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# The Effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi County, Kenya.

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**THE EFFECT OF MARKETING MIX ELEMENTS ON CUSTOMER  
SATISFACTION IN THE LPG INDUSTRY IN NAIROBI COUNTY,  
KENYA**



**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS  
ADMINISTRATION AT STRATHMORE UNIVERSITY**

**MARCH, 2025**

**DECLARATION**

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other university. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due reference is made in this thesis itself.

**Angel Nyambura**

**MBA/071799**


Signature: .....  ..... Date: .....24.03.2025.....



**APPROVAL**

The dissertation of Angel Nyambura has been reviewed and approved for examination by:

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Signature: .....  ..... Date.....25.03.2025.....

## ABSTRACT

The liquid petroleum gas (LPG) industry is experiencing unprecedented growth as the world shifts towards clean energy options. Therefore, as the market expands, competition is expected to intensify. The dynamics of LPG business are not far different from conventional business models, meaning customer satisfaction, as a source of strategic competitive advantage, also applies to the trade of LPG products and services. The concept of the marketing mix as a driver of customer satisfaction has long been established. However, there is limited empirical evidence highlighting how the elements of the marketing mix influence the satisfaction of consumers in the LPG industry, especially in low- and middle-income countries. As such, this study sought to fill this knowledge gap by examining the effect the marketing mix has on customer satisfaction in the LPG industry of Nairobi County. The study focused on product, price, promotion, and place elements of marketing mix which also constituted the independent variables and their effect on customer satisfaction which constituted the dependent variable. The study was underpinned in the consumer decision-making theory as the anchoring theory and the expectancy disconfirmation theory which provided the additional supporting framework. The study adopted positivism philosophy as the research philosophy and followed a descriptive cross-sectional research design. The target population for the study was households using LPG in Nairobi County from whom a sample of 400 respondents was drawn using a simple random sampling technique. Primary data was gathered using structured questionnaires and analyzed using descriptive and inferential statistics via SPSS software. Findings of descriptive statistics suggest respondents remained neutral regarding customer satisfaction and perceptions towards product mix, promotion mix, and place mix. However, they were dissatisfied with the price mix. Inferential statistics indicate the 4P's of marketing mix account for 75.9% of customer satisfaction in Nairobi County's LPG market. The product mix ( $\beta=.668, p<.05$ ), price mix ( $\beta=.117, p<.05$ ), and place mix ( $\beta=.220, p<.05$ ) had significant positive effect on customer satisfaction whereas the effect of promotion mix ( $\beta=.063, p>.05$ ) was nonsignificant. Therefore, this research concludes that out of the 4P's of marketing, product, price, and place elements are significant predictors of customer satisfaction in Nairobi County's LPG sector. Based on the finding, this research recommends industry players and regulators to formulate strategies and policies on around these elements in order to drive customer satisfaction and subsequently promote the uptake of LPG. In addition, since this research focused only on the 4P's of marketing, further research on the rest of marketing mix elements would be instrumental.

**Keywords:** *Marketing mix, customer satisfaction, LPG, product, price, place, promotion.*

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## LIST OF ABBREVIATIONS

<b>AVE:</b>	Average Variance Extracted
<b>CES:</b>	Customer Effort Score
<b>CSAT:</b>	Customer Satisfaction Score
<b>DOPU:</b>	Drop-off/pick-up
<b>EDT:</b>	Expectancy Disconfirmation Theory
<b>ITA:</b>	International Trade Administration
<b>KIPPRA:</b>	Kenya Institute for Public Policy Research and Analysis
<b>KNBS:</b>	Kenya National Bureau of Statistics
<b>LPG:</b>	Liquid Petroleum Gas
<b>NACOSTI:</b>	National Commission for Science, Technology, and Innovation
<b>NPS:</b>	Net Promoter Score
<b>PLS:</b>	Partial Least Squares
<b>SDG:</b>	Sustainable Development Goals
<b>SEM:</b>	Structural Equation Model
<b>SPSS:</b>	Statistical Package for the Social Sciences
<b>SU-ERB:</b>	Strathmore University Ethical Review Board

# CHAPTER ONE

## INTRODUCTION TO THE STUDY

### 1.1 Background of the Study

In the modern competitive business space, customers should be the center of attention for business entities of all kinds. Boroumandfar et al. (2021) assert that customer satisfaction is key to staying relevant, gaining a competitive advantage, or even surviving today's era. According to Tefera and Govender (2017) and Wahab et al. (2016), information technology has become more widespread, and the increased interdependence of the world's economies has made the business environment more competitive. This results from numerous new entrants offering similar products and services to the same groups of customers (Tefera & Govender, 2017). A business intending to be competitive in the current times must satisfy the needs of its customers, which involves “gaining insights into their demands, expectations, tendencies, abilities, and limitations in purchasing behavior” (Garg et al., 2016; Sudari et al., 2019; Wahab et al., 2016).

Making sure customers are satisfied should be the primary goal of every business entity. Wadud (2013) cites that customer satisfaction is the baseline for standardization and excellence in business performance. This is because being driven by the need to fulfil customer needs helps implement and operate along the principles of continuous improvement (Wadud, 2013). According to Hill et al. (2017), “it is crucial for businesses to care for, appreciate, and fulfil the needs of their customers.” After all, customers are the recipients of the products and services that businesses offer. Without them, businesses would cease to exist. Ganiyu et al. (2012) contend that customers are the key factor in the existence and development of a company in the market. Therefore, firms intending to be successful in today's intensely competitive marketplace should create value and deliver unique experiences to their customers.

Marketing is integral to fulfilling customer satisfaction (Simangunsong et al., 2018; Sudari et al., 2019). Wahab et al. (2016) point out that business providers must understand and apply the elements of marketing to drive satisfaction. The core “components of the marketing mix include product, price, place, promotion, people, processes, and physical evidence” (Kotler et al., 2015). A multitude of research studies shows that customers are more satisfied when a business enterprise serves them quality products at affordable rates in a convenient manner (Boroumandfar et al.,

2021; Garg et al., 2016; Tefera & Govender, 2017). Additionally, businesses should employ certain promotional strategies to inform customers about their products. Simply put, blending the elements of marketing elicits a positive customer response.

The effect of marketing mix elements on customer satisfaction is a widely explored topic in the empirical literature. The conventional wisdom is that the components of the marketing mix translate positively to customer satisfaction (Kotler et al., 2015). It is believed that when the right products are offered, priced fairly, well promoted, and accessed more conveniently, customers are satisfied (Boroumandfar et al., 2021; Garg et al., 2016). In addition, “the people involved in delivering the product or service and the processes of providing it also impact customer satisfaction” (Jain, 2013). However, this notion has extensively been debated, resulting in inconsistencies of findings among researchers on how each element of the marketing mix influences customer satisfaction across all sectors.

For instance, Marlina et al. (2019) found that marketing mix elements are predictors of customer satisfaction. However, “only three of the seven components of the marketing mix (product, promotion, and people) had a significant influence” (Marlina et al., 2019). The impact of the other elements, price, place, processes, and physical evidence was not significant. Basing their study on the retail store, Anggraini et al. (2023) found that “out of the 4Ps of marketing mix, only place and price had a significant impact on satisfaction with the impact of promotion and place not being significant”. Adewale and Adeniran (2019) observed that “the presence of the right products, at the right place, right price and effective promotion leads to customer satisfaction, resulting in efficiency of manufacturing firms in Nigeria.” Marketing mix elements have also been found to be predictors of satisfaction in coffee industry (Dahlan et al., 2023). However, out of the seven elements, only two (processes and products) had a significant effect; the rest did not.

While some researchers provide evidence suggesting a positive correlation between marketing mix elements and customer satisfaction, another set of empirical work suggests the lack of correlation between individual components of marketing mix and customer satisfaction. A classic example is Putra et al.'s (2019) study that observed that “out of the seven elements of marketing mix, product, price, location, and process had no significant effect on customer satisfaction.” The researchers argue that while product quality matters, it does not always guarantee satisfaction. Not

only that, on the issue of the price element, Putra et al. (2019) clarify that “the higher the benefits obtained, the more people will not see how much value must be paid,” implying that the more consumers utilize a product or service, the less price value becomes important and the more “the benefits derived from the product or service” are emphasized. Farida et al. (2016) and Triska et al. (2014) also observed an absence of causality between “product, price, and place variables and customer satisfaction.” In Ethiopia’s education sector, Kant et al. (2023) found “that the promotion element did not have a direct effect on customer buying behavior.”

Another set of academic literature affirms that some of the components of the marketing mix have a negative impact on satisfaction. Campo and Yagüe (2008) observed that “the effect of price on satisfaction in the tourism sector can go both ways – positive and negative.” In other words, as much as price is an indicator of quality, thus reflecting satisfaction positively, it can also denote sacrifice. In other words, “as the price increases, the consumer’s satisfaction increases, but only up to a certain price level, after which the relationship decreases” (Campo & Yagüe, 2008). Overall, the researchers found that the negative impact of price on satisfaction outweighs its positive effect, particularly when tourists evaluate the value derived from a tour versus the charges incurred. Cao et al. (2003) made a similar observation in the e-retail sector, where high prices resulted in low price satisfaction among online shoppers translating to negative overall customer fulfilment.

As the literature suggests, the effect of marketing mix elements on customer satisfaction remains highly contentious. The lack of consensus, especially on certain components of the marketing mix, is notable. A group of researchers believe some of these elements are positive predictors of customer satisfaction, while another group disputes that these elements negatively affect customer satisfaction. Between these two opposing sides of the debate exists another group of research suggesting the absence of causality between some marketing elements and customer satisfaction. The inconsistency of findings accompanied other issues, such as scope, methodological, conceptual, and contextual gaps, which warranted investigation into the topic.

### **1.1.1 Marketing Mix Elements**

The concept of marketing mix has varied definitions from different scholars. The most accurate definition was pieced together by Philip Kotler, who, according to Constantinides (2016), stated

that “marketing mix is a set of controllable variables that an organization can use to influence buyers' responses.” Marketing mix elements are the key components of a marketing strategy, according to Gordon (2012) and Kotler et al. (2015), who further noted that “the marketing mix is historically centered around product, price, place, and promotion and serves as the foundation model for all businesses.” In other words, a marketing mix is a set of tactics a business uses to promote its product or service offering as well as its brand in the market.

The origin of the concept of marketing mix can be traced back to the 1940s when Professor Culliton used it in his lectures and his publication, “The Management of Marketing Costs” (Festa et al., 2016). According to him, “marketing is a mixture of various elements that can be applied by marketers effectively” (Festa et al., 2016). However, it was not until “the 1960s that the term marketing mix was first coined by Neil Borden, a Harvard Professor, in his 1964 article, *The Concept of Marketing Mix*” (Festa et al., 2016). Constantinides (2016) documents that the usage of “the 4Ps of the marketing mix (product, price, promotion, and place) was then popularized by Jerome McCarthy, who contextualized the marketing mix to consumer behavior, market analysis, market segmentation, marketing planning, and customer behavior.”

A product represents an item (tangible or intangible) or service designed to meet customer needs and wants (Kotler et al., 2015). Khadka and Maharjan (2017) recognize a product as “the value or a set of benefits that marketers present to customers for a price, making it the most important component of the marketing mix.” A good product, as Kotler et al. (2015) clarify, should satisfy customer needs and be deemed to be of higher quality. Put simply, a good product should perform its intended purpose. The core aspects of the product element of the marketing mix include product design (physical attributes), features, benefits, quality, brand, variety and options, service, and product life cycle, all of which are aimed at meeting customer needs and creating value (Cruz, 2015; Hoe & Mansori, 2018; Lone & Bhat, 2022). In this study, product performance, durability, reliability, serviceability, variety and options, and conformance were used as measures of product mix in the LPG sector.

Price refers to the “value customers are expected to pay in exchange for a product or service” (Virvilaite et al., 2009). Nakhleh (2012) cites that it is “the most important factor in customer satisfaction.” Drawing from multiple studies, Khan (2014) considers price as the cost customers

have to incur in “exchange for the benefits of having or using a product or service.” Işoraitè (2016), Kotler et al. (2015), and Londhe (2014) points out that “price is the only element of the marketing mix set in relation to the other elements.” The core aspects of price mix vary depending on product, service, or industry, but according to Khan (2014), Kotler et al. (2015), and Razak et al. (2016), the following aspects are common: pricing strategy, perceived value, and price-setting factors. Based on these aspects, the price mix for the study was conceptualized as follows: price-quality ratio, price fairness, price stability, price clarity, and relative pricing in the LPG market.

Promotion is one of the vital components of the marketing mix and an integral ingredient of the total marketing process (M. Khan, 2014; Kotler et al., 2015). It is a combination of several marketing methods aimed at “making potential customers aware of the many choices regarding products and services.” Möller (2016) argues that “a successful product or service means nothing if its benefits cannot be communicated clearly to the target market.” Therefore, promotion serves three critical purposes: “provide information, persuade the target market, and encourage them to take action.” The conceptualization of the promotion mix was informed by the following studies (Kant et al., 2023; Ubeja & Bedia, 2014), whereby brand image, factualness of brand messaging, staff knowledgeable, payment options, and appropriateness of promotional activities served as measures.

Place, also distribution or location, is defined by Goi (2010) as “the strategy an organization uses to distribute its products and services to its customers.” In a separate publication, Al Muala and Al Qurneh (2012) defined the place mix “as a set of independent organizations that cater to the process of availing products to consumers.” Khan (2014) believed that a place is “the ease of access with which customers associate a service, like location and distribution.” These definitions might vary, but they point towards one theme—the place being the availability of products. The place element is as important as the other components because, no matter how good a product is, how fair its pricing is, and how well promoted if it is not available to the target market, then it all means nothing (M. Khan, 2014). In light of the above, and also owing to Pungnirund's (2013) study, place mix was conceptualized as follows: product availability, convenience, delivery, accessibility, and reliability.

Through the scholarly work of Bernard Booms and Mary Jo Bitner, the 4Ps were extended to the 7Ps in an attempt to structure the marketing mix for service firms (Wichmann et al., 2022). The additional three elements included people, process, and physical evidence. The people element focuses on the personalities representing the product, and it can also refer to the people a business is selling to; the process element refers to what happens behind the scenes in product creation, and it can also refer to logistics or the efficiency of a product reaching customers; “physical evidence consists of anything a customer sees or experiences when interacting with a business” (Wichmann et al., 2022). Therefore, the additional three Ps were introduced to the marketing mix to better cater to service-based companies. Therefore, the LPG sector is a product-oriented market, so this research focused on the 4Ps of marketing.

### **1.1.2 Customer Satisfaction**

Satisfying customers should be the mantra of every business. According to Hill et al. (2017), it “is crucial for businesses to care for, appreciate, and fulfill the needs of their customers.” After all, customers are the recipients of the products and services that businesses offer. Without them, businesses would cease to exist. Ganiyu et al. (2012) contend that customers are the key factor in the existence and development of a company in the market. Therefore, firms intending to be successful in today's intensely competitive marketplace should create value and deliver unique experiences to their customers. Satisfaction, as Ganiyu et al. (2012) describe, for which Hill et al. (2017) and Hamzah and Shamsudin (2021) concur, includes the feelings associated with the atmosphere before, during, and after the purchasing process, as well as the fulfillment from consuming the product.

The concept of customer satisfaction as it is known now was initially, and for many decades, an area in the human behavior field. Pizam et al. (2016) indicate that the concept was more linked to philosophy and understood as part of human life rather than a goal of human needs. It was not until the conception of modern sciences in the 1940s that customer satisfaction started becoming relevant in economics and business management. It gained prominence in these fields, and in due time, practitioners started to measure it and include it as a strategic goal for marketing activities (Berners & Martin, 2022). Distinguished scholars, academics, and researchers such as Edwin Locke and Ralph Day, among others, have since covered the concept in detail.

Since customer satisfaction refers to “the measure of how products and services a business entity offers meet or exceed customer expectations,” in the context of the LPG sector, it is “the measure of how well LPG products, services, brands, and overall experience meet customer expectations” (Sangeetha A, 2020; Thanabordeekij & Syers, 2020). Customer satisfaction, however, is complex and subject to a number of factors, most of which include expectations and experiences. According to Ganiyu et al. (2012), expectations, in this case, “are influenced by a number of factors, including situational factors, customer background (e.g., values, personality, income level), branch factors (competition), and company factors (marketing, business idea).”

In view of the above, the assessment of customer satisfaction also involves employing a range of measures and metrics to gain insights into how well a product or service meets customer expectations. Key among these include the Customer Satisfaction Score (CSAT), Net Promoter Score (NPS), and Customer Effort Score (CES) (Hill et al., 2017; Pizam et al., 2016). Companies also analyze customer reviews, ratings, and feedback surveys to gather qualitative and quantitative data. Additionally, repeat purchase rates, churn rates, and customer retention rates, as well as customer lifetime value, serve as key indicators of long-term satisfaction (Hill & Alexander, 2017; Kotler et al., 2015; Leninkumar, 2017). Therefore, in this study, customer satisfaction was measured using customer experience versus expectations (expectancy disconfirmation), NPS, repurchase intention, and affective satisfaction as relevant indicators for LPG products and services.

Customer satisfaction may not provide direct revenue or have a meaningful impact on a company's valuation. However, it is a significant indicator of the value an organization offers from the perspective of its customers. Satisfaction enhances customer loyalty, which in turn drives a company's revenues, profits, relevance, and competitiveness (Dam & Dam, 2021; Pizam et al., 2016). Happy customers are loyal and often provide repeat business and referrals and serve as brand advocates (Dam & Dam, 2021). Generally, marketing influences customer satisfaction in that the marketing strategies adopted ensure customers benefit from quality products and exceptional experiences (Leninkumar, 2017). As demonstrated so far, the marketing mix, as the most important part of a marketing strategy, can have a huge impact on customer satisfaction.

### 1.1.3 LPG Industry in Kenya

Kenya's LPG market is "characterized by a long and complex value chain, extending from the government as strategist and planner through importation, bulk storage, wholesaling, and retailing before reaching the consumer" (World Bank, 2018). The International Trade Administration (ITA) says 100% of LPG is imported, with the bulk of it from the United States. The report further suggests that the LPG imported is in the region of 370,000 metric tons a year. The industry comprises 44 licensed LPG dealers whose activities are regulated by the government through the Energy and Petroleum Regulatory Authority (EPRA). Five of the 44 dealers, including "Rubis Energy Kenya, Total Kenya, Vivo Energy, OLA Energy, and National Oil Corporation, control 80% of the market" (World Bank, 2018). Cylinders are available in 1-, 3-, 6-, and 13-kilogram sizes. "70% of current demand is for the 6-kilogram size and 20% for the 13-kilogram size."

The LPG industry plays a crucial role in the nation's energy transition, aiming to provide cleaner cooking solutions and reduce reliance on harmful traditional fuels like wood and charcoal. The industry contributes to improving public health by decreasing indoor air pollution, mitigating deforestation, and supporting the government's goal of achieving universal access to modern energy cooking services (ITA, 2023; World Bank, 2018). Furthermore, ITA (2023) states that the growth of the LPG sector stimulates economic activity through increased imports, infrastructure development like storage facilities, and the creation of distribution networks while also providing a cleaner energy alternative for commercial and industrial use.

However, despite the sector's contribution, the country is in greater need of better cooking fuel. Douglas (2021) projects that several factors will drive the demand growth of LPG in Kenya, including policy measures, better product availability, and the increase in disposable income. According to Hsu et al. (2021), "only 24.4% of households in the country use LPG, with the rest relying on biomass fuels." This observation has led to a series of studies to determine factors influencing LPG adoption, for which Kamau (2021) found that availability, price, LPG market, and distribution model played a huge role. The government intends to increase LPG use among households to at least 35.3% by 2030 and reduce the reliance on polluting fuels, especially in urban areas.

There is slow adoption of LPG in Kenya despite government efforts to lure more Kenyan households into adopting LPG. Achieving a 35.3% LPG consumption rate by 2030 might be problematic. A recent publication in the Business Daily suggests that cooking gas consumption dropped by 35% due to high prices, further derailing the accomplishment of the LPG consumption target by 2030 (Odinga, 2022). This can be attributed to two primary issues: the complexity of the value chain and the fact that 100% of LPG is imported. The supply chain is long and complex, resulting in higher consumer prices and further driving customers away. Also, since most LPG is imported from the United States, currency fluctuations negatively affect consumer prices.

According to the World Bank (2018), in a move to strengthen the capacity to manage the LPG sector, the government has embarked on a number of projects, chief among them being the development of a World Bank-funded sustainable LPG distribution model dubbed KEPTAP. The “project involves constructing a 30,000-ton LPG handling and storage facility for \$129 million in Mombasa to reduce costs and increase the use of clean-burning oil among lower-income Kenyans” (World Bank, 2018). While this is ongoing, the World Bank still recommends, among others, reviewing the economics underpinning LPG uptake and promoting the demand for LPG among consumers. Examining the effect of marketing mix elements on customer satisfaction in the LPG market is an effort that aligns with the recommendations above.

## **1.2 Statement of the Problem**

The uptake of LPG in Kenya is underwhelming. Currently, about 76% of Kenya’s households use unsustainable cooking options, which harm the environment and lead to at least 15,000 deaths per year (World Bank, 2018). This is because the push to improve the adoption of LPG as a cleaner cooking option has encountered several challenges, including price increases due to currency fluctuations and a complex supply chain, which has further seen a significant reduction in LPG consumption (Odinga, 2022). Going by the current trajectory, achieving the targeted 35% LPG consumption rate by 2030, a goal that is aligned with the sustainable development goal (SDG) 7, is uncertain. As such, with the World Bank (2018) recommending reviewing the economics underpinning LPG consumption, it is imperative to turn to research and understand the nexus between marketing mix elements and customer satisfaction in an effort to manipulate these elements to improve satisfaction and thereby promote LPG uptake.

Empirical data is essential in informing critical decisions in expanding the LPG market (Shari et al., 2022; Vassiliades et al., 2022). Gaining insights into the phenomenon is crucial in guiding strategic decision-making in offering the right LPG products at the right price and place and ensuring they are well-promoted to drive customer satisfaction. This is because when customers are satisfied, it becomes feasible to promote LPG uptake in Kenya further and achieve the established targets for LPG consumption. However, whereas it is conventionally believed that the marketing mix impacts customer satisfaction positively, the difference in opinions regarding specific marketing mix elements is apparent among researchers.

A portion of empirical evidence suggests that the marketing mix improves customer satisfaction (Anggraini et al., 2023; Dahlan et al., 2023; Marlina et al., 2019). Even then, the impact of some of the elements is not significant. Another set of empirical work suggests that some of the elements are not predictors of customer satisfaction (Farida et al., 2016; Kant et al., 2023; Putra et al., 2019; Triska et al., 2014). Other researchers like Cao et al. (2003) and Campo and Yagüe (2008) believe price has a negative impact on satisfaction.

Besides the inconsistencies in findings, these studies are not without methodological, geographical scope, contextual, and conceptual limitations. The relationship between the variables is not quantified in some studies, denoting a methodological gap (Cao et al., 2003; Ellitan, 2021). Also, the findings are hardly in the context of the LPG market, and most of the studies were conducted outside Kenya (Anggraini et al., 2023; Boroumandfar et al., 2021; Dahlan et al., 2023; Marlina et al., 2019; Putra et al., 2019). The concepts covered in some of the available studies are inconsistent with those of the present study (Kant et al., 2023; Wahab et al., 2016). Because of these empirical gaps, findings and conclusions from these studies could not be generalized to the study's target population. Therefore, this study aimed to address the problems above by focusing on the effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County.

### **1.3 Objectives of the Study**

The study was guided by one general objective and four specific objectives.

#### **1.3.1 General Objective**

The general objective of the study was to determine the effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County, Kenya.

### **1.3.2 Specific Objectives**

- i. To determine the effect of the product mix on customer satisfaction in the LPG industry in Nairobi City County, Kenya.
- ii. To determine the effect of the price mix on customer satisfaction in the LPG industry in Nairobi City County, Kenya.
- iii. To determine the effect of the place mix on customer satisfaction in the LPG industry in Nairobi City County, Kenya.
- iv. To determine the effect of the promotion mix on customer satisfaction in the LPG industry in Nairobi City County, Kenya.

### **1.4 Research Questions**

- i. What effect does the product mix have on customer satisfaction in the LPG industry in Nairobi City County?
- ii. What effect does the price mix have on customer satisfaction in the LPG industry in Nairobi City County?
- iii. What effect does the place mix have on customer satisfaction in the LPG industry in Nairobi City County?
- iv. What effect does the product mix have on customer satisfaction in the LPG industry in Nairobi City County?

### **1.5 Scope of the Study**

The study investigated the effect the marketing mix elements have on customer satisfaction in the LPG market in Nairobi City County. The conceptual scope was limited to the “product mix, price mix, place mix, and promotion mix” as the independent variables and satisfaction as the dependent variable. The contextual scope of the study was the LPG sector, and the geographical scope was limited to Nairobi County, where households using LPG for cooking were targeted.

### **1.6 Significance of the Study**

The findings from this empirical investigation are useful in a number of ways. Firstly, the findings and recommendations the study offers are invaluable in informing the policymaking process in the LPG industry. The outcome of the study provides valuable insights into the level of customer

satisfaction in the context of LPG's product portfolio, pricing, promotions, and placing. Such insights can be essential in guiding and providing actionable courses of action to the government in creating policies and programs for the sector. Critical industry-wide policymaking should be informed by scientific evidence; the study contributes to this process by making facts about the topic available.

Secondly, the study benefits the key players in Kenya's LPG market, including importers, wholesalers, distributors, and retailers. The research provides a pool of information on what customers value as far as marketing mix elements are concerned. By collecting and analyzing data on attributes of customer satisfaction, this research offers facts and direction for LPG companies to make informed and effective marketing decisions. Therefore, this study helps LPG companies introduce products and services that create value for their customers.

Thirdly, the findings of the study also benefit researchers. For instance, the study builds up and expands knowledge around the research topic and provides up-to-date information on the phenomenon. As such, it serves as a reference point for researchers intending to gain a deeper understanding of the effect of marketing mix in the LPG sector. Also, the study aids future researchers in completing their studies. It helps develop literature and serves as the basis for formulating hypotheses that guide their investigations.

## **1.7 Chapter Summary**

The chapter offers a synopsis of the research. In this chapter, the underlying context of the research is discussed under the background of the study section, along with the rationale for the investigation. The chapter also describes the problem the research sought to address, the objectives it sought to achieve, and the research questions it sought to answer. The scope and significance of the study are also provided in this chapter.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

The chapter offers a review of the literature on the effect of marketing mix on customer satisfaction in the LPG industry in Nairobi. It describes, analyzes, and critiques previous empirical studies conducted on the topic. The chapter also covers the theoretical framework, the knowledge gap, and the conceptual framework.

#### 2.2 Theoretical Review

A “theoretical foundation in scientific research,” according to Varpio et al. (2020), “is a structure that can hold or support a theory of a research study.” A “theoretical framework introduces and describes the theories that explain the phenomenon, draw conclusions, and make predictions, demonstrating that a research topic is grounded in established ideas” (Varpio et al., 2020). That said, the study adopted Philip Kotler’s consumer decision-making process as the anchoring theory and the expectancy disconfirmation theory as the supporting theory.

##### 2.2.1 Consumer Decision-Making Process Theory

The consumer decision-making process model “is an essential theory of marketing developed by Philip Kotler. It holds that consumers go through a certain process before making a purchase to determine what products or services best fit their needs” (Qazzafi, 2019; Stankevich, 2017). In this model, Kotler proposed a five-stage process “including problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase evaluation” (Panwar et al., 2019; Qazzafi, 2019; Stankevich, 2017). In other words, consumers first consider what they need, conduct research, and compare options before deciding to buy. After making the purchase, they determine whether they made the right decision.

The consumer decision-making process has broadly been accepted as a theoretical framework for understanding consumers. It is celebrated for its simplicity and clarity in learning consumers’ past experiences, mapping their customer journey, and influencing their decisions (Panwar et al., 2019). It has been tested and proven to play a crucial role in refining marketing strategies to attract

and retain more customers. For example, offering superior product quality, fair pricing, strategic promotional activities, and convenience in the supply chain (Stankevich, 2017). However, it has been criticized for its linearity. This is because, in today's fast-paced digital world, predicting consumer behavior is far more complex (Qazzafi, 2019). Nonetheless, as Qazzafi (2019) explains, "since all marketing decisions are based on assumptions and knowledge of customer behavior," Kotler's consumer decision-making theory was relevant to this study.

Therefore, the theory provided a robust framework for examining how marketing mix elements influenced customer satisfaction in the LPG sector in Nairobi. It was used to understand customer journeys, analyze their perceptions and evaluations, identify key influencers, and determine their post-purchase behavior.

### **2.2.2 The Expectancy Disconfirmation Theory**

The "expectancy disconfirmation theory (EDT) or the expectancy disconfirmation paradigm (EDP) is a theoretical model for assessing customer satisfaction developed by Richard L. Oliver in 1977 and 1980" (Elkhani & Bakri, 2016). The theory postulates that "consumers purchase goods and services with pre-purchase expectations about the anticipated performance" (Filtenborg et al., 2017). Therefore, according to EDT, "customer satisfaction is linked to the expectation and perception of product quality in the sense that the comparison between the preset expectations and the real-time examination of the product forms the basis of customer satisfaction" (Elkhani & Bakri, 2016). In other words, once the product is used, the expected outcomes are compared with the actual outcomes to determine the satisfaction level.

The model encompasses "four constructs: expectations, perceived performance, disconfirmation of beliefs, and satisfaction" (Filtenborg et al., 2017). In this case, "the disconfirmation belief is the difference between expectation and perceived performance" (Elkhani & Bakri, 2016; Filtenborg et al., 2017). For instance, when a product outperforms a consumer's initial expectations, the disconfirmation is positive and vice versa. Therefore, as Filtenborg et al. (2017) point out, a customer is satisfied when the disconfirmation is positive and dissatisfied when the disconfirmation is negative.

The “EDT theory has a long history in the customer satisfaction literature, dating back to 1967 when Howard and Sheth defined satisfaction as the discrepancy between the aspirations and perceived reality of experiences” (Yüksel & Yüksel, 2008). It has since widely been used in a wide range of disciplines and evaluating satisfaction with different products and services, including e-commerce (Elkhani & Bakri, 2016), governance (Filtenborg et al., 2017), education (Pereira et al., 2015), and employment (Sinha et al., 2020). However, it is based on the assumption that all customers have prior expectations, which may not always be the case. Nevertheless, since this study focuses on customer satisfaction in the LPG market and is subject to the marketing mix, the EDT was relevant and served as a supporting theory.

## **2.3 Empirical Review**

The empirical literature section provides an empirical review of previous scientific studies on the subject matter under investigation. The systematic empirical review of literature aims to identify knowledge gaps that exist in the current body of empirical work that the study attempted to address.

### **2.3.1 Product Mix and Customer Satisfaction**

The product element of the marketing mix is considered a vital determinant of customer satisfaction. Blythe and Martin (2019), Greve and Schlüschen (2018), and Hill and Alexander (2017) attribute this to “the critical role product quality plays as one of the key aspects of business action plans and goals for business activities.” Firms seek to “improve customer satisfaction by producing quality products that meet or exceed customer needs and expectations” (Greve & Schlüschen, 2018). The benefits of quality products designed to fulfil customer needs do not just end with customer satisfaction; as Blythe and Martin (2019) contend, “they also promote customer loyalty, which is a critical factor in sustaining long-term business growth and success.” Below are previous empirical studies on the topic.

Cruz (2015) performed a nonexperimental study to “examine the relationship between product quality (in this case, vehicle) and customer satisfaction.” The study was derived from the increased rates of accidents attributed to poor vehicle quality, safety concerns, and costs. “A sample of 77 automobile users was selected, and data was collected using questionnaires; the gathered data was

analyzed using a simple and multiple linear regression model” (Cruz, 2015). According to the findings, product quality and customer satisfaction had a strong statistical relationship. Therefore, the researcher concluded that building high-quality cars reduces the number of deaths and injuries associated with vehicular accidents and leads to higher customer satisfaction rates.

Syafarudin (2021) sought to examine “the effect of product quality on customer satisfaction and its implications on customer loyalty in the era of COVID-19 in Indonesia.” In the study, product “quality constituted the independent variable, while customer satisfaction was the dependent variable. A quantitative research design was adopted to fulfill the objective of the study, and a sample of 150 respondents was selected using the Slovin formula. Data was collected using questionnaires and analyzed using quantitative analytical techniques, Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) criteria” (Syafarudin, 2021). Findings suggest “that product quality had a significant influence on customer satisfaction during the COVID-19 pandemic”.

In a separate investigation, Rua et al. (2020) examined “the relationship between product quality and customer satisfaction and its significance on customer loyalty in the Bamboo Institute, Dili.” A total of “190 questionnaires were distributed to customers of Bamboo Institute in Dili, Timor-Leste, and the relationship between the three variables (product quality, customer satisfaction, and customer loyalty) was measured using SMART-PLS 3.0” (Rua et al., 2020). The data collected was sorted and analyzed using quantitative statistical tools. They found that “product quality and customer satisfaction have a positive and significant influence on customer loyalty and that customer satisfaction mediates the relationship between product quality and customer loyalty.”

Elsewhere in Malaysia, Wahab et al. (2016) studied “the relationship between marketing mix and customer loyalty in the Hijab industry, with customer satisfaction being the mediating effect.” The study focused on Shah outlets as the unit of analysis and female shoppers as the population. “A sample of 250 respondents was selected using a convenience sampling technique, and data was collected using questionnaires” (Wahab et al., 2016). Correlational analysis and hierarchical regression analysis with a mediator were used to analyze the data collected. The study found that “the marketing mix (product, price, promotion, and place) had a positive and strong effect on

customer satisfaction and loyalty; also, customer satisfaction played a significant mediating role between marketing mix and customer loyalty.”

An in-depth quantitative survey by Hoe and Mansori (2018) also offers “insights into the relationship between product mix and customer satisfaction.” The purpose of this research was to “explore the effect of product quality and customer satisfaction and loyalty in the Malaysian engineering industry.” Product quality constituted “the independent variable and was measured using performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality; customer satisfaction was the mediating variable, while customer loyalty was the dependent variable” (Hoe & Mansori, 2018). The study adopted a descriptive research design, and data was collected from 90 authorized personnel from the select organizations using questionnaires. The study found a strong correlation between product and customer satisfaction, with satisfaction mediating the relationship between product and loyalty.

A study by Ling (2014) sought to examine “the impact of marketing mix elements on customer satisfaction, a case study deriving consensus rankings from benchmarking.” “The 4Ps – product, price, promotion, and place – constituted the independent variable and customer satisfaction was the dependent variable”. A descriptive survey design was adopted, and the study covered Tesco Stores, Carrefour, Giant of Dairy Farm Limited, and Mydin Mohamed Holdings, all retail stores, as units of analysis. Data was collected from a sample of 856 respondents who constituted customers of the selected retail stores. The study found that across the four retail stores, product, price, promotion, and place factors contributed significantly to customer satisfaction.

Another study by Ellitan (2021) sought to evaluate “the role of the marketing mix in building customer satisfaction and loyalty.” The predictor “variables included product, price, promotion, and place, with the outcome variables being customer satisfaction and loyalty; the study adopted a qualitative research design where several peer-reviewed articles selected from reputable online databases were analyzed” (Ellitan, 2021). The study found that having a variety of products that fulfill customer needs, price at affordable rates, have strong marketing, and are strategically located had a strong influence on customer satisfaction and loyalty. The problem with the study, however, is that it was limited methodologically and conceptually.

Adewale and Adeniran (2019) sought to critically examine “the impact of marketing mix elements on customer satisfaction with a special focus on Nestle Nig PLC in Lagos State, Nigeria.” To fulfill the purpose of the study, the researchers “adopted a descriptive survey design in which a sample size of 77 respondents was selected using a simple random sampling technique, and data was collected using questionnaires”. The researchers found a “correlation between marketing mix and customer satisfaction; the outcome of the investigation demonstrated that where there is the presence of the right products, the right price, the right place, and effective promotional activities, the result is often a significant increase in customer satisfaction.” The findings, however, are applicable to Nestle and the food and drink processing sector in Nigeria and may thus not be relevant to the LPG sector in Kenya.

An empirical review was conducted by Zulu et al. (2023) “to determine the impact product quality has on customer satisfaction and loyalty in Nigeria’s Adama beverages Ltd.” To fulfill this objective, the researchers adopted “a survey research design and recruited a sample of 264 respondents from whom data was collected using questionnaires; the data gathered was analyzed using quantitative statistical techniques such as linear regression and heteroscedasticity”. According to the findings, “product quality had a positive and significant impact on customer satisfaction and customer loyalty.” Therefore, the study concluded that the variations in a company's customer satisfaction scores and loyalty could be a result of changes to product quality.

### **2.3.2 Price Mix and Customer Satisfaction**

A company’s pricing strategy significantly influences its ability to keep customers satisfied. The general assumption is that customers are less satisfied with higher prices and vice versa. However, this is not always the case since people are naturally skeptical of extremely cheap prices (Haq, 2018; Hinterhuber & Liozu, 2012). Also, prices help shape customers’ perceptions of the quality of the product or service. Although higher prices may suggest that the product is exceptional, setting prices higher can deter customers. In addition, higher prices can lead to poor customer retention in the long run, especially if the product’s perceived quality does not match its price. Therefore, Haq (2018) proposes setting reasonable prices, a view that has been proven by Hasim et al. (2020), who found that customers are more satisfied when products are priced reasonably. Below are studies that looked into the correlation between the two variables.

The effect of the price factor on satisfaction has also been explored. For instance, Wantara and Tambrin (2019) studied “the effect price and product quality had on customer satisfaction and customer loyalty in Madura Batik.” A sample of “200 respondents were interviewed and asked to fill out a five-point Likert scale questionnaire” (Wantara & Tambrin, 2019). The SEM analytical method was used to analyze the data collected. The researchers found that both price and product quality were significant predictors of customer satisfaction. However, whereas price was a significant predictor of “customer loyalty, product quality did not have a significant effect on customer loyalty.”

Similar to Wantara and Tambrin's (2019) study, Razak et al. (2016) also tested “the effect price and product quality have on customer satisfaction and the mediating role of customer value in improving customer satisfaction on toothpaste products.” The researchers adopted “a quantitative research design to fulfill the objective of the study; structured Likert scale questionnaires were distributed to 110 respondents who were selected through a purposive sampling technique. Structural Equation Modeling was used as a means of inferential statistics to analyze data” (Razak et al., 2016). According to the findings, the price and quality of products were positive and significant predictors of customer satisfaction.

Elsewhere in Pakistan, Malik et al. (2012) sought to examine “the impact of brand image, service quality, and price on customer satisfaction in the telecommunication sector.” Data was gathered from a sample of 200 educational and business sectors of Gujranwala region using questionnaires. The “sample was selected using a stratified random sampling technique, and data was analyzed using the regression model; the study found that price and service quality had a significant impact on customer satisfaction” (Malik et al., 2012). However, the impact of the brand image was not significant. The study and its outcome are useful, but it focuses on the telecommunication sector in Pakistan. Therefore, the conclusions may not be relevant to the case of the LPG sector in Kenya.

Sentamu (2011) also sought to find out the various pricing strategies and their effect on customer satisfaction. The quantitative research design was utilized to satisfy the objective of the study, and a sample of 200 employees and 50 customers was selected to participate in the survey through “a purposive sampling technique, and data was collected using structured questionnaires and measured using a five-point Likert scale.” The study found that pricing has a significant influence

on customer satisfaction. Therefore, Sentamu (2011) recommends that companies should adopt the right pricing strategies to win, satisfy, and retain customers.

In the Westland area of Nairobi, Kenya, Wanyanga (2011) conducted a study to investigate “the influence price has on customer satisfaction among mobile phone users.” To achieve this goal, the researcher “adopted a descriptive research design and used stratified sampling technique was used to select a sample size of 150 respondents”. A “semi-structured questionnaire was used to collect data from the selected participants, and data was analyzed using the linear regression model.” Wanyanga (2011) found that price highly influenced customer satisfaction. The researchers recommended that mobile phone companies should commit to offering competitive pricing to drive customer satisfaction.

### **2.3.3 Promotion Mix and Customer Satisfaction**

The promotion element of the marketing mix is also viewed as a factor of satisfaction. Promotional activities such as discounts, advertising, free shipping, holiday promotions, vouchers and coupons, clearance sales, and free trials, among others, are believed to drive satisfaction (Bakator et al., 2018; Nisrina & Usman, 2021). Promotion primarily aims to communicate. In the process of informing, promotional activities can be used to persuade customers, thereby influencing their buying behavior (Nisrina & Usman, 2021). For instance, intensive promotional campaigns instill the desire to try out or buy a product or service. Therefore, besides informing, the promotion mix aims to drive sales. Below are studies that have looked into the subject matter extensively.

Triyadi (2020) aimed “to determine the effect of promotion and service quality on customer satisfaction at PT. Surya Karya Prima in Jakarta.” The study adopted “an explanatory research design with a sample of 100 respondents. Data was collected using questionnaires and analyzed via regression testing, correlation, determination, and hypothesis testing statistical methods” (Triyadi, 2020). The researchers found that “both promotion and service quality have significant effects on customer satisfaction.” However, the effect of service quality is stronger than that of the promotional mix. Therefore, researchers urged companies to invest more in service quality.

Lestari and Ruslany (2022) embarked on a study to determine “the influence of product, promotion, and price on customer satisfaction and its impact on broadband internet customer

loyalty at PT Indonesia Comments Plus.” Data was collected from “a sample of 150 respondents, and Structural Equation Modelling (SEM) AMOS 22.0 was used for data analysis” (Lestari & Ruslany, 2022). The result of the study shows that “product, price, and promotion have a positive and significant impact on customer satisfaction; also, all three independent variables have a positive and significant influence on broadband internet customer loyalty.”

In a similar investigation, Suharyono and Elfahmi (2021) explored “the effect of product quality, price perception, and promotion on customer satisfaction and its implications on customer loyalty of PT Makmur Jaya Agro Pesticides.” A sample of 160 respondents was drawn from PT Makmur Jaya Agro Pesticides for the study, and data was collected using questionnaires. The SEM model was adopted for analysis with the help of the SPSS tool. Suharyono and Elfahmi (2021) observed that “product quality, price perception, and promotion all had a positive and significant impact on customer satisfaction; also, customer satisfaction plays a mediating role between these variables and customer loyalty.”

A research study by Odunlami (2020) looked into “the effect of promotional mix on customer satisfaction among telecom subscribers in Lagos and Ogun States in Nigeria.” In this study, “advertising, sales promotion, public relations, personal selling, and direct marketing constituted the promotional mix and represented the independent variable, while customer satisfaction was the outcome variable.” A survey research design was used for the study, and data was collected using questionnaires. The multiple regression model was used to analyze data and formulate the correlation between the variables. Odunlami (2020) discovered that “advertising, sales promotion, public relations, personal selling, and direct marketing had significant effects on customer satisfaction.”

#### **2.3.4 Place Mix and Customer Satisfaction**

The place element of the marketing mix contributes to customer satisfaction. A study conducted by Pungnirund (2013) on the role of place mix and customer purchasing behavior found that “customers are happy when conveniently presented with the right products, at the right time, in the right way, at the right place, and in the right form.” As such, “the choice of distribution channels has a strong effect on sales; the distribution system is considered a key external resource

for an organization” (Pungnirund, 2013). Further insights into the correlation between the variables are provided by the peer-reviewed studies below.

The correlation was examined by Jamaludin et al. (2020), who sought to explore “the effect distribution strength has on customer satisfaction in PT Semen Tiga Roda.” The distribution channels made for “the independent variables, while customer loyalty was the dependent variable; a sample of 20 respondents was selected from the PT Semen Tiga Roda organization through a simple random sampling technique”. Quantitative data was collected from the respondents via questionnaires, and data was analyzed using correlational statistics and a linear regression model. Jamaludin et al. (2020) “found a positive and significant correlation between the distribution system and customer satisfaction.”

In another investigation, Caesar et al. (2022) sought to determine “the effect of product, distribution, and service quality on customer loyalty through customer satisfaction in the Indonesian marketplace.” The research study conducted was “a survey research design, and data was collected using a questionnaire tool with SEM analysis; a purposive sampling technique was used to select a sample of 400 customers from five marketplaces”. The study “found that product quality and service quality had a significant and positive impact on customer satisfaction, but the distribution system did not have a significant effect on either customer satisfaction or customer loyalty.” Therefore, Caesar et al. (2022) concluded that “distribution, or place factor, is not a significant predictor of customer satisfaction.”

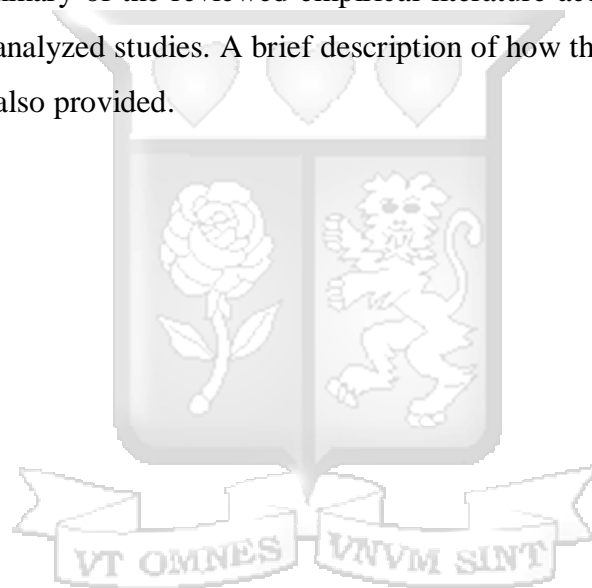
Elsewhere in Ghana, Mcobrein (2019) was determined to understand “the determinants of customer satisfaction through an effective wholesale distribution system, a survey of distributors and retail outlets at Makola Market in Accra.” Primary and secondary data were collected via interviews, questionnaires, and documentary reviews. Mcobrein (2019) found that “the distribution channel adopted by Makola Distributors ensures the availability of products, reduces response time, and makes information available to their customer in an aspect that facilitates a positive relationship with their customers and agents.” The study also discovered that the choice of distribution channel was a reliable predictor of customer satisfaction in the Makola market.

In Ethiopia, Deneke (2020) conducted an investigation on “the relationship between physical distribution and customer satisfaction in Ambo Mineral Water Company (AMW) PLC in Addis

Ababa.” Physical distribution was denoted by “distribution activities (transportation, warehousing, inventory control, and order processing) and distribution service (timeliness, product availability, distribution quality, and flexibility)” (Deneke, 2020). The researcher adopted “a survey research design and recruited a sample of 200 respondents comprising commercial staff, distributors, and major retailers; a structured questionnaire with a five-point Likert scale served as the data collection instrument, and correlational statistics were used to analyze data”. The study found that physical distribution has a significant effect on overall customer satisfaction.

## 2.4 Summary and Knowledge Gap

Table 2.1 provides a summary of the reviewed empirical literature accompanied by knowledge gaps identified from the analyzed studies. A brief description of how the current study addressed these knowledge gaps is also provided.



**Table 2. 1: Literature Review Summary and Knowledge Gap**

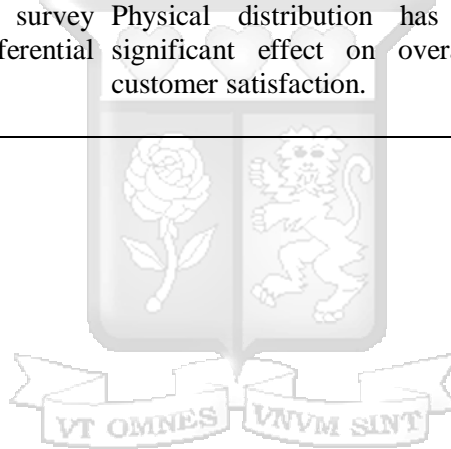
Author(s)	Objective	Methodology	Results	Knowledge Gap	Focus of present study
Zulu et al. (2023)	“Product quality and customer satisfaction and loyalty”	Quantitative: survey design and inferential statistics	“Product quality has a strong effect on satisfaction and loyalty.”	Study conducted in the beverage sector in Nigeria; findings cannot be generalized to the LPG sector in Kenya	The present research addressed the LPG sector in Nairobi, Kenya.
Syafarudin (2021)	Product quality and satisfaction during COVID-19.	Quantitative: descriptive design & inferential statistics	“Product quality has a strong influence on satisfaction.”	The study was conducted in regional banks in Indonesia; the results cannot be generalized to the LPG industry in Kenya.	The present research was based on the LPG sector in Nairobi, Kenya.
Rua et al. (2020)	Product satisfaction and loyalty	quality and design & structural equation modeling	Quantitative: survey design & structural equation modeling “Product quality has a strong effect on satisfaction and loyalty; satisfaction mediates product and loyalty.”	The findings of the study are limited to the context of the education sector and not relevant to the LPG industry.	The study focused on the LPG sector in Nairobi, Kenya.
Ellitan (2021)	Marketing mix and satisfaction and loyalty	Qualitative: desk-top and approach	“Product, price, promotion, and place influence customer satisfaction and loyalty.”	Study limited methodologically and conceptually; adopt a qualitative design.	The study utilized a quantitative research design to quantify the effect.
Wahab et al. (2016)	“Marketing mix and loyalty in the Hijab industry: the mediating effect of satisfaction.”	Quantitative: survey design and inferential statistics	“Marketing mix has a significant effect on customer satisfaction and loyalty. Satisfaction mediates the relationship between marketing mix and loyalty.”	The study was conducted in Malaysia and included loyalty as an outcome variable.	The study was conducted in Nairobi, Kenya, and focused on marketing mix and customer satisfaction.
Adewale & Adeniran (2019)	“Marketing mix and satisfaction on Nestle PLC in Nigeria”	Quantitative: descriptive design	“Marketing mix has a strong impact on customer satisfaction.”	Study conducted in the food and beverage sector in Nigeria	The study focused on the LPG sector in Nairobi, Kenya

Author(s)	Objective	Methodology and inferential statistics	Results	Knowledge Gap	Focus of present study
Hoe and Mansori (2018)	“Product quality and satisfaction and loyalty in the Malaysian engineering industry”	Quantitative: survey design and inferential statistics	“Product factor strongly correlates with customer satisfaction and loyalty. Satisfaction mediates the relationship between product and loyalty.”	The study was conducted in Malaysia, based on the engineering sector	The study was conducted in Kenya and focus on the LPG sector
Wantara and Tambrin (2019)	“Price and product quality and satisfaction and loyalty in Madura Batik.”	Quantitative: survey design & structural equation modeling	Price and product quality affected satisfaction significantly.	The study was conducted in the banking sector and based in Indonesia. Findings cannot be generalized to the LPG sector in Kenya.	The study was conducted in Kenya and focused on the LPG sector.
Malik et al. (2012)	“Brand image, service quality, and price and satisfaction in the telecom industry”	Quantitative: survey design and inferential statistics	Price and service quality predicted satisfaction significantly; the impact on the brand image was not significant.	The study focused on the telecommunications sector and was based in Pakistan. Findings may not apply to the LPG sector.	The study focused on the LPG sector in Kenya.
Wanyanga (2011)	“To investigate the influence price has on customer satisfaction among mobile phone users.”	Quantitative: survey design and inferential statistics	Price has a significant influence on customer satisfaction among mobile phone users.	The study lacks the element of recency; information may not be relevant	The study captured up-to-date trends
Sentamu (2011)	To find out the various pricing strategies and their effect on customer satisfaction	Quantitative: survey design and inferential statistics	Pricing has a significant influence on customer satisfaction	The study lacks the element of recency and has a weak conceptual framework	The study captured up-to-date trends

<b>Author(s)</b>	<b>Objective</b>	<b>Methodology</b>	<b>Results</b>	<b>Knowledge Gap</b>	<b>Focus of present study</b>
Odunlami (2020)	Promotional mix and satisfaction in Lagos and Ogun States's telecom subscribers.	Quantitative: survey design and inferential statistics	Promotional mix is a strong predictor of satisfaction.	The study was conducted in Nigeria's telecom sector. Results may not apply to the LPG industry in Kenya.	The study was conducted in Kenya and focused on the LPG sector.
Triyadi (2020)	“Promotion and service quality and satisfaction at PT. Surya Karya Prima in Jakarta”	Quantitative: survey design and inferential statistics	Both promotion and service quality affected satisfaction, but the effect of service quality was stronger.	The study was based in Indonesia; findings may not apply to LPG in Kenya	The research was based on the LPG sector in Kenya
Lestari and Ruslany (2022)	“Product, promotion, and price and satisfaction and its effect on loyalty at PT” Indonesia Comments Plus”	Quantitative: survey design & structural equation modeling	Product, price, and promotion affected satisfaction and loyalty significantly; satisfaction mediated the correlation.	Study based in Indonesia and focused on the broadband internet sector	The study was conducted in Kenya and focus on the LPG sector
Suharyono and Elfahmi (2021)	Product quality, price perception, promotion and satisfaction, and loyalty	Quantitative: survey design & structural equation modelling	Product, price, and promotion impacted satisfaction significantly; satisfaction mediated marketing mix and loyalty.	The study was limited in terms of conceptual framework. The association between promotion mix and satisfaction is not well illustrated.	The study focused on demonstrating the relationship between marketing mix elements and customer satisfaction.
Jamaludin et al. (2020)	Distribution strength and satisfaction in PT Semen Tiga Roda.	Quantitative: survey design and inferential statistics	The distribution system positively and significantly affects satisfaction	The element of place factor is not broadly covered	The study plans to cover all aspects of place mix
Caesar et al. (2022)	“Product, distribution, and service quality on loyalty via satisfaction in Indonesia.”	Quantitative: survey design & structural equation modelling	Product and service quality significantly impacts satisfaction; the distribution	The study was limited in terms of conceptual framework. The element of distribution and its	A detailed conceptual framework was adopted to ensure all aspects of place mix are covered.

Author(s)	Objective	Methodology	Results	Knowledge Gap	Focus of present study
			system did not affect either satisfaction or loyalty.	effect is not well demonstrated.	
Mcobrein (2019)	Determinants of satisfaction via a wholesale distribution system in Ghana.	Quantitative: survey design and inferential statistics	The choice of distribution channel was a reliable predictor of satisfaction in the Makola market.	The research was limited in conceptual framework. The association between place mix and satisfaction is not well illustrated.	The study focused on the role of place mix on customer satisfaction.
Deneke (2020)	Physical distribution and satisfaction in (AMW) PLC Ethiopia	Quantitative: survey design and inferential statistics	Physical distribution has a significant effect on overall customer satisfaction.	The association between place factors and satisfaction is not well demonstrated.	The study focused on the role of place mix on customer satisfaction.

Source: (Researcher, 2025)



## 2.5 Conceptual Framework

A “conceptual framework is an analytical tool that showcases the relationship between variables in a research study” (Kivunja, 2018). The conceptual framework for the study is shown in Figure 2.1. The marketing mix, as the predictor or independent variable, was represented by product, price, promotion, and place factors, while customer satisfaction constituted the dependent or outcome variable.

### Independent Variables

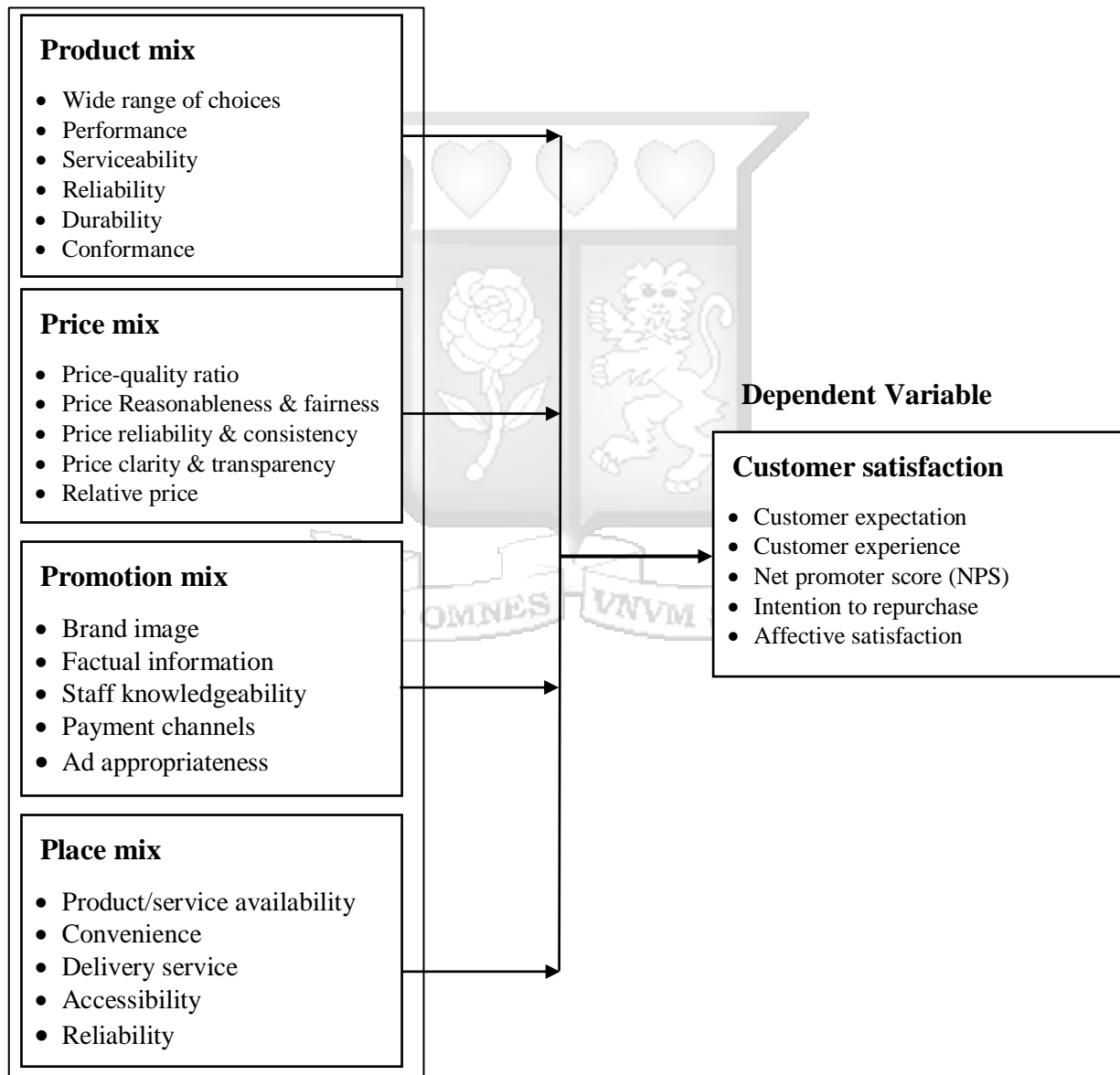


Figure 2. 1: Conceptual Framework

Source: (Researcher, 2025)

## 2.6 Operationalization of Variables

While the conceptual framework highlights the key concepts and expected relationships between the variables of a study, operationalization involves defining the variables and describing how they are measured. Table 2.2 illustrates how the variables of this study were operationalized and measured.

**Table 2. 2: Operationalization of Variables**

Variable	Indicators	Scale	Source
Customer satisfaction	<ul style="list-style-type: none"> <li>• Customer expectation</li> <li>• Customer experience</li> <li>• Net promoter score (NPS)</li> <li>• Intention to repurchase</li> <li>• Affective satisfaction</li> </ul>	5-Point Likert Scale	(Kotler et al., 2015; Leninkumar, 2017)
Product mix	<ul style="list-style-type: none"> <li>• Wide range of choices</li> <li>• Performance</li> <li>• Serviceability</li> <li>• Reliability</li> <li>• Durability</li> <li>• Conformance</li> </ul>	5-Point Likert Scale	(Cruz, 2015; Hoe & Mansori, 2018; Lone & Bhat, 2022)
Price mix	<ul style="list-style-type: none"> <li>• Price-quality ratio</li> <li>• Price Reasonableness &amp; fairness</li> <li>• Price reliability &amp; consistency</li> <li>• Price clarity &amp; transparency</li> <li>• Relative price</li> </ul>	5-Point Likert Scale	(M. T. Khan, 2014; Kotler et al., 2015; Razak et al., 2016)
Promotion mix	<ul style="list-style-type: none"> <li>• Brand image</li> <li>• Factual information</li> <li>• Staff knowledgeability</li> <li>• Payment channels</li> <li>• Ad appropriateness</li> </ul>	5-Point Likert Scale	(Kant et al., 2023; Ubeja & Bedia, 2014)
Place mix	<ul style="list-style-type: none"> <li>• Product/service availability</li> <li>• Convenience</li> <li>• Delivery service</li> <li>• Accessibility</li> <li>• Reliability</li> </ul>	5-Point Likert Scale	(Pungnirund, 2013)

Source: (Researcher, 2025)

## 2.7 Chapter Summary

The chapter analyzed and reviewed previous peer-reviewed articles on the effect of marketing mix on satisfaction. The empirical review of the literature focused on the specific elements of the marketing mix – product, price, promotion, and place – and their effect on customer satisfaction. The studies were critically reviewed through the lenses of the consumer decision-making process theory and expectancy disconfirmation theory, which made for the theoretical framework for the study. Most of the studies reviewed reveal a positive correlation among the variables. However, contextual, conceptual, scope and methodological limitations were identified.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter focuses on the "how" the study was conducted. It details the methods, procedures, techniques, and tools that were used to collect, process, and analyze data to respond to the research questions.

#### **3.2 Research Philosophy**

The study was underpinned by the positivist research philosophy. Positivism is a school of thought rooted in the belief that science is the only way to learn about the truth (Park et al., 2020). It holds that knowledge is obtained via objective observations and measurements. Therefore, in this research paradigm, “researchers are objective analysts who dissociate themselves from personal values and beliefs” (Tamminen & Poucher, 2020). The choice for this research paradigm was justified by the need to emphasize objective measurement and reason that leads to objective findings free from human misinterpretation or bias. As such, it was vital in gathering and analyzing data to complete the study.

#### **3.3 Research Design**

A research design is “the overall strategy for answering the research question; it is a framework that encompasses the methods, tools, and techniques used to collect, analyze, and interpret data” (Dannels, 2018). The choice of a research design should be informed by the topic and the research paradigm adopted. Therefore, the study adopted “a descriptive cross-sectional research design,” which, according to Chege and Otieno (2020), is a suitable design for population-based research that seeks to describe a phenomenon. In other words, the design seeks to provide systematic information about a subject matter under investigation. In this case, it was appropriate to describe the dynamics of the association between the variables.

The design was suitable for studying the effect of marketing mix elements on customer satisfaction in Nairobi County's LPG sector because it allowed for the collection of data on both the perception towards marketing mix elements and customer satisfaction levels at a single point in time. As described above, this design enabled capturing a snapshot of the relationships between these

variables across a diverse sample of LPG customers within the county. A descriptive cross-sectional research design helped gather quantitative data on how LPG customers perceive product quality, pricing, distribution, and promotional activities and correlated these perceptions with their reported satisfaction levels.

### **3.4 Population and Sampling**

This section describes the study's target population and sampling methods used to select and recruit participants.

#### **3.4.1 Target Population**

A “research population refers to a collection of individuals, entities, items, objects, events, etc., with similar attributes” (Etikan & Bala, 2017). An example of a population is the entire student body at a learning institution. “It is the group that a researcher intends to study and draw conclusions about a phenomenon” (Etikan & Bala, 2017). The target population of the study constituted LPG consumers within Nairobi County. The “Kenya Institute for Public Policy Research and Analysis (KIPPRA) suggests that the LPG consumption in Nairobi County is 67.2%” (Mbaka & Njogu, 2023). The number of households in Nairobi County from the 2019 national census is 1,506,888 (Kenya National Bureau of Statistics [KNBS], 2023). Therefore, a population of 1,012,628 households (62.7% of 1,506,888) were targeted.

#### **3.4.2 Sampling**

Sampling “is the selection of a subset of individuals from within a population of interest to estimate the characteristics of the whole population” (Etikan & Bala, 2017). Sampling is necessary since, considering its size, the participation of the entire population is not possible. Therefore, a smaller group is necessary for data collection. The study adopted a “simple random sampling method to recruit participants, a type of probability sampling in which a researcher randomly selects a subset of participants from the target population” (Takona, 2024). This technique was suitable for the study because it reduced the likelihood of selection bias, which could skew the research results, thereby producing a sample that accurately reflects the attributes of the entire population.

The sample size was determined by Tora Yamane's (1967) formula, which is used to determine the appropriate sample size based on the size of the population. The sample size was as follows:

### Equation 3. 1: Yamane Sample Size Formula

$$n = \frac{N}{1 + N(e)^2}$$

Where;

$n$  = ideal sample size,  $N$  = size of the target population,  $e$  = margin of error (5%)

Therefore;

$$n = \frac{1,012,628}{1 + 1,012,628(0.05)^2}$$

Sample size includes = 400 respondents

The target respondents were selected from all the sub-counties of the Nairobi County. Sample representation was proportional to the number of households for each sub-county. This was done to ensure all sub-counties were equally represented. Table 3.1 illustrates sample representation per sub-county.

**Table 3. 1: Sample size**

Sub-County	No. of Households	Percentage (of 1,506,888)	Sample size
DAGORETTI	155,089	10.29%	41
EMBAKASI	347,955	23.09%	92
KAMUKUNJI	84,365	5.60%	23
KASARANI	271,290	18.00%	72
KIBRA	61,690	4.10%	16
LANG'ATA	62,239	4.13%	17
MAKADARA	70,361	4.67%	19
MATHARE	74,967	4.96%	20
NJIRU	204,563	13.58%	54
STAREHE	69,389	4.60%	18
WESTLANDS	104,980	6.97%	28
<b>Total</b>			<b>400</b>

Source: (Researcher, 2025)

### 3.5 Data Collection

The systematic “collection of data is essential for a researcher to answer research questions and test hypotheses in a sufficient manner; data collection involves gathering and measuring information on the variables of interest in an established and systematic fashion” (Taherdoost, 2021). As such, for the stated research questions to be answered and the established hypotheses

tested, data must be systematically collected. To achieve this, the study was based on primary data, and an intercept survey method was adopted for data collection.

More specifically, structured questionnaires were made for the research instrument. Structured questionnaires are suitable for data collection due to their standardized format, which ensures consistency and comparability across responses (Ganesha & Aithal, 2022). The questionnaires comprised a set of standardized and close-ended questions with specific schemes and sequencing, allowing for limited, quick, and quantitative responses. It consisted of 6 sections: respondents' demographic background, product element, price element, promotion element, place element, and customer satisfaction; data was measured using the Likert 5-point scale (Appendix 6).

By using closed-ended questions with predefined answer options, quantitative data was gathered efficiently, facilitating straightforward analysis and statistical comparisons. This format also helped minimize interviewer bias, as questions were presented uniformly and allowed for efficient data entry and processing (Ganesha & Aithal, 2022). Furthermore, structured questionnaires were particularly effective for the large sample size, enabling data to be collected from a broad and diverse population in a relatively short period while maintaining data reliability and validity.

An intercept survey method was used to gather on-site feedback from the targeted respondents. This approach involves approaching individuals in public places, such as shopping malls, streets, or events, and asking them to participate in a survey on the spot (Henley & McCoy, 2018). The intercept survey was excellent for the study because it helped reach a diverse and representative sample that may not respond to other methods. Research assistants were stationed at the centralized location of each sub-county. The assistants approached target respondents, introduced them to the survey, disclosed information about the study, asked for informed consent, and then handed them the questionnaires to complete. The questionnaires were read to those unable to read.

### **3.6 Research Quality**

In the realm of scientific inquiry, research quality is an essential factor in ensuring thoroughness, accuracy, authenticity, relevance, and trustworthiness of evidence. Achieving research quality

demands that certain standards must be followed. This ensures that the findings are reliable and valid. The quality of the study was assured, as discussed below:

### 3.6.1 Reliability

Reliability “refers to the consistency of a measure, the ability of the research method to produce the same results over and over” (Sekaran & Bougie, 2016). The scholars further suggest that research should be consistent in three ways: over time, across items, and across researchers. The research instrument’s internal consistency was maintained by conducting a pilot study on 20 individuals with attributes similar to those of the target population. This is because Kunselman (2024) advises a “sufficient sample size for a pilot study should range between 12 and 30 individuals per group.”

Data was collected from the targeted individuals using questionnaires. The results were subjected to the “Cronbach's Alpha test, which sought to assess the reliability of the instrument by comparing the amount of shared variance or covariance among the items making up a research instrument to the amount of overall variance” (Price et al., 2019). The acceptable level of internal consistency should fall between 0.7 and 0.9 of Cronbach's Alpha scale values.

The reliability test was performed to ascertain the quality of this research. In particular, the Cronbach’s Alpha test was performed on all the constructs. The general rule of thumb is that the acceptable Cronbach’s Alpha value for reliable research should fall in the 0.7-1 range. As shown in Table 4.3, all the constructs met this requirement. Therefore, this research is reliable.

**Table 3. 2: Reliability Test**

<b>Constructs</b>	<b>Cronbach’s Alpha</b>	<b>N of Items</b>
Customer satisfaction	.862	5
Product mix	.870	6
Price mix	.904	5
Promotion mix	.887	5
Place mix	.882	5

**Source: (Researcher, 2025)**

### **3.6.2 Validity**

While “reliability focuses on the consistency of the measures, validity is concerned with the accuracy of the measures; the test-retest reliability, internal consistency, and interrater reliability are good indications that scores represent what they should” (Price et al., 2019). However, more is needed since a measure can be reliable but not valid. A valid study conveys data that is a true representation of respondents' views. Therefore, the internal validity of the study was enhanced by verifying the research instrument was designed to collect data that represented the actual views of the participants. This was achieved by seeking feedback on the validity of the research instrument from the assigned supervisor. Also, external validity was achieved by assuring respondents of their free will and data privacy for the purpose of minimizing bias in their responses.

### **3.7 Data Analysis**

The completed questionnaires were collected and prepared for analysis. They were sorted and checked for accuracy and consistency and cleaned for errors and omissions to ensure data eligibility. Once that was done, the data was coded, categorized, and input into computer software, SPSS, for analysis. Descriptive, correlational, and multiple regression statistics were adopted for data analysis.

#### **3.7.1 Descriptive Statistics**

Descriptive statistics is used to “describe the main features of a data set; the analysis was useful in summarizing and describing data in terms of frequencies, mean, and standard deviation for qualitative and quantitative variables” (Mishra et al., 2019). This type of statistical technique was particularly used to describe and summarize the basic features of the respondents' demographic profile and identify patterns in the data set.

#### **3.7.2 Correlational Analysis**

Correlational analysis or bivariate analysis is applied to determine the relationship and the magnitude of this relationship between variables. In this study, correlational analysis was used to check for the correlation between each predictor and outcome variable, as highlighted in objectives

1, 2, 3, and 4. According to (Sen & Das, 2023), “correlation between variables is denoted by a correlation coefficient that ranges between -1 and +1. A negative coefficient is an indication of a negative correlation, a positive coefficient signifies a positive correlation, and zero shows no correlation between variables”.

### 3.7.3 Diagnostic Tests

Besides correlational tests, the study applied diagnostic analytics to check whether the underlying assumptions of the regression model were satisfied or violated. Diagnostics tests that were performed include tests for heteroscedasticity, normality, autocorrelation, and multicollinearity. These tests were helpful in ascertaining the validity of the regression model before proceeding to the next stage of analysis.

### 3.7.4 Regression Analysis

The “regression analysis is used to determine the relationship between two or more independent variables and a single dependent variable” (Sen & Das, 2023). The analysis is relevant to the study since it features four independent variables (product, price, promotion, and place factors) and a single dependent variable (customer satisfaction). The regression model that was used includes the following:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where;

$Y$  = Satisfaction of Consumers,  $\alpha$  = Constant,  $\beta$  = Beta coefficients,  $X_1$  = Product element,  $X_2$  = Price element,  $X_3$  = Promotion element,  $X_4$  = Place element,  $\varepsilon$  = error term

### Equation 3. 2: Multiple linear regression equation

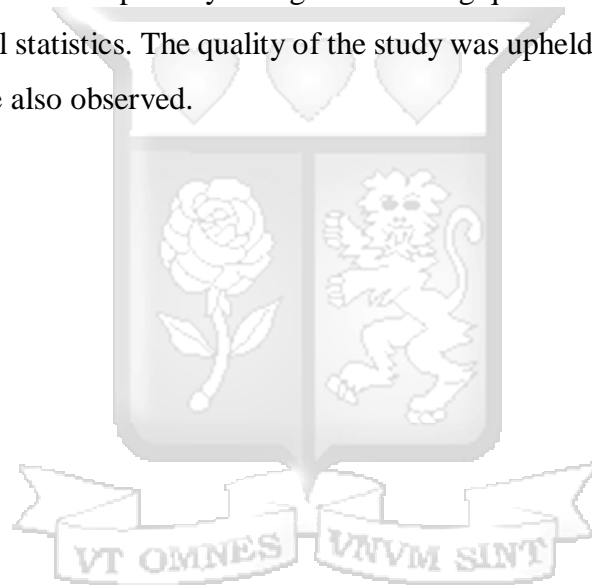
## 3.8 Ethical Issues in Research

In addition to the standards for research quality, the principles of ethics were observed in completing the study. Ethical approval was obtained from the Strathmore University Ethical Review Board (SU-ERB) before data collection. Once that was done, a research license was secured from the National Commission for Science, Technology, and Innovation (NACOSTI). This was done to maintain the credibility of the study. Also, the principles of informed consent, privacy, and confidentiality were adhered to for the purpose of protecting respondents' rights and interests. Participants were issued an informed consent form to sign before agreeing to participate

in the study. They were also assured of their voluntary participation and the freedom to withdraw at any point during the study. To protect their privacy, the study did not collect personally identifiable data.

### **3.9 Chapter Summary**

The focus of the chapter was to describe the methodology that was adopted to complete this research study. As discussed, the positivist research philosophy was followed, and a descriptive cross-sectional research design was employed. The study targeted the number of households in Nairobi City County using LPG from whom a sample was recruited using simple random sampling. The study was based on primary data gathered using questionnaires and analyzed using descriptive and inferential statistics. The quality of the study was upheld, and ethical standards for conducting research were also observed.



## CHAPTER FOUR DATA ANALYSIS AND INTERPRETATION

### 4.1 Introduction

This section of the paper delves into the heart of the study – the findings. The outcome of the rigorous process of data collection and analysis is presented in this chapter in a comprehensive and understandable format. The findings of this research are presented in a clear and concise manner using tables and figures.

### 4.2 Response Rate

The survey targeted 400 respondents, each of whom was furnished with a questionnaire to fill out. A total of 317 out of the 400 distributed questionnaires were received in time for the analysis. However, following a survey data cleaning process, 19 questionnaires were rejected for incomplete responses and errors. As such, 298 of the completed questionnaires were eligible for analysis, meaning 74.5% of the respondents participated in the survey in its entirety.

**Table 4. 1: Response Rate**

Category	Frequency	Percentage
Responded	298	74.5%
Non-response	102	25.5%
<b>Total</b>	<b>400</b>	<b>100.0%</b>

Source: (*Researcher, 2025*)

### 4.3 Respondents' Demographic Information

The survey sought to gather data on the demographic profile of the research participants. Findings are presented in Table 4.2. As observed, the bulk of the respondents were female (61.4%), aged 31-40 years (40.3%), had tertiary level education (59.4%), were not willing to disclose their marital status (28.5%), and belonged to a household size of 1-4 people (62.4%). Nearly half (or 47.3%) of the respondents chose not to disclose household income, but out of those who did, 31.5% stated that they were earning less than KES 20,000 per month. In addition, the most popular LPG cooking gas brands are K-Gas (20.1%), Hashi (17.6%), and Afri Gas (12.3%).

**Table 4. 2: Respondents' Sociodemographic Information (N=298)**

<b>Sociodemographic characteristic</b>	<b>Distribution</b>	<b>Frequency</b>	<b>Percentage</b>
Please indicate your gender	Male	115	38.6%
	Female	183	61.4%
Please indicate your age (years)	<30	99	33.2%
	31-40	120	40.3%
	41-50	70	23.5%
	>50	9	3.0
Level of education	No formal education	8	2.7%
	Primary school	9	3.0%
	Secondary school	104	34.9%
	Tertiary level	177	59.4%
Marital status	Married	78	26.2%
	Single (never married)	45	15.1%
	Separated	17	5.7%
	Divorced	11	3.7%
	Living together	62	20.8%
	Not willing to disclose	85	28.5%
Size of your household	1-4 people	186	62.4%
	5-8 people	89	29.9%
	9-12 people	12	4.0%
	Above 12 people	11	3.7%
Monthly household income (in KES)	<20,000	94	31.5%
	20,000-50,000	24	8.1%
	51,000-80,000	33	11.1%
	>80,000	6	2.01%
	Not willing to share	141	47.3%
Brand of LPG cooking gas used	Hashi	50	17.6%
	K-Gas	57	20.1%
	Afri Gas	35	12.3%
	Hass	25	8.8%
	Pro Gas	26	9.2%
	Total	18	6.3%
	Others	87	29.1%

**Source: (Researcher, 2025)**

## 4.4 Descriptive Statistics

This section of the study presents findings from the descriptive statistics performed on the data. The specific descriptive statistics the study carried out include the measures of central tendency, measures of frequency, and measures of distribution.

### 4.4.1 Customer Satisfaction

The research sought to collect data on customer satisfaction in the LPG sector in Nairobi City County. Respondents were required to indicate the extent to which they agreed or disagreed with the statements about the satisfaction of LPG on a five-point Likert scale where 1=strongly disagree; 2=disagree; 3= neutral; 4=agree; 5=strongly agree. Table 4.3 summarizes the main qualities of the responses.

**Table 4. 3: Customer Satisfaction**

	1 f (%)	2 f (%)	3 f (%)	4 f (%)	5 f (%)	Mean	STD
In general, the quality of the products and services my current LPG supplier offers meets my expectations.	21 (7.0)	39 (13.1)	86 (28.9)	108 (36.2)	44 (14.8)	3.386	1.105
I am happy with the overall experience I received from my LPG supplier.	4 (1.3)	21 (7.0)	120 (40.3)	132 (44.3)	21 (7.0)	3.487	.7838
I would recommend my LPG supplier to other customers.	5 (1.7)	26 (8.7)	100 (33.6)	121 (40.6)	46 (15.4)	3.594	.9099
Based on the quality and service I receive, I have a strong intention to continue to purchase LPG from my current supplier in the future.	10 (3.4)	43 (14.4)	58 (19.5)	150 (50.3)	37 (12.4)	3.540	.9950
Overall, I am happy with the LPG gas, services, and prices my supplier offers.	27 (9.1)	12 (4.0)	84 (28.2)	148 (49.7)	27 (9.1)	3.456	1.028
<b>Overall Mean</b>						<b>3.493</b>	<b>.9643</b>

Source: (Researcher, 2025)

The overall mean for the customer satisfaction variable was 3.493 at a 0.9643 standard deviation. The finding suggests customers in Nairobi County's LPG industry were neither satisfied nor

dissatisfied. More interestingly, respondents remained neutral on all measures of satisfaction, including customer expectations (M=3.386, SD=1.105), customer experience (M=3.487, SD=.7838), net promoter score (M=3.594, SD=.9099), intention to repurchase (M=3.540, SD=.9950), and affective satisfaction (M=3.456, SD=1.028). However, it is worth noting that a significant number of respondents stated that their expectations were met (51%), were happy with the experience received (51.3%), stated they would recommend their LPG dealer (56%), were happy with their decision to purchase from their LPG supplier (62.7%), and were fulfilled with the overall services and prices offered (58.8%).

#### 4.4.2 Product Mix

The research sought to collect data on product mix in the LPG sector in Nairobi City County. Table 4.4 summarizes the main characteristics of the responses on a 5-point Likert scale.

**Table 4. 4: Product Mix**

	1 f (%)	2 f (%)	3 f (%)	4 f (%)	5 f (%)	Mean	STD
My current supplier is known for their wide selection of high-quality LPG cooking products.	26 (8.7)	44 (14.8)	115 (38.6)	89 (36.2)	24 (8.1)	3.138	1.050
LPG cooking gas from my current supplier performs better than other options in the market.	19 (6.4)	10 (3.4)	141 (47.3)	114 (38.3)	14 (4.7)	3.315	.8730
My current dealer offers well-maintained and serviced LPG cylinders.	42 (14.2)	16 (5.4)	90 (30.2)	119 (39.9)	31 (10.4)	3.272	1.168
The LPG cylinders from my supplier perform as intended without failure or developing issues.	14 (4.7)	9 (3.7)	108 (36.2)	134 (45.0)	33 (11.1)	3.547	.9024
LPG cooking gas from my current supplier lasts longer than most options on the market.	17 (5.7)	47 (15.8)	64 (21.5)	140 (47.0)	30 (10.1)	3.399	1.050
My dealer demonstrates a commitment to safety by providing LPG cylinders and services that adhere to industry standards.	15 (5.0)	15 (5.0)	77 (25.8)	143 (48.0)	48 (16.1)	3.651	.9774
<b>Overall Mean</b>						<b>3.387</b>	<b>1.003</b>

Source: (Researcher, 2025)

The overall mean score for the product mix variable was 3.387 at a 1.003 standard deviation. This means that respondents, in general, are neither satisfied nor dissatisfied with the product element of the marketing mix in Nairobi's LPG sector. Further insights show that they were neither satisfied nor dissatisfied with all the elements of the product mix, including range of product choice (M=3.138, SD=1.050), performance (M=3.315, SD=.8730), serviceability (M=3.547, SD=.9024), reliability (M=3.399, SD=1.050), longevity (M=3.651, SD=.9774), and conformance (M=3.272, SD=1.168). However, it is worth noting that a significant number of the respondents were satisfied with LPG cooking gas performing as intended without issues (56.1%), lasting longer than other options (57.1%), and LPG products and services complying with standards (64.1%).

#### 4.4.3 Price Mix

The research sought to collect data on price mix in the LPG sector in Nairobi City County. Table 4.5 summarizes the main characteristics of the responses on a 5-point Likert scale.

**Table 4. 5: Price Mix**

	<b>1</b> f (%)	<b>2</b> f (%)	<b>3</b> f (%)	<b>4</b> f (%)	<b>5</b> f (%)	<b>Mean</b>	<b>STD</b>
The prices offered by my supplier match the quality of LPG and the services they offer.	66 (22.1)	87 (29.2)	85 (28.5)	52 (17.4)	8 (2.7)	2.493	1.099
I believe that the prices I pay for LPG gas and other services are fair and reasonable.	76 (25.5)	89 (29.2)	66 (22.1)	59 (19.8)	8 (2.7)	2.443	1.148
Prices from my LPG supplier are usually stable, and any changes are communicated accordingly.	65 (21.8)	70 (23.5)	79 (26.5)	67 (22.5)	17 (5.7)	2.668	1.206
My supplier informs me about the prices of LPG and other charges in a way that I can understand.	80 (26.8)	87 (29.2)	40 (13.4)	70 (23.5)	21 (7.0)	2.547	1.297
My supplier offers the most competitive prices for LPG in the market.	54 (18.1)	74 (24.8)	90 (30.0)	53 (17.8)	27 (9.1)	2.748	1.206
<b>Overall Mean</b>						<b>2.580</b>	<b>1.191</b>

**Source: (Researcher, 2025)**

The overall mean score for the price mix variable was 2.580 at a 1.191 standard deviation, suggesting that respondents were dissatisfied with prices in Nairobi's LPG sector. They expressed dissatisfaction with all elements of the pricing mix, including price-quality ratio (M=2.493, SD=1.099), reasonableness and fairness (M=2.443, SD=1.148), reliability and consistency

(M=2.668, SD=1.206), clarity and transparency (M=2.547, SD=1.297), and relative pricing (M=2.748, SD=1.206). Further analysis shows that the majority of the respondents believed the prices they paid did not match the quality of product and services received (51.3%), the prices were unfair (54.7%), and stated their suppliers did not clarify prices and charges in ways they could understand (56.0%).

#### 4.4.4 Promotion Mix

The research sought to collect data on the promotion mix in the LPG sector in Nairobi City County. Table 4.6 summarizes the main characteristics of the responses on a 5-point Likert scale.

**Table 4. 6: Promotion Mix**

	1 f (%)	2 f (%)	3 f (%)	4 f (%)	5 f (%)	Mean	STD
My current LPG supplier is well-known in the market because of the quality of gas and services they offer.	21 (7.0)	45 (15.1)	159 (53.4)	55 (18.5)	18 (6.0)	3.013	.9283
The information my current LPG supplier shares is factual and can be verified.	44 (14.8)	17 (5.7)	98 (32.9)	122 (40.9)	17 (5.7)	3.171	1.123
My LPG supplier shows a high level of creativity in how they design their advertisements.	41 (13.8)	34 (11.4)	83 (27.9)	105 (35.2)	35 (11.7)	3.198	1.205
My current LPG supplier offers multiple payment options, including cash, M-Pesa, credit card, etc.	9 (3.0)	35 (11.7)	108 (36.2)	114 (38.3)	32 (10.7)	3.419	.9367
The staff at my LPG supplier demonstrate that they have the knowledge and ability to answer customers' questions.	18 (6.0)	38 (12.8)	89 (29.9)	110 (36.9)	43 (14.4)	3.409	1.073
<b>Overall Mean</b>						<b>3.242</b>	<b>1.053</b>

Source: (Researcher, 2025)

The overall mean for the promotion mix variable is 3.242 at 1.053 standard deviation, implying that respondents were neither satisfied nor dissatisfied with the promotional element of the marketing mix in the LPG sector in Nairobi County. This is further proven by a sense of neutrality on all elements of promotion mix, including brand image (M=3.013, SD=.9283), factualness of information (M=3.171, SD=1.123), ad appropriateness (M=3.198, SD=1.205), payment channels (M=3.409, SD=1.073), and staff knowledgeability (M=3.409, SD=1.073). Most respondents were neither satisfied nor dissatisfied with the reputation of the LPG dealers (53.4%); only 46.6%

agreed that information provided by the suppliers could be verified, and 46.9% were happy with the creativity of ad designs.

#### 4.4.5 Place Mix

The research sought to collect data on place mix in the LPG sector in Nairobi City County. Table 4.7 summarizes the main characteristics of the responses on a 5-point Likert scale.

**Table 4. 7: Place Mix**

	<b>1</b> <b>f (%)</b>	<b>2</b> <b>f (%)</b>	<b>3</b> <b>f (%)</b>	<b>4</b> <b>f (%)</b>	<b>5</b> <b>f (%)</b>	<b>Mean</b>	<b>STD</b>
My LPG supplier is always available for business, both day and night.	62 (20.8)	63 (21.1)	97 (32.6)	56 (18.8)	20 (6.7)	2.695	1.188
My preferred brand of LPG is always available whenever I make an order.	40 (13.4)	59 (19.8)	61 (20.5)	107 (35.9)	31 (10.4)	3.101	1.227
My current LPG supplier is situated in a place I find to be convenient.	19 (6.4)	46 (15.4)	65 (21.8)	131 (44.0)	37 (12.4)	3.406	1.088
My LPG supplier provides multiple options for placing an order, including phone calls, SMS, etc.	28 (9.4)	39 (13.1)	75 (25.2)	113 (37.9)	42 (14.4)	3.349	1.160
Whenever I place an order, my current supplier delivers on time.	31 (10.4)	105 (35.2)	30 (10.1)	105 (35.2)	27 (9.1)	2.973	1.220
<b>Overall Mean</b>						<b>3.105</b>	<b>1.177</b>

**Source: (Researcher, 2025)**

The overall mean for the place mix variable is 3.105 at a 1.177 standard deviation, meaning respondents were neither satisfied nor dissatisfied with the place element of the marketing mix in the LPG market in Nairobi County. They expressed dissatisfaction with the availability of products and services (M=2.695, SD=1.188) and promptness of delivery (M=2.973, SD=1.220). However, they remained neutral on the availability of LPG cooking gas brand preference (M=3.101, SD=1.227), supplier convenience (M=3.406, SD=1.088), and accessibility (M=3.349, SD=1.160).

#### 4.5 Establishing Relationships

The research carried out inferential statistics for the purpose of making inferences about the target population based on the sample data, identifying the relationship between variables, and testing hypotheses or theories. More specifically, this research performed correlational analysis and regression analysis. Findings are presented in the sections that follow.

#### 4.5.1 Normality Test

This research performed a normality test before proceeding to inferential statistics to determine whether to conduct parametric or nonparametric tests. According to Sutanapong and Louangrath (2015), the parametric test applies when the dataset follows a normal distribution, and the nonparametric test applies if the data is not normally distributed. In particular, due to the sample size, the research performed the Kolmogorov–Smirnov test, a normality test, due to the sample size. Findings from the test show that all the constructs are statistically significant ( $p < .05$ ), as shown in Table 4.8, confirming that they were all not normally distributed. Further analysis shows that constructs were either skewed to the left or right.

**Table 4. 8: One-Sample Kolmogorov–Smirnov Test**

	N	Mean	Std. Deviation	Skewness	Kurtosis	K-S	Asmp. Sig.
Customer satisfaction	298	3.4926	.77903	-1.201	1.067	.256	.000
Product mix	298	3.3870	.78514	-1.106	1.582	.174	.000
Price mix	298	2.5799	1.01404	.431	-1.039	.153	.000
Promotion mix	298	3.2423	.87891	-.627	-.180	.175	.000
Place mix	298	3.1047	.97070	-3.59	-7.10	.175	.000

Source: (Researcher, 2025)

#### 4.5.2 Product Mix and Customer Satisfaction

Correlational analysis was performed to test the correlation (strength and direction) between each independent variable and the dependent variable. In particular, since data did not follow normal distribution, the research performed Spearman's rank correlation analysis, a nonparametric test.

Spearman's correlation test was performed to check for the presence of a correlation between the product mix element and customer satisfaction in the LPG industry in Nairobi County. Table 4.9 shows the results of the analysis.

**Table 4. 9: Product Mix and Customer Satisfaction**

		Customer satisfaction	Product mix
Spearman's rho	Customer satisfaction	Correlation Coefficient	1.000
			.735**

	Sig. (2-tailed)	.	.000
	N	298	298
Product mix	Correlation Coefficient	.735**	1.000
	Sig. (2-tailed)	.000	.
	N	298	298

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

A very strong, significant positive correlation was observed between product mix and customer satisfaction ( $r=.735, p<.05$ ). The monotonic increasing relationship between the two variables means that an increase in the product mix would result in a substantial increase in the satisfaction of customers. In addition, since the correlation is statistically significant, this research rejected the null hypothesis at a 95% confidence level and a 5% significance level.

#### 4.5.3 Price Mix and Customer Satisfaction

Spearman's correlation test was conducted to investigate the association between the price mix element and customer satisfaction in Nairobi County's LPG sector. Findings are presented in Table 4.10.

**Table 4. 10: Price Mix and Customer Satisfaction**

			Customer satisfaction	Price mix
Spearman's rho	Customer satisfaction	Correlation Coefficient	1.000	.570**
		Sig. (2-tailed)	.	.000
		N	298	298
	Price mix	Correlation Coefficient	.570**	1.000
		Sig. (2-tailed)	.000	.
		N	298	298

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

The research observed a strong, significant positive correlation between price mix and customer satisfaction ( $r=.570, p<.05$ ). The monotonic increasing relationship between the two variables means that increasing the price element of the marketing mix would result in a substantial increase in customer satisfaction in Nairobi County's LPG sector. In addition, the relationship is statistically significant, meaning this research rejected the null hypothesis at a 95% confidence level and a 5% significance level.

#### 4.5.4 Promotion Mix and Customer Satisfaction

Spearman's correlation test was computed to examine the correlation between the promotion mix element and customer satisfaction in the LPG sector of Nairobi County. Findings are presented in Table 4.11.

**Table 4. 11: Promotion Mix and Customer Satisfaction**

			<b>Customer satisfaction</b>	<b>Promotion mix</b>
Spearman's rho	Customer satisfaction	Correlation Coefficient	1.000	.686**
		Sig. (2-tailed)	.	.000
		N	298	298
	Promotion mix	Correlation Coefficient	.686**	1.000
		Sig. (2-tailed)	.000	.
		N	298	298

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

A strong, significant positive correlation was discovered between promotion mix and customer satisfaction ( $r=.686$ ,  $p<.05$ ). The monotonic increasing relationship between the two variables implies that improving the promotion element of the marketing mix would result in a substantial increase in customer satisfaction in Nairobi County's LPG market. In addition, the relationship is statistically significant, meaning this research rejected the null hypothesis at a 95% confidence level and a 5% significance level.

#### 4.5.5 Place Mix and Customer Satisfaction

Spearman's correlation test was conducted to investigate the association between the place mix element and customer satisfaction in Nairobi County's LPG sector. Findings are presented in Table 4.12.

**Table 4. 12: Place Mix and Customer Satisfaction**

			<b>Customer satisfaction</b>	<b>Place mix</b>
Spearman's rho	Customer satisfaction	Correlation Coefficient	1.000	.655**
		Sig. (2-tailed)	.	.000
		N	298	298
	Place mix	Correlation Coefficient	.655**	1.000
		Sig. (2-tailed)	.000	.
		N	298	298

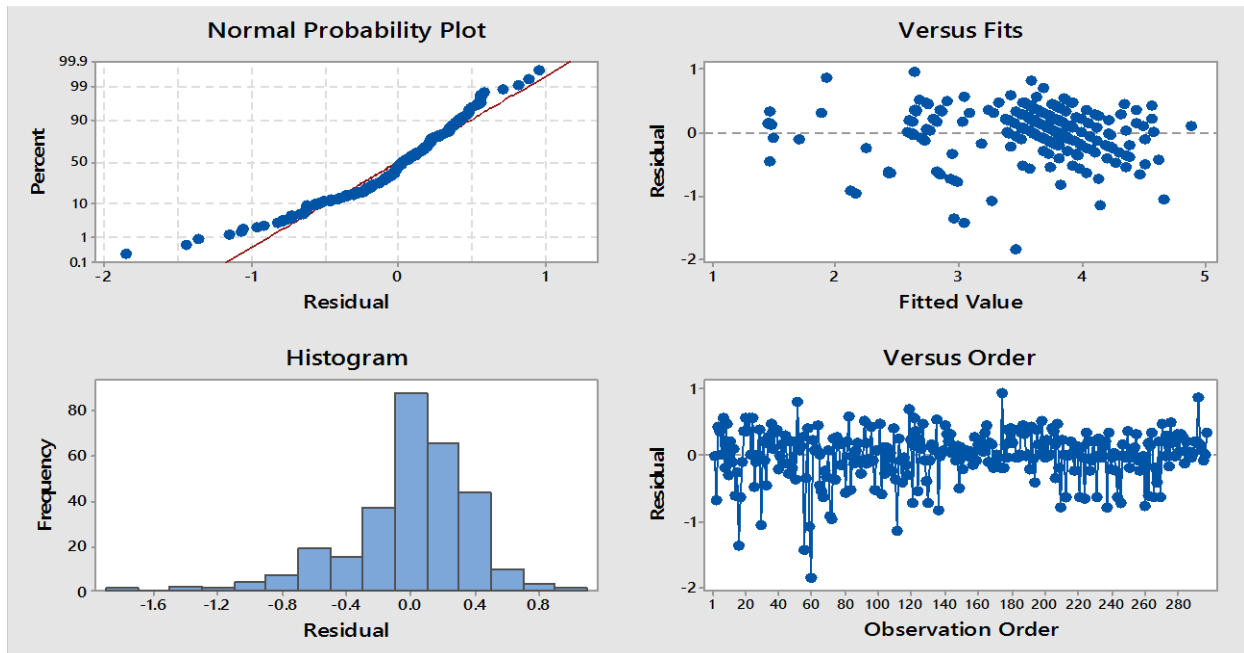
\*\* . Correlation is significant at the 0.05 level (2-tailed).

The research found a strong, significant positive correlation between place mix and customer satisfaction in Nairobi County's LPG sector ( $r=.655$ ,  $p<.05$ ). The monotonic increasing relationship between the two variables implies that improving the place element of marketing mix would result in a substantial increase in customer satisfaction. In addition, the relationship is statistically significant, meaning this research rejected the null hypothesis at a 95% confidence level and a 5% significance level.

#### **4.5.6 Regression Analysis**

The second part of the inferential statistics is performing regression analysis. However, before proceeding to the analysis, diagnostic tests were performed to examine the appropriateness of the regression model. Put simply, the tests were performed to check if the underlying assumption of regression analysis was satisfied. It was important to perform the regression diagnostic tests because if any of the assumptions are violated, the model may not accurately represent the underlying data.

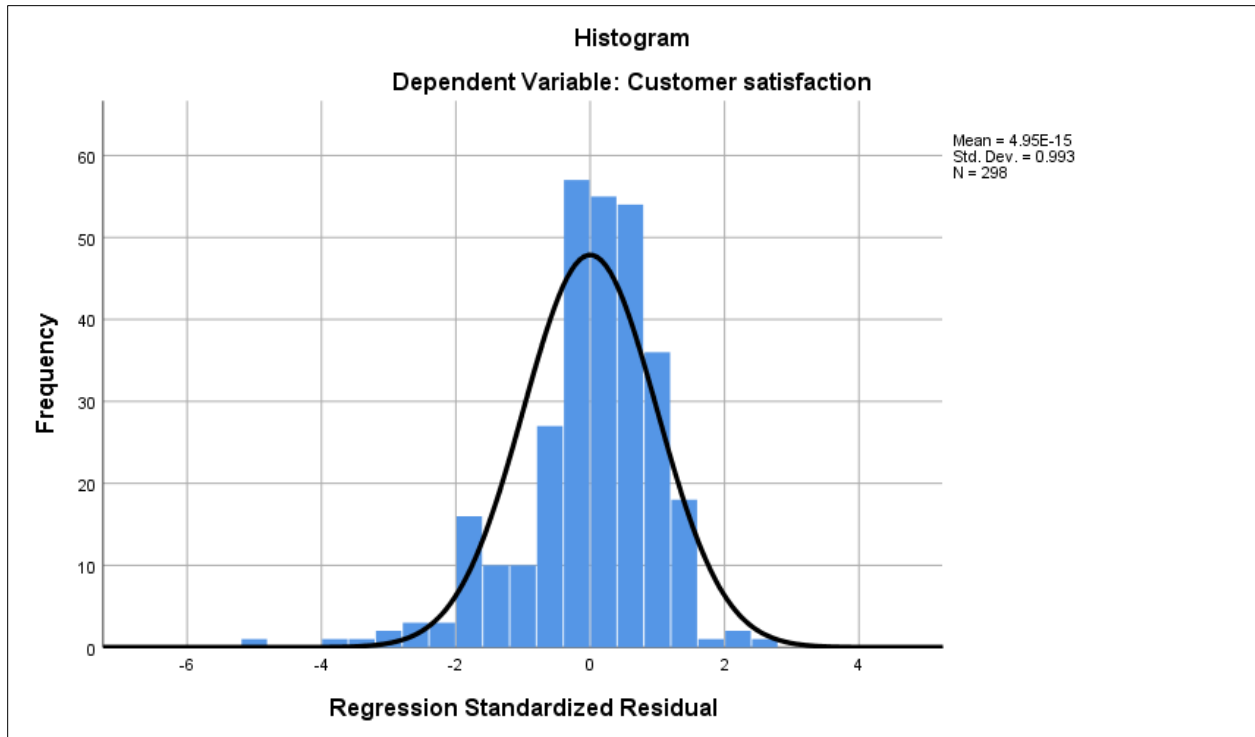
From the test for heteroscedasticity, the first assumption of regression analysis is that the variance of the residuals (or error terms) changes systematically as the predictor variables. In other words, the residuals have a constant variance, a state known as homoscedasticity. Residual plots were generated to detect homoscedasticity or patterns that indicate unequal spread of residuals. The findings of the homoscedasticity test are shown in Figure 4.1.



**Figure 4. 1: Residual Plots for Customer Satisfaction**

The normal probability (Q-Q) plot from the figure above shows that the residuals are approximately normally distributed, as the observed quantiles closely conform to the expected quantiles from a standard normal distribution. In addition, the residual versus fitted values plot produces a flat line, suggesting a uniform distribution of the residuals. Therefore, the homoscedasticity assumption was satisfied.

Test for Normality is the second assumption of the regression analysis, which holds that the residuals or error terms should follow a normal distribution. To check if this assumption was violated, a histogram (P-P) plot was generated to have a visual outlook of the distribution of the residuals. Figure 4.2 showcases the finding for the test for normality.



**Figure 4. 2: Test for Normality**

The histogram exhibits an approximately symmetric, bell-shaped distribution centered around zero, revealing that the normality assumption is likely to hold. This suggests that the normality assumption is likely to be true. The assumption is further confirmed by the absence of too many extreme positive or negative residuals.

Test for Autocorrelation is the third assumption, which is that the consecutive residuals are independent or not correlated. The study used the Durbin-Watson (D-W) test to check for autocorrelation in the residuals. The test produces a value ranging from 0 to 4. Values below 1.5 signify positive serial correlation, and those above 2.5 signify negative serial correlation. A value of 2.0 indicates an ideal case of no autocorrelation, but a value between 1.5 and 2.5 suggests autocorrelation is likely not a cause for concern.

**Table 4. 13: Test for Autocorrelation**

Alpha	.05
D-stat	1.974
D-lower	1.623
D-upper	1.967

**Source:** (Researcher, 2025)

The correlation between the independent variables was not significant, as illustrated in Table 4.14. A DW value of 1.974 confirms that autocorrelation was not a likely cause for concern. This is further proven by  $(4 - D) > D_U$ , which confirms that the autocorrelation assumption was not violated.

A test for multicollinearity was performed “to check if the independent variables in a regression model should not be highly correlated, a state known as multicollinearity” (Sarstedt et al., 2021). The variance inflation factor (VIF) test was performed to determine if the assumption held. If this assumption is violated, the coefficient estimates in the regression model become unreliable. As shown in Table 4.14, the assumption was satisfied since  $VIF < 10$  for all the constructs.

**Table 4. 14: Test for Multicollinearity**

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constance)		
	Product mix	.251	3.982
	Price mix	.363	2.757
	Promotion mix	.149	6.691
	Place mix	.259	3.861
a. Dependent Variable: customer satisfaction			

**Source:** (Researcher, 2025)

Having ascertained that none of the underlying assumptions was violated, the study proceeded to perform regression analysis. The analysis was useful in modeling and predicting the value of the dependent variable based on the values of the dependent variables.

In the regression analysis, a model summary was generated to provide essential information about the fitted regression model. Findings are illustrated in Table 4.15.

**Table 4. 15: Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.871	.759	.745	.38212

a. Predictors: (Constant), Product mix, price mix, promotion mix, place mix

b. Dependent Variable: Customer satisfaction

The “R-value indicates the correlation between the predicted and actual values of customer satisfaction” (Tripepi et al., 2008). Therefore, a 0.871 R-value indicates a strong positive correlation. The “R Square value represents the proportion of the variance in customer satisfaction that is explained by the regression model” (Tripepi et al., 2008). As such, an R Square value of 0.759 implies that 75.9% of the variance in customer satisfaction can be attributed to the variation in the marketing mix elements. This signifies that approximately 76% of the variance in customer satisfaction can be attributed to the combined influence of the 4Ps of the marketing mix within Nairobi County's LPG market.

The “Adjusted R Square value adjusts the R Square for the number of predictors in the model; it is a more conservative measure of the model's fit, especially when dealing with multiple predictors” (Tripepi et al., 2008). Therefore, the adjusted R Square value of 0.745 suggests that the model's fit is still strong, even after accounting for the number of predictors.

The “standard error of the estimated value represents the average distance between the observed values of customer satisfaction and the predicted values from the regression model. A lower standard error indicates a better fit of the model” (Tripepi et al., 2008). In this case, the standard error of 0.38212 suggests that, on average, the predicted customer satisfaction values are within 0.38212 units of the actual values.

Overall, the regression model provides a strong fit to the data and effectively explains a significant portion of the variation in customer satisfaction. The marketing mix elements, particularly product, price, promotion, and place, are important predictors of customer satisfaction in this context.

The analysis of variance (ANOVA) was performed to test the significance of the regression model. The test helps determine if the variability in the dependent variable, as explained by the independent variable, is significant. Findings are shown in 4.16.

**Table 4. 16: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	226.076	16	14.130	55.204	.000 <sup>b</sup>
	Residual	71.924	281	.256		
	Total	298.000	297			

Dependent Variable: Customer satisfaction

Predictors: Product mix, price mix, promotion mix, place mix

The overall regression model is statistically significant, as proven by ( $F(16, 281) = 55.204, P < 0.00$ ). Therefore, this research concludes that marketing mix elements are reliable predictors of customer satisfaction in Nairobi County's LPG sector.

Furthermore, the regression coefficients were generated to measure the statistical relationship between the outcome variable and the four predictor variables. In other words, the regression coefficient analysis was performed to determine the extent to which each independent variable influences the dependent variable. Table 4.17 shows the regression coefficient of the variables.

**Table 4. 17: Regression Coefficients**

Model		Unstandardized Coefficients		t	Sig.
		$\beta$	Std. Error		
1	(Constant)	.603	.098	6.131	.000
	Product mix	.668	.035	36.950	.000
	Price mix	.117	.035	11.169	.010
	Promotion mix	.064	.048	1.815	.126
	Place mix	.220	.088	6.274	.000

a. Dependent Variable: customer satisfaction

Regression coefficients, as shown above, demonstrate that the product mix has a strong and statistically significant positive impact on customer satisfaction ( $\beta = .668, t = 36.950, p < .05$ ), price mix has a significant positive effect on customer satisfaction ( $\beta = .117, t = 11.169, p < .05$ ), and place mix has a significant positive effect on customer satisfaction ( $\beta = .220, t = 6.274, p < .05$ ). On the other hand, promotion mix has a nonsignificant positive effect on customer satisfaction ( $\beta = .064, t = 1.815, p > .05$ ).

In summary, the product mix, price mix, and place mix all have statistically significant positive impacts on customer satisfaction, with the product mix having the strongest effect. The promotion mix, however, does not show a statistically significant impact in this model.

The final regression equation is as follows:

$$\text{Customer satisfaction} = 0.603 + .668X_1 + .117X_2 + .064X_3 + .220X_4 + \varepsilon$$

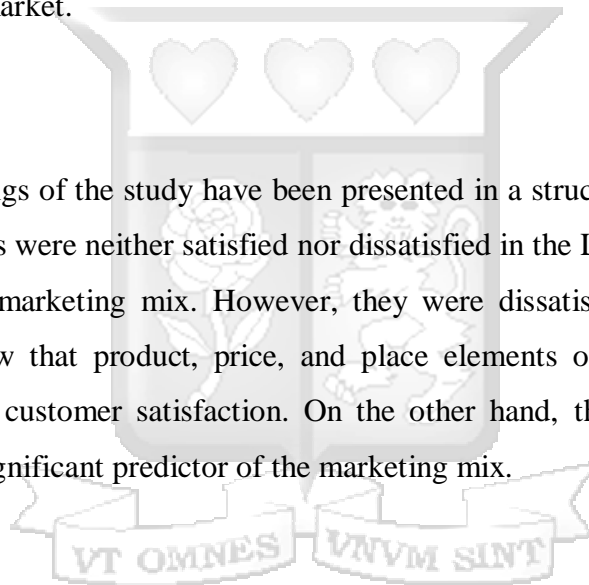
Where;

$X_1$ = Product mix,  $X_2$ = Price mix,  $X_3$ = Promotion mix,  $X_4$ = Place mix,  $\varepsilon$  = error term

Based on the regression equation above, if the values of all the marketing mix elements are equal to zero, customer satisfaction would only be 0.603. In other words, the absence of product, price, promotion, and place elements of the marketing mix can have an adverse effect on customer satisfaction in the LPG market.

#### 4.6 Chapter Summary

In this chapter, the findings of the study have been presented in a structured manner. According to the results, respondents were neither satisfied nor dissatisfied in the LPG market and also with each of the 4Ps of the marketing mix. However, they were dissatisfied with the price mix. Inferential statistics show that product, price, and place elements of the marketing mix are significant predictors of customer satisfaction. On the other hand, the promotion mix of the marketing mix is not a significant predictor of the marketing mix.



## **CHAPTER FIVE**

### **SUMMARY, DISCUSSION, CONCLUSION, AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter's focus is the discussion and conclusion of the research study. It is represented in four sections: an overview of the study, a discussion of findings in relation to the research questions, an overall conclusion of the study, research implications, limitations encountered, and recommendations for future research.

#### **5.2 Summary of Key Findings**

The goal of this research was to determine the effect of marketing mix elements on customer satisfaction in Nairobi City County's LPG sector. In particular, the research study focused primarily on the effects of the 4P's of the marketing mix. The research was underpinned by consumer decision-making and the expectancy disconfirmation theories, a positivist research philosophy was adopted, and the research design employed was descriptive cross-sectional. The study targeted 400 households using LPG for cooking in Nairobi City County who were surveyed using structured questionnaires.

A total of 298 completed questionnaires were eligible for data analysis, translating to a response rate of 74.5%. Most respondents were female (61.4%), aged 31-40 years (40.3%), were tertiary level educated (59.4%), part of households comprising 1-4 people (62.4%), and earned less than KES 20,000 a month. The most common brands of LPG cooking gas were K-Gas (20.1%), Hashi (17.6%), and Afri Gas (12.3%). Descriptive statistics demonstrate neutrality (neither satisfaction nor dissatisfaction) on customer satisfaction ( $M=3.493$ ,  $SD=.9643$ ), product mix ( $M=3.387$ ,  $SD=1.003$ ), promotion mix ( $M=3.242$ ,  $SD=1.053$ ), and place mix ( $M=3.105$ ,  $SD=1.177$ ). On the other hand, a score ( $M=3.386$ ,  $SD=1.105$ ) for the price mix means that respondents were dissatisfied.

The results of correlational statistics show that each of the 4P of the marketing mix positively correlated with customer satisfaction, with the association of product mix being very strong ( $r=.735$ ,  $p<.05$ ) and the rest of the marketing mix elements price mix ( $r=.570$ ,  $p<.05$ ), promotion mix ( $r=.686$ ,  $p<.05$ ), and place mix ( $r=.655$ ,  $p<.05$ ) being strong. Regression analysis results

demonstrate that the 4P's of the marketing mix explains 75.9% of customer satisfaction in Nairobi County's LPG market. Regression analysis suggests that product mix ( $\beta=.668, t=36.950, p<.05$ ), price mix ( $\beta=.117, t=11.169, p<.05$ ), and place mix ( $\beta=.220, t=6.274, p<.05$ ) all have significant positive effect on customer satisfaction whereas the effect of promotion mix ( $\beta=.063, t=1.815, p>.05$ ) is nonsignificant.

### **5.3 Discussion of Key Findings**

In this section of the paper, the results are discussed in relation to the study's specific objectives and research questions. The key findings represented in the previous chapter are interpreted in the context of theoretical framework and literature review.

#### **5.3.1 Product Mix and Customer Satisfaction**

The first objective of the study was to determine the effect of the product element of the marketing mix on customer satisfaction in the LPG sector of Nairobi City County. The outcome of descriptive statistics shows a theme of neutrality on all aspects of the product mix: availability of a wide range of products, performance, serviceability, reliability, durability, and conformance. This means that the product mix strategies adopted by LPG dealers in Nairobi County are not effective enough to drive customer satisfaction. In other words, there is a lack of comprehensive approaches by LPG dealers to manage and optimize their product portfolio that meets or exceeds customer needs and expectations.

The results of inferential statistics demonstrate that the product element of the marketing mix has a significant positive effect on customer satisfaction in the LPG sector of Nairobi County. This means that improving the product mix strategy can greatly improve customer satisfaction. Therefore, this research rejected the null hypothesis. The research is also in support of the consumer decision-making theory and the expectancy disconfirmation theory. Customers have certain expectations before purchasing and/or consuming a product. Therefore, as the theories suggest, customers are fulfilled if the product meets or exceeds their needs and expectations; otherwise, they become dissatisfied with their decision to purchase the product.

This research also corroborates findings from previous body of empirical literature, including Adewale and Adeniran (2019), Cruz (2015), Hoe and Mansori (2018), Rua et al. (2020),

Syafarudin (2021), Wahab et al. (2016) and Zulu et al. (2023) who all found significant positive correlation between product mix and customer satisfaction. The nature, quality, features, variety, and design of a product, which is a key element of the marketing mix, greatly influences customer satisfaction. In the context of Nairobi County's LPG sector, this means that when the product mix strategy is well-designed and executed, customer needs and expectations are met or exceeded, leading to high levels of customer satisfaction.

### **5.3.2 Price Mix and Customer Satisfaction**

The second objective of the study was to determine the effect of price mix on customer satisfaction in Nairobi County's LPG sector. Descriptive statistics suggest high levels of dissatisfaction among respondents regarding the price mix strategy adopted by LPG suppliers in Nairobi County. They felt that the prices set for LPG cooking gas did not match the quality of services offered, were unreasonable and unfair, were not reliable and consistent, lacked transparency, and were not competitive. This finding confirms World Bank's (2018) claim that consumer prices for LPG cooking gas in Kenya are expensive despite the strong and growing demand for LPG in Kenya.

Findings of inferential statistics show that the price element of the marketing mix has a significant positive influence on customer satisfaction in Nairobi County's LPG market. This means that enhancing the pricing mix strategy would result in a significant increase in customer satisfaction in Nairobi County's LPG industry. Therefore, this research supports the consumer decision-making theory and the expectancy disconfirmation theory. This is in the sense that customers have prior expectations about price before making a purchase; that being the case, if these expectations are satisfied after the purchase/consumption, they become fulfilled; otherwise, they end up unhappy with the pricing strategy.

Moreover, the research is in agreement with previous literature on the effect of price mix and customer satisfaction (Malik et al., 2012; Razak et al., 2016; Sentamu, 2011; Wantara & Tambrin, 2019; Wanyanga, 2011). The pricing strategy a company adopts has the potential to greatly influence the level of satisfaction customers derive from its products or services. For instance, in the case of the LPG supply business, if the pricing strategy is perceived as fair, competitive, and good value for money, customers are more fulfilled. Therefore, an effective pricing strategy that offers value to LPG customers can significantly enhance their satisfaction.

### **5.3.3 Promotion Mix and Customer Satisfaction**

The third objective of the study was to examine the effect of the promotion element of the marketing mix on customer satisfaction in the LPG sector of Nairobi County. Descriptive statistics showed that respondents were neutral on the promotion mix strategy adopted by LPG suppliers, including brand reputation, factualness of information, staff knowledgeability, variety of payment options, and ad appropriateness. In other words, these promotional strategies and tools were not effective enough to communicate with and persuade consumers to engage LPG suppliers, leading to underwhelming satisfaction.

In addition, inferential statistics demonstrate that the promotion element of the marketing mix has a nonsignificant positive effect on customer satisfaction. This means that the observed increase in customer satisfaction could be due to chance or other factors not related to promotional activities. Therefore, an increase in promotion mix strategy by LPG suppliers would not have a strong effect on customer satisfaction. With this realization, this research is not in support of the consumer decision-making theory and the expectancy disconfirmation theory since promotional mix does not have a significant effect on customer satisfaction.

Also, in support of the finding, Kant et al. (2023) found that the promotion element of the marketing mix did not have a direct effect on customer satisfaction; rather, the entire effect is indirect. In the context of this study, the observed effect of promotional mix on customer satisfaction could be by chance, which can happen due to a number of reasons. Possible factors include the influence of other elements of the marketing mix (product, price, and/or place elements). Another possible explanation is that promotional activities may not be reaching or resonating with the target audience in the LPG market. The latter explanation could be more probable.

### **5.3.4 Place Mix and Customer Satisfaction**

The final objective of the study was to determine the effect of the place element of the marketing mix on customer satisfaction in Nairobi County's LPG sector. Descriptive statistics showed a sense of neutrality among respondents regarding the place mix strategy. They remained neutral on all aspects of the element, including accessibility, product/service availability, convenience,

promptness of service delivery, and reliability. The finding suggests that the combination of strategies of the place element of the marketing mix adopted in the LPG sector of Nairobi County is ineffective. These strategies are not doing enough to achieve their intended purpose.

Inferential statistics revealed a significant positive effect of place mix on customer satisfaction in the LPG market in Nairobi County. This means that improving the place mix strategy can lead to high levels of customer satisfaction. Therefore, the consumer decision-making theory and the expectancy disconfirmation theory are supported by this research. This is in the sense that when the place element strategy, including order processing, inventory management, and convenience, are well-designed and executed, customers become happy.

The findings on the phenomenon are also consistent with those of previous literature (Deneke, 2020; Jamaludin et al., 2020; Mcobrein, 2019; Pungnirund, 2013). The place element of the marketing mix is concerned with where and how a company's products or services are available to the customers. Therefore, the strategies a company uses to make its products or services available to customers can greatly influence how those customers are. In this case, when LPG dealers make strategic decisions about the physical locations or virtual places like online marketplaces, coupled with the efficiency of order processing, inventory management, and delivery services, it becomes easier and more convenient for customers to access their products and services, resulting in high levels of satisfaction.

#### **5.4 Conclusions**

The research study aimed to determine the effect of marketing mix elements on customer satisfaction in the LPG sector of Nairobi City County. The uptake of LPG as a cleaner cooking option has fallen short of expectations despite recent government actions to increase its consumption. This research aimed to contribute to addressing the challenges of LPG uptake by studying the effect of marketing mix elements on the satisfaction of LPG customers. The objective of the study was achieved based on the results of the study. It was discovered that the 4P's of the marketing mix explains up to 75.9% of customer satisfaction. Therefore, the study concludes that the marketing mix is crucial in enhancing the satisfaction of LPG products in Nairobi County.

However, the interaction between the individual elements of the 4Ps of marketing mix and customer satisfaction varied. While most of the elements had a significant effect on satisfaction, regression analysis revealed that the product mix element had the strongest effect. Therefore, this study concludes that the product mix is the most important element of marketing in driving the satisfaction of LPG products in Nairobi County.

The price element had a significant positive effect on customer satisfaction. This means that price is a crucial factor in determining customers' satisfaction with the use of LPG. Therefore, this study concludes that value perception, price sensitivity, and pricing strategy, all-encompassing elements of price mix, are critical determinants of customer satisfaction.

Similarly, results demonstrate that the place element had a significant effect on customer satisfaction. The place mix consists of the physical and online stores as well as the distribution channels. The study found that this element predicts customer satisfaction through convenience, product availability, and positive customer experience. Therefore, the study concludes that place element is an important driver of customer satisfaction in Nairobi County's LPG sector.

Lastly, the promotion element had an insignificant effect on customer satisfaction, according to the outcome of inferential statistics. The study thus concludes that the promotion element of the marketing mix is not a predictor of customer satisfaction. A possible explanation for this outcome is that the specific promotional strategies examined did not produce a meaningful effect on satisfaction, or the effect of the other three elements of the marketing mix outperformed that of the promotional mix.

## **5.5 Recommendations**

The research study's findings also have significant policy implications for the LPG sector. The research establishes that the consumer prices of LPG cooking gas in Kenya are a major concern as far as the uptake of LPG is concerned. The solution to improving the uptake of LPG should, therefore, primarily revolve around pricing. This means EPRA should formulate and enforce policies that seek to regulate how LPG cooking gas is priced in the market. Not only that, the quality standards and convenience in the trade of LPG should not be ignored in these policies. Enhancing satisfaction and the subsequent uptake of LPG would mean enforcing policies that

would ensure improved quality of cooking gas that is priced fairly and offered where customers want them.

The results and conclusion of the study have significant practical implications for the LPG industry in Nairobi County. They suggest that product, price, and place elements of the 4P of marketing have a significant effect on customer satisfaction in the sector. What these findings suggest is that by offering the right LPG products and services at the right price and at the right place, customer satisfaction improves, resulting in increased sales. As such, LPG dealers should pay special attention to and adjust their strategies around these elements of the marketing mix. Dealers who wish to become more competitive and drive more sales should enhance their product mix, price mix, and place mix strategies.

The study also holds significant theoretical implications by contributing to and refining existing marketing and consumer behavior theories, particularly within the context of emerging markets. It allows for the empirical testing and expansion of established frameworks like the marketing mix model and customer satisfaction theories, specifically within the unique dynamics of the Kenyan LPG sector. Findings reveal how specific marketing mix elements (4Ps) interact with customer satisfaction in a context marked by developing infrastructure and evolving consumer preferences. Additionally, the research illuminates the applicability and limitations of general marketing theories in the context of a rapidly growing energy sector in a developing economy, leading to the development of context-specific models or refinements of existing theories.

## **5.6 Limitations of the Study**

Every research study has limitations, and this is no exception. A major drawback of this study is associated with the complexities of the study area and target population. The study targeted households that use LPG cooking gas across Nairobi County. Due to the extensiveness of the research area, the budget and timeline set for the study were not sufficient. More financial resources were pumped into the study with the addition of extra days for the research process to ensure a sufficient response rate was achieved. However, despite the budgetary and time constraints, fortunately, the quality of this research was not compromised.

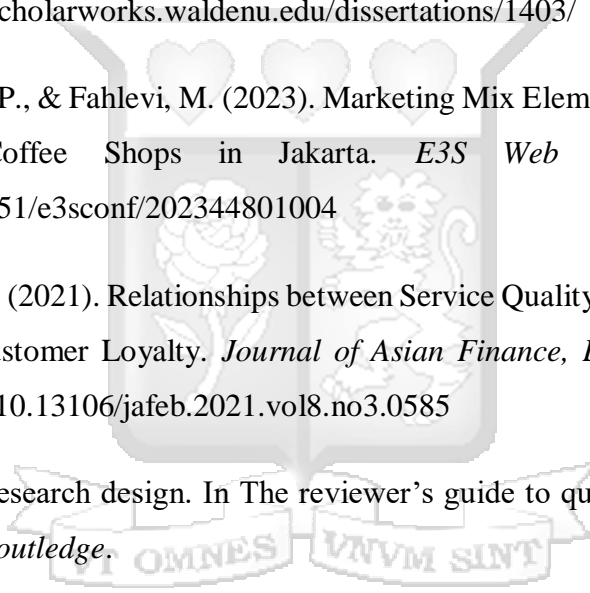
## 5.7 Areas for Further Research

This research provides recommendations for future research on the topic based on the findings. As observed, the 4Ps of marketing accounts for 75.9% of customer satisfaction in Nairobi County's LPG sector. Marketing mix has a total of seven documented elements, meaning the rest of the percentage (24.1%) can be attributed to marketing mix elements not covered in this research, including people, processes, and physical evidence. Therefore, future research should focus on the level to which these elements impact customer satisfaction in the sector. Also, the present study was limited to quantitative approach. Future researchers should consider incorporating a mixed-method approach for the purpose of leveraging qualitative data to gain further insights and contexts into the quantitative data.



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## APPENDICES

### APPENDIX 1: LETTER OF INTRODUCTION

Angel Nyambura

MBA Student

Strathmore University Business School

To whom it may concern,

#### **RE: REQUEST FOR PARTICIPATION IN AN ACADEMIC RESEARCH**

I am pursuing a Master's Degree in Business Administration at the Strathmore University Business School. I am conducting a study on the effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County.

You have been selected as one of the potential respondents to this study. Therefore, I request your kind participation by completing the attached questionnaire. The information you will provide will be treated with strict confidence and will only be used for this research and academic purposes. Your anonymity is also assured.

Thank you in advance.



Best regards,

Angel Nyambura



## APPENDIX 2: CONSENT FORM

### TITLE OF THE PROPOSED STUDY

The effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County.

### SECTION 1: INFORMATION SHEET

**Principal Investigator:** Angel Nyambura

**Institutional Affiliation:** Strathmore Business School (SBS)

**Mobile:** +254 711 673371

**Email:** [angelnyambura.an@gmail.com](mailto:angelnyambura.an@gmail.com)

**Supervisor:** Everlyne Makhanu

**Email:** [emakhanu@strathmore.edu](mailto:emakhanu@strathmore.edu)

**Institutional Affiliation:** Strathmore Business School (SBS)

### SECTION 2: INFORMATION SHEET – THE STUDY

#### **2.1. Why is this study being carried out?**

This study is being carried out in fulfillment of the requirement for the award of a Master in Business Administration at Strathmore Business School.

It aims to determine the effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County.

#### **2.2. Do I have to take part?**

No. Taking part in this study is entirely optional, and the decision rests only with you. If you decide to take part, you will be asked to complete a questionnaire to get information on the effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County. The questionnaire will be well-structured and simple to understand and complete. Further explanation will be provided where necessary.

Please note you are free to decline to take part in the study from this study at any time without giving any reasons.

#### **2.3. Who is eligible to take part in this study?**

Household members in Nairobi County.

#### **2.4. Who is not eligible to take part in this study?**

- Non-household members in Nairobi County.
- Incapacitated persons.
- Any person who is under 18 years of age (Minors).

### **2.5. What will taking part in this study involve for me?**

You will be approached and requested to take part in the study. If you are satisfied that you fully understand the goals behind this study, you will be asked to sign the informed consent form (this form) and then taken through a questionnaire to complete.

### **2.6. Are there any risks or dangers in taking part in this study?**

There are no risks in taking part in this study. All the information you provide will be treated as confidential and will not be used in any way without your express permission.

### **2.7. Are there any benefits of taking part in this study?**

The information will be used to improve the knowledge of customer satisfaction in the LPG sector in Nairobi City County. The completion of the study will be instrumental in promoting the uptake of LPG in the county.

### **2.8. What will happen to me if I refuse to take part in this study?**

Participation in this study is entirely voluntary. Even if you decide to take part at first but later change your mind, you are free to withdraw at any time without explanation.

### **2.9. Who will have access to my information during this research?**

Access to all the information obtained during this research will be restricted. All research records will be stored in securely locked cabinets. That information may be transcribed into our database, but this will be sufficiently encrypted and password protected. Only the people who are closely concerned with this study will have access to your information. All your information will be treated as private and confidential.

### **2.10. Who can I contact in case I have further questions?**

You can contact me, the Principal Investigator, Angel Nyambura, at Strathmore Business School by email at [angelnyambura.an@gmail.com](mailto:angelnyambura.an@gmail.com) or by calling +254 711 673371, and a summary report of the findings will be shared via email.

You can also contact my supervisor, Everlyne Makhanu, at the Strathmore Business School, Nairobi, or by e-mail at [emakhanu@strathmore.edu](mailto:emakhanu@strathmore.edu).

**If you want to ask someone independent anything about this research, please contact:**

The Secretary

Strathmore University Institutional Ethics Review Board,  
P. O. BOX 59857, 00200,  
Nairobi.

Email: [ethicsreview@strathmore.edu](mailto:ethicsreview@strathmore.edu)

I, \_\_\_\_\_, confirm that all the issues confirm that all the issues about this study have been clarified. I further affirm that I have asked all the questions that I needed to ask, and all of them have been answered to my satisfaction. I have read and understood the questions. I have been provided with the contacts of the person and institution that I need to contact in case issues arise and I need further clarification.

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/YY)

Participant's name: \_\_\_\_\_ Time: \_\_\_:\_\_\_ (HH/Mins)

*(please print name)*

I, ANGEL NYAMBURA, certify that I have followed the SOP for this study, 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 consented to the participation in the study. S/he has been given the opportunity to ask questions which have been answered satisfactorily.

Investigator's signature:  Date: \_\_16\_\_ / \_\_06\_\_ / \_\_2024\_\_

Investigator's name: \_\_Angel Nyambura\_\_ Time: \_\_\_:\_\_\_ (HH/Mins)

## APPENDIX 3: APPROVAL LETTER



3<sup>rd</sup> June 2024

Ms Nyambura Angel,  
angel.nyambura@strathmore.edu

Dear Ms Nyambura,

**RE: The Effect of Marketing Mix Elements on Customer Satisfaction in the LPG Industry in Nairobi City County**

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2191/24**. The approval period is from **3<sup>rd</sup> June 2024 to 2<sup>nd</sup> June 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,

A handwritten signature in blue ink, appearing to read "Ambrose Rachier".


**Mr Ambrose Rachier,**  
Chairperson; SU-ISERC

**APPENDIX 4: RESEARCH LICENCE**

  
REPUBLIC OF KENYA  
National Commission for Science, Technology and Innovation

**Ref No: 669261**

**RESEARCH LICENCE**



**This is to Certify that Miss. Angel Rachel Nyambura 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: THE EFFECTS OF MARKETING MIX ELEMENTS ON CUSTOMER SATISFACTION IN THE LPG INDUSTRY IN NAIROBI CITY COUNTY, KENYA for the period ending : 14/June/2025.**


License No: **NACOSTI/P/24/36749**

**669261**

Applicant Identification Number

**Director General**  
NATIONAL COMMISSION FOR  
SCIENCE, TECHNOLOGY &  
INNOVATION

Verification QR Code



**NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.**

**See overleaf for conditions**

## APPENDIX 5: THE RESEARCH INSTRUMENT FOR THE STUDY

This questionnaire intends to collect data about the effect of marketing mix elements on customer satisfaction in the LPG industry in Nairobi City County. This survey is being conducted as part of the fulfillment of the degree of Masters of Business Administration (MBA) at Strathmore University. Therefore, this survey is purely for academic purposes. Please note that your participation is voluntary and the answers you provide shall remain private and confidential. No personally identifiable information will be collected, and the information you choose to provide in this study cannot be connected back to you. Please read each question carefully and answer by ticking against the most appropriate answer.

---

### SECTION A: BACKGROUND INFORMATION

1. Please indicate your gender.

Male

Female

2. Age

Under 30 years

31 – 40 years

41 – 50 years

Over 50 years

3. Level of education

No formal education

Primary

Secondary

Tertiary

4. Marital status

Married

Single (never married)

Separated

Divorced

Living together

Not willing to disclose

5. Household size

1-4 people

5-8 people

9-12 people

Above 12 people

6. Monthly household income (in Kenya Shillings)

Less than 20,000

20,000-50,000

51,000-80,000

Above 80,000

Not willing to share

7. What brand of LPG do you use? \_\_\_\_\_

### SECTION B: CUSTOMER SATISFACTION

This section relates to your response regarding customer satisfaction in the LPG industry in Nairobi County. Please indicate the extent to which you agree or disagree with each statement by placing an “X” on the column that best matches your response.

Note: 1=Strongly Disagree; 2=Disagree; 3=Neither Agree nor Disagree; 4=Agree; and 5=Strongly Agree.

	1	2	3	4	5
In general, the quality of the products and services my current LPG supplier offers meets my expectations.					

I am happy with the overall experience I receive from my LPG supplier.					
I would recommend my LPG supplier to other customers.					
Based on the quality and service I receive; I have a strong intention to continue to purchase LPG from my current supplier in the future.					
Overall, I am happy with the LPG gas, services, and prices my supplier offers.					

### SECTION C: PRODUCT MIX

This section relates to your response regarding the product element of marketing mix in the LPG industry in Nairobi County. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=Strongly Disagree; 2=Disagree; 3=Neither Agree nor Disagree; 4=Agree; and 5=Strongly Agree.

	1	2	3	4	5
My current supplier is known for their wide selection of high-quality LPG cooking products.					
LPG cooking gas from my current supplier performs better than other options in the market.					
My current dealer offers well-maintained and serviced LPG cylinders.					
The LPG cylinders from my supplier perform as intended without failure or developing issues.					
LPG cooking gas from my current supplier last longer than most options on the market.					
My dealer demonstrates commitment to safety by providing LPG cylinders and services that adhere to industry standards.					

### SECTION D: PRICE MIX

This section relates to your response regarding the price element of marketing mix in the LPG industry in Nairobi County. Please indicate the extent to which you agree or disagree with each statement by placing an "X" on the column that best matches your response.

Note: 1=Strongly Disagree; 2=Disagree; 3=Neither Agree nor Disagree; 4=Agree; and 5=Strongly Agree.

	1	2	3	4	5
The prices offered by my supplier matches the quality of LPG and services they offer.					
I believe that the prices I pay for LPG gas and other services are fair and reasonable.					
Prices from my LPG supplier are usually stable and any changes is communicated accordingly.					
My supplier informs me about the prices of LPG and other charges in a way I can understand.					

My supplier offers the most competitive prices for LPG in the market.					
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### SECTION E: PROMOTION MIX

This section relates to your response regarding the promotion element of marketing mix in the LPG industry in Nairobi County. Please indicate the extent to which you agree or disagree with each statement by placing an “X” on the column that best matches your response.

Note: 1=Strongly Disagree; 2=Disagree; 3=Neither Agree nor Disagree; 4=Agree; and 5=Strongly Agree.

	1	2	3	4	5
My current LPG supplier is well known in the market because of the quality of gas and services they offer.					
The information my current LPG supplier is factual and can be verified.					
My LPG supplier shows a high level of creativity in how they design their advertisements.					
My current LPG supplier offers multiple payment options, including cash, M-Pesa, credit card, etc.					
The staff at my LPG supplier demonstrate that they have the knowledge and ability to answer customers' questions.					

### SECTION F: PLACE MIX

This section relates to your response regarding the place element of marketing mix in the LPG industry in Nairobi County. Please indicate the extent to which you agree or disagree with each statement by placing an “X” on the column that best matches your response.

Note: 1=Strongly Disagree; 2=Disagree; 3=Neither Agree nor Disagree; 4=Agree; and 5=Strongly Agree.

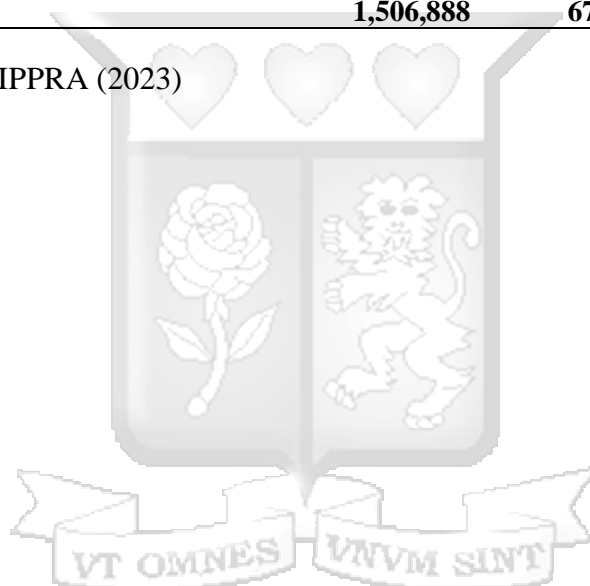
	1	2	3	4	5
My supplier is readily available, regardless of the time of day or night.					
My current LPG supplier is situated in a place I find to be convenient.					
My current supplier offers multiple channels to order LPG, including phone call, SMS, a dedicated app, etc.					
Whenever I make an order, my current supplier is always delivers on time.					

**Thank You for Your Time**

## APPENDIX 6: LPG CONSUMPTION IN NAIROBI CITY COUNTY

	Sub-County	No. of Households	LPG Penetration	Households using LPG
1.	DAGORETTI SUB-COUNTY	155,089	66.7%	103,444
2.	EMBAKASI SUB-COUNTY	347,955	70.4%	244,960
3.	KAMUKUNJI SUB-COUNTY	84,365	68.7%	57,717
4.	KASARANI SUB-COUNTY	271,290	75.1%	203,739
5.	KIBRA SUB-COUNTY	61,690	43.7%	26,959
6.	LANGA'TA SUB-COUNTY	62,239	70.9%	44,127
7.	MAKADARA SUB-COUNTY	70,361	59.2%	41,654
8.	MATHARE SUB-COUNTY	74,967	46.2%	34,635
9.	NJIRU SUB-COUNTY	204,563	68.3%	139,717
10.	STAREHE SUB-COUNTY	69,389	54.9%	38,097
11.	WESTLANDS SUB-COUNTY	104,980	73.9%	77,580
<b>Total</b>		<b>1,506,888</b>	<b>67.2%</b>	<b>1,012,628</b>

Source: KNBS (2019); KIPPRA (2023)



## APPENDIX 7: LIST OF LPG COMPANIES IN KENYA

1. ALFA GAS LIMITED
2. AVIAN GAS LIMITED
3. CHEV ENERGIES LIMITED
4. CITY GAS LIMITED
5. DEPAR LIMITED
6. EAST AFRICAN GAS AND OIL LIMITED (EAGOL)
7. EASTERN GAS DISTRIBUTORS (K) LIMITED
8. ENERGY HORIZONS
9. FAST GAS LIMITED
10. GALANA ENERGIES LIMITED
11. GREEN GAS COMPANY LIMITED
12. GREEN WELLS ENERGIES LTD
13. GULF ENERGY HOLDINGS LIMITED
14. JAGUAR PETROLEUM LIMITED
15. KENDAL ENERGY SOLUTIONS LIMITED
16. KENTO ENERGY LTD
17. KIRYAN ENERGY LIMITED
18. LAKE OIL LIMITED
19. LIBYA OIL KENYA LIMITED
20. LUQMAN PETROLEUM LIMITED
21. MASH GAS ENTERPRISE LIMITED
22. MAX GAS AND PETROLEUM COMPANY LTD
23. M-GAS LIMITED
24. MILELE GAS LIMITED
25. MORE GAS LIMITED
26. MOTO GAS COMPANY LIMITED
27. MOTO GAS COMPANY LIMITED
28. MULTIENEGY LTD
29. NATIONAL OIL CORPORATION OF KENYA



30. OCEAN GAS LIMITED
31. OLA ENERGY
32. OXX ENERGY LIMITED
33. PETROCITY ENTERPRISES LIMITED
34. PROTO ENERGY LIMITED
35. RIFT GAS LIMITED
36. RIHAL ENERGY COMPANY LIMITED
37. RIVA PETROLEUM DEALERS LIMITED
38. ROYAL GAS AND ENERGY LIMITED
39. RUBIS ENERGY PLC
40. SALAMA GAS LIMITED
41. SMART GAS ENERGY LIMITED
42. SPAREMAN TRADING LIMITED
43. STABEX INTERNATIONAL LTD
44. TAIFA GAS KENYA LIMITED
45. TOPLINE TRADERS LTD
46. TOTAL ENERGIES MARKETING KENYA
47. TRINITY ENERGY (K) LIMITED
48. UNIGAS KENYA LIMITED
49. VIJI FILLINGS LIMITED
50. VIVO ENERGY KENYA LIMITED

