *Elements of education and social science research methods*.
- Orzan, G., Cruceru, A., Bălăceanu, C., & Chivu, R.-G. (2018). Consumers' Behavior Concerning Sustainable Packaging: An Exploratory Study on Romanian Consumers. *Sustainability*, 10(6), 1787. <https://doi.org/10.3390/su10061787>
- Pattanaik, S., Mishra, B. B., & Moharana, T. R. (2017). How Consumer Demographics is Associated with Shopping Behaviour? A Study on Indian Consumers. *Siddhant- A Journal of Decision Making*, 17(2), 195. <https://doi.org/10.5958/2231-0657.2017.00022.2>
- Paul, U., & Bandyopadhyay, A. (2019). Theoretical Approaches to Qualitative Research. *Bengal Physician Journal*, 6(1), 12–14. <https://doi.org/10.5005/jp-journals-10100-6103>
- Plé, B. (2000). Auguste Comte on Positivism and Happiness. *Journal of Happiness Studies*, 1(4), 423–445. <https://doi.org/10.1023/A:1011597222119>

- Rejeesh, C. R., & Anto, T. (2023). Packaging of milk and dairy products: Approaches to sustainable packaging. *Materials Today: Proceedings*, 72, 2946–2951. <https://doi.org/10.1016/j.matpr.2022.07.467>
- Saliya, C. A. (2022). *Doing Social Research and Publishing Results: A Guide to Non-native English Speakers*. Springer Nature Singapore. <https://doi.org/10.1007/978-981-19-3780-4>
- Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research Methods for Business Students* (7th ed.). Pearson.
- Shweta Kumar. (2023). Demographic Factors and their impact on Consumer Attitude towards Green Durable Products in Delhi/NCR. *World Journal of Advanced Research and Reviews*, 20(3), 1522–1534. <https://doi.org/10.30574/wjarr.2023.20.3.2497>
- Svinicki, M. D. (2010). *A Guidebook On Conceptual Frameworks For Research In Engineering Education*.
- Tzimas, D., Karipidis, P., & Kontogeorgos, A. (2017). *CONSUMER MOTIVES IN TIMES OF ECONOMIC RECESSION: ADOPTION OF THE MEANS END THEORY*.  VT OMNES VNVM SINT
- Vrabič Brodnjak, U., & Jestratijević, I. (2022). Solutions of sustainable packaging in footwear and apparel industry. *Proceedings - The Eleventh International Symposium GRID 2022*, 533–538. <https://doi.org/10.24867/GRID-2022-p59>
- Yung, X. Y. (2023). The Positive Role of Packaging in Consumer Behavior. *Advances in Economics, Management and Political Sciences*, 63(1), 293–300. <https://doi.org/10.54254/2754-1169/63/20231445>

APPENDICES

Appendix 1: Nairobi County map

Table 5. 1: Nairobi County map showing the location of the selected constituencies (Koech et al., 2020)



Appendix 2: Ethical Clearance Letter



15th January 2024

Mrs Maina Rita,
rita.w.maina@gmail.com

Dear Mrs Maina,

RE: Exploring Consumer Attitudes towards Sustainable Milk Packaging in the Kenyan Dairy Industry

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC1927/23**. The approval period is from **15th January 2024 to 14th January 2025**.

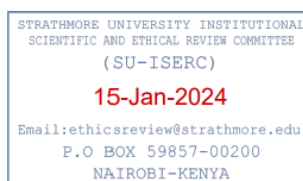
This approval is subject to compliance with the following requirements:

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
- iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
- v. Clearance for the export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.






Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke/> and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC



Appendix 3: NACOSTI Research Permit

 <p>REPUBLIC OF KENYA</p>	 <p>NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION</p>
Ref No: 620694	Date of Issue: 18/January/2024
RESEARCH LICENSE	
	
<p>This is to Certify that Miss.. Rita Wairimu Maina of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: EXPLORING CONSUMER ATTITUDES TOWARDS SUSTAINABLE MILK PACKAGING IN THE KENYAN DAIRY INDUSTRY for the period ending : 18/January/2025.</p>	
License No: NACOSTI/P/24/32574	
Applicant Identification Number 620694	Director General  NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code 
<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	
See overleaf for conditions	

Appendix 4: Letter of introduction (to prospective respondent)

Ole Sangale Rd, Madaraka Estate,
P.O Box 59857 00200, Nairobi, Kenya,
Cell: +254 703 414/6/7, Twitter: @SBSKenya
Email: info@sbs.ac.ke or visit www.sbs.strathmore.edu



27th June 2023

To Whom It May Concern.

Dear Sir/ Madam.

RE: FACILITATION OF RESEARCH – RITA MAINA

This is to introduce Rita Maina who is a Master of Business Administration student at Strathmore University Business School, admission number MBA/77543/13. As part of our MBA Program, Rita is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, she would like to request for appropriate data from your organization.

Rita is undertaking a research paper on “**Consumer Attitudes and Preferences to Sustainable Packaging in the Milk Industry in Kenya: Exploring the Circular Economy**” The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

A handwritten signature in black ink, appearing to be "Alois Njenga".

Alois Njenga.
Manager – MBA Programs.
Strathmore University Business School.

Appendix 5: Research Instrument (Survey)

Dear Participants,

I am conducting a survey to explore consumer attitudes towards sustainable milk packaging in the Kenyan dairy industry.

This survey is part of a research project that seeks to examine the characteristics of milk product packaging influencing consumer attitudes, investigate the relationship between consumer demographics and preferences for sustainable packaging, and assess consumers' willingness to pay for sustainable packaging options in the milk industry.

I, _____, have had the study explained to me. I have understood all that I have read and have had explained to me and had my questions answered satisfactorily. I understand that I can change my mind at any stage.

Please tick the boxes that apply to you;

Participation in the research study

I AGREE to take part in this research

I DON'T AGREE to take part in this research

Storage of information on the completed questionnaire

I AGREE to have my completed questionnaire stored for future data analysis

I DON'T AGREE to have my completed questionnaire stored for future data analysis

Participant's Signature:

Date:

____/____/____

DD / MM / YEAR

Participant's Name:

Time: ____/____

(Please print name)

HR / MN

I, _____ (Name of person taking consent) certify that I have followed the SOP for this study and have explained the study information to the study participant named above, and that s/he has understood the nature and the purpose of the study and consents to the participation in the study. S/he has been given opportunity to ask questions which have been answered satisfactorily.

Investigator's Signature:

Date:

_____/_____/_____

DD / MM / YEAR

Investigator's Name:

Time: ____/____

(Please print name)

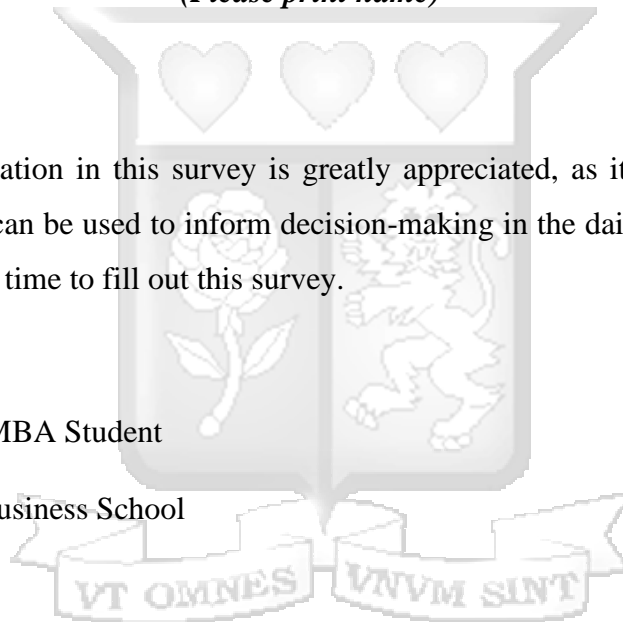
HR / MN

Your participation in this survey is greatly appreciated, as it will provide valuable insights that can be used to inform decision-making in the dairy industry. Thank you for taking the time to fill out this survey.

Sincerely,

Rita Maina, MBA Student

Strathmore Business School



Questionnaire for Consumer Attitudes Towards Sustainable Milk Packaging

Introduction:

Thank you for participating in this survey. Your opinions are crucial for understanding consumer attitudes towards sustainable milk packaging. Please answer the following questions honestly and to the best of your knowledge.

PART A: BASIC INFORMATION pt 1 (Please tick as appropriate)

1. Do you buy milk or milk products?

Yes

No

2. If you buy milk, how often do you purchase it?

Daily

2-3 times a week

Once a week

Less than once a week

3. Where do you typically get your milk from? (Select all that apply)

Local Kiosk

Supermarket/hypermarket

Dairy farm/fresh milk vendor

Online delivery

Other (please specify)

4. What type of milk do you usually consume? (Select all that apply)

Dairy milk

Organic milk

Powdered milk

UHT milk

Plant-based milk (e.g., almond, soy, oat)

Other (please specify)

5. What type of packaging is your milk? (Select all that apply)

Milk pouches

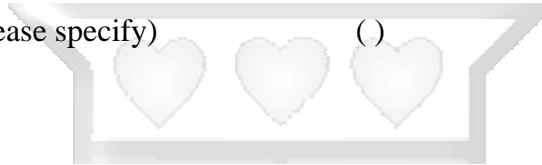
Metal tin

Plastic bottle

Paper carton

Glass bottle

Other (please specify)



Pouches



Metal tin



Glass bottle



Paper carton



Plastic bottle

6. Kindly indicate the location of where you usually buy your milk

North Nairobi: Westlands, Kasarani, Ruaraka, Starehe, Kamukunji	
South Nairobi: Langata, Kibra, Dagoretti North, Dagoretti South, Embakasi North	
East Nairobi: Makadara, Embakasi East, Embakasi South	
West Nairobi: Roysambu, Mathare, Embakasi Central, Embakasi West	
Other	

PART B: BASIC INFORMATION pt 2 (Please tick as appropriate)

1. What is your gender?

Female

Male

2. What is your highest educational achievement?

Diploma

Bachelors

Masters

Ph.D.

Others Specify _____

3. Indicate your age group

18–24

25–34

35–44

45–54

55–64

Over 64

4. Indicate your gross monthly income (Kenya Shillings)

<20,000

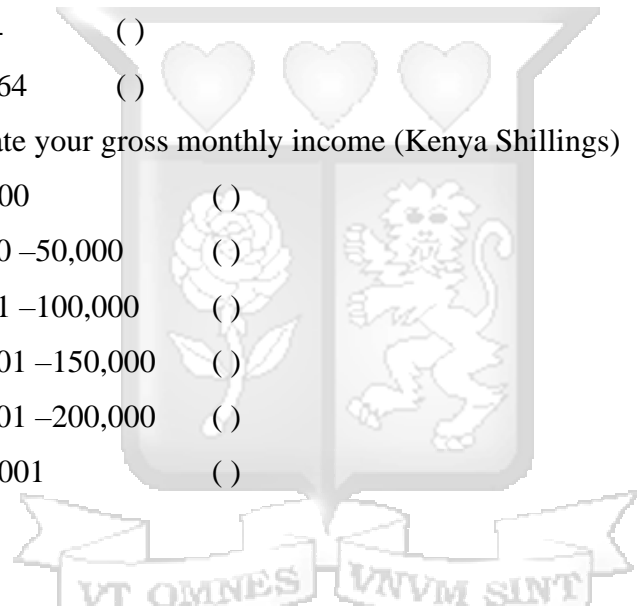
20,000 –50,000

50,001 –100,000

100,001 –150,000

150,001 –200,000

>200,001



PART C: CHARACTERISTICS OF MILK PRODUCTS PACKAGING

Section 1: Packaging aesthetics

Please indicate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a	The use of eco-friendly symbols or labels on milk packaging positively influences my perception.				

b	Packaging material transparency (clear visibility of the product) contributes to the overall attractiveness.				
c	Brand logos and images on milk packaging enhance my perception of the product.				
d	The color schemes used in milk packaging are attractive.				

Section 2: Environmental impact

Please indicate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a.	The environmental impact of milk packaging is an important consideration for me.				
b.	I believe that sustainable milk packaging helps protect the environment.				

Section 3: Functionality

Please rate the importance of the following factors related to milk packaging functionality:

Not important [1] Slightly important [2] Moderately important [3]Very important [4]

(Please tick as appropriate)

		1	2	3	4
a.	Easy to open and use				
b.	Leak-proof (with a cap)				
c.	Resealable for freshness				

Section 4: Convenience

Please rate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a.	I prefer milk packaging that is convenient for on-the-go consumption.				
b.	Convenient packaging size options influence my milk purchasing decisions.				

PART D: SOCIAL FACTORS:

Please rate the importance of the following factors when choosing milk products:

Not important [1] Slightly important [2] Moderately important [3]Very important [4]

(Please tick as appropriate)

		1	2	3	4
a.	Brand reputation (What people generally think and feel about a company or product based on their experiences and what they've heard from others.)				
b.	Social responsibility practices of the company				
c.	Peer recommendations and reviews				

PART E: WILLINGNESS TO PAY

Section 1: Innovation

Please indicate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4

a.	I am willing to pay more for milk products with innovative packaging.				
b.	Innovative packaging enhances the overall milk product experience.				

Section 2: Price

Please rate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a.	I am willing to pay a premium for milk products with sustainable packaging.				
b.	Price is a significant factor in my purchasing decision for milk products.				

Section 3: Benefits

Please rate the importance of the following benefits associated with sustainable milk packaging:

Not important [1] Slightly important [2] Moderately important [3]Very important [4]

		1	2	3	4
a.	Reduced environmental impact				
b.	Improved product safety and freshness				
c.	Enhanced convenience and usability				

Section 4: Knowledge

Please rate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a.	I have sufficient knowledge about sustainable milk packaging options i.e.				
	Recyclable Packaging				
	Biodegradable Packaging				
	Compostable Packaging				
	Reusable Packaging				
	Packaging Made from Recycled Materials				
b.	More information about sustainable milk packaging would positively influence my purchasing decisions.				

PART F: CONSUMER ATTITUDES TOWARDS SUSTAINABLE PACKAGING IN THE MILK INDUSTRY

Section 1: Consumer Attitudes

Please indicate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a.	I am concerned about reducing my environmental impact.				
b.	Environmental sustainability is an important factor when I choose milk products.				
c.	I actively seek out milk products with sustainable packaging.				

Section 2: Consumer Preferences

Please rate the importance of the following factors when choosing milk products:

Not important [1] Slightly important [2] Moderately important [3]Very important [4]

(Please tick as appropriate)

		1	2	3	4
a.	Taste				
b.	Freshness.				
c.	Price				
d.	Look				
e.	Packaging sustainability				

Section 3: Sustainable packaging

Please rate your level of agreement with the following statements:

Strongly Disagree [1] Disagree [2] Agree [3] Strongly Agree [4]

(Please tick as appropriate)

		1	2	3	4
a.	Milk products should be packaged using environmentally friendly materials.				
b.	Sustainable packaging contributes to the overall quality of milk products.				
c.	I actively support companies that use sustainable packaging for their milk products.				

Section 4: Sustainable packaging types

Please rate your preference level of Sustainable milk packaging types

No extent [1] , Low [2] High [3] Very high [4]

(Please tick as appropriate)

		1	2	3	4

a.	<p>Recyclable Packaging: Packaging materials that can be collected, processed, and reused in the manufacturing of new products. Examples include plastic containers labeled with recycling symbols and cardboard cartons.</p>				
b.	<p>Biodegradable Packaging: Packaging materials that can naturally decompose and break down into natural elements over time through the action of microorganisms. Examples include packaging made from plant-based materials, such as cornstarch or sugarcane.</p>				
c.	<p>Compostable Packaging: Packaging materials that can undergo composting, a process that converts organic waste into nutrient-rich compost. Compostable packaging materials can break down and contribute to the growth of plants when placed in a composting environment.</p>				
d.	<p>Reusable Packaging: Packaging that is designed to be used multiple times, reducing the need for single-use packaging. Examples include glass bottles that can be returned, cleaned, and refilled with milk.</p>				

e	Packaging Made from Recycled Materials: Packaging materials that are created using recycled content, such as post-consumer recycled plastics or paperboard. These materials help reduce the demand for virgin resources and minimize waste.				
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Thank you for your time

