ONLINE CUSTOMER FEEDBACK AND PRODUCT DESIGN IN E-COMMERCE RETAIL MARKET IN KENYA

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DECLARATION

The research project presented herein is my original work and has not been submitted in any other university for examination.
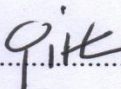
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The research project is presented to me for consent as the supervisor supervising the student.

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DEDICATION

I dedicate this project to my family, who inspired me to attain my academic potential

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I would like to express my deepest gratitude to my family members, friends and colleagues whose support and guidance has made me reach this far in academics.

In addition, I would like to thank my fellow students and lecturers of the University of Nairobi, whose knowledge and inspiration throughout my academic journey, led to my current accomplishments.

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ABSTRACT

E-Commerce creates online platforms from where customers can share their compliments and raise complaints about the products. However, the manner in which online customer feedback is employed to enhance product design, online retailing services and improved customer experience with online shopping is not evidently clear among scholars. Retail e-commerce in Kenya is one of the major drivers of the economy. However, technological disruption is forcing many retail shops to review their business models. With the competitive business environment in the retail sector, retail firms are forced to identify opportunities that enable them to diversify and reach their clients or customers. The purpose of this study is to determine the impact of online customer feedback on product design in retail market in Kenya. The specific objectives were to determine the extent of customer feedback regarding online products of e-commerce retail market in Kenya and determine the impact of online customer feedback on product design in e-commerce retail market in Kenya. The study employed descriptive survey design. The study population was 31 e-commerce retail businesses with established online customer feedback platforms in Kenya. The study employed online based questionnaires to gather primary data. Data analysis entailed the descriptive and inferential statistics. The descriptive results included the mean scores, standard deviation and frequencies while inferential results entail multiple linear regression model. Sales rank, volume of reviews and valence explained 59.6% of the aesthetic product design, 53.4% of the functional product design and 41.7% of the symbolic product design in e-commerce retail market. The coefficient of sales rank has a positive and significant impact on aesthetic product design, functional product design and symbolic product design in the e-commerce retail market. The coefficient of volume of reviews has a positive and significant impact on functional product design in the e-commerce retail market. Valence has a positive and significant impact on aesthetic product design, functional product design and symbolic product design in the e-commerce retail market. The volume of reviews did not have significant impact on aesthetic product design and symbolic product design in the e-commerce retail market. The study concluded that sales rank, volume of reviews and valence are vital constructs of online feedback used by online markets to shape the design of products demanded by customers. A conclusion is thus made that sales rank and valence impacts the aesthetic, functional and symbolic product design in the e-commerce retail market. Volume of reviews impacts only the functional product design of items sold in the e-commerce retail market. The study recommends that e-commerce businesses need to rank the various products sold in the e-commerce retail market to aid in the selection and improvement of product design. The ranking of products need to be automated showing the products ranking top and those ranking lower. The e-commerce retail shop need to fetch the reviews made by customers and filter them by importance to aid in online sales decision making and marketing of the product.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Product design is a very important feature associated with products merchandised or sold by retailers and so largely impacts potential purchase by customers though online channel or brick and mortar. Online business is anchored on trust that the seller will genuinely sell quality product of the specified design as displayed online (Gilal, Zhang & Gilal, 2018). However, many online customers who bought products have been dissatisfied by the design of products shipped to them in terms of functionality, quality and outward appearance (Mpinganjira, 2016). Online sale of products that do not meet the preference of the customer or fulfill the buyer-seller product terms breeds dissatisfaction among customers while also undermining the growth of online business activities. According to Maslowska, Malthouse and Viswanathan (2017) consumers tend to rely on suggestions and opinions regarding the nature of products and services being sold by a firm in deciding whether or not to buy a particular product or service. Online product reviews are becoming more vibrant as source of information to prospective buyers of product and services in comparison to traditional methods like billboards advertisements and mass media.

Online customer feedback is a critical aspect of customer engagement and online marketing yet little information is known on its impact on product design (Kim, Maslowska & Malthouse, 2018). With the emergence of electronic commerce, online customer feedback is a powerful source of information in the design of products that suit the needs and preferences of the customers (Cui Lui & Guo, 2012). Customers are constantly accessing product reviews online through blogs, online retailers' platforms, brand websites and also third-party product review sites from where customers get a chance to discuss the nature of products, specifications, design and choice (Park & Nicolau, 2015). It is perceived that online product feedback by previous customers play significant role in the design and improvement of the quality of product and services being offered by enterprises engaged in online businesses. Online product reviews help prospective buyers or customers to gain insight information regarding product or services to be bought hence lessen uncertainties of purchasing a product or service that did not meet their desires and specifications.

The study was guided by Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB) and Commitment-Trust Theory. TPB was developed by Ajzen (1991) and postulates that the behaviors and intentions of the people are influenced by social norms, pressure, attitude and ability to take control of the behavior (Ajzen, 1991). The TAM was advanced by Davis (1989) and explains that the reception and usage of a particular technology is determined by the amount of benefits associated with it and also its ease of using it. Morgan and Hunt (1994) developed Commitment-Trust Theory where they contended that the key mediators in exchange among the participants are commitment and trust that leads to building interpersonal collaboration.

1.1.1 Online Customer Feedback

Online Customer Feedback refers to information or reviews posted by customers regarding a product of service being sold online. According Dewi, Sudiarno, Saputra and Dewi (2018), Online Customer Feedback describes past experiences about online products and services purchased by customers. Online Customer Feedback allows customers to comment and put forward their opinions, feelings and perception of certain online products and services (Abdolmalekia & Ahmadian, 2016). Prospective online customers thus gain more information and details about products or services via online reviews enhancing trust in the products/services in comparison to information got by product marketers themselves (Park & Nicolau, 2015). Online Customer Feedback comprise many sub-dimensions including negative online reviews, positive online reviews, negative reviews, style of online review and structure, number of online reviews, online review title, usefulness ratings, quality reviews, source of information, online review shortness and moderate online reviews.

Various metrics of online customer feedback have been under review by many scholars: volume, star ratings, number of reviews, review content, review richness, valence and dispersion (Kim, et al., 2018; Cui, Lui & Guo, 2012). Much attention is paid on the volume of online reviews about product and service just to increase product and service awareness among prospective customers. The average ratings also called valence, weighted measure of negative versus positive comments carries useful and vital description of the quality of online product or service for customers aspiring to make online purchases (Cui, Lui & Guo, 2012). Previous consumers of the product and services are more likely to recommend them to other prospective online customer. The spread or dispersion of information about the product or service enhances customer reviews regarding a product spreads within and across customers.

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Consequently, online reviews star ratings depict the level of acceptance or rejection about the online service and products (Holleschovsky, 2015). In this study, online customer feedback will be operationalized into/under volume of reviews, sales rank, valence (average rating, percentage of positive reviews, volume of page views and percentage of negative reviews.

1.1.2 Product Design

Product designs defines the sets of elements constituting a product and take three forms, symbolism, aesthetics and functionality (Holleschovsky, 2015). Product design carries the physical structure and unique features that suit customer choice and preferences (Gilal, Zhang & Gilal, 2018). Aesthetic design defines the outlook beauty and physical look of product. The functionality aspect of the product describes its ability to serve the purpose meant to (Gilal, Zhang & Gilal, 2018).

Symbolic design highlights the particular meaning, visual elements, signs that pass information about the product's status, social roles and self-image. It focuses on the specific meaning or signs which communicates status and self-image (Maslowska, *et al.,* 2017). Product design is perceived to influence customers buying behavior including product preference, willingness-to-buy, where to buy and post purchase behavior/word-of mouth (Abdolmaleki & Ahmadian, 2016). In this study, product design was operationalized in terms of, functional, aesthetic and symbolic design.

1.1.3 Online Customer Feedback and Product Design

Consumers depend on online customer feedback to make rational decisions on whether to buy a product online or not (Holleschovsky, 2015). Consumers thus look for specific information about the product; online review star ratings to gain in-depth understanding of the product (Kim, Maslowska & Malthouse, 2018). Online feedback is a bidirectional phenomenon where previous customers make comments about the product while new customer go online to check the rating of a product based on the perception of previous consumers. The introduction of the internet dramatically increased online recommendations of products and services through electronic word of mouth (Mpinganjira, 2016). Consumers tend to rely on previous online customers' feedback as an avenue to understand more about a product and service before deciding whether to buy a product online or not. In addition, product owners/retailers tend to use the information provided by customers to improve the

design of their products with a view of providing what customers prefer hence attracting more customers.

Prospective online consumers can read one or more of the features of the product design and make up their mind to purchase product or not. More often, star ratings, source of the information, argument quality, usefulness, and message sidedness, are what customers look in online products and services (Floyd *et al.,* 2014). Product design is recognized as among the prominent determinants of firms' competitive advantage driving its performance (Ahmed, 2020). Product design features are what firms, marketers and brand managers are dwelling on with an aim of enhancing value, satisfaction and retention of customers. Gilal, Zhang and Gilal (2018) linked functional, symbolic designs and aesthetic to high turnover, sales growth and market share.

Based on the importance of online reviews, Maslowska, Malthouse and Bernritter (2017) noted that online reviews impact online business in terms of product and service sales, customer preferences and behavior and customers' understanding of the product information. Online customer feedback influences customers' decision to buy a product from online platforms or not (Hu, Liu & Zhang, 2008). Online Customer Feedback allows customers to adequately assess and understand a product or service before making a decision to purchase it (Dewi, et al., 2018). Positive online feedback may stimulate high product sales; however, negative reviews about the product hinders high sales growth. Online customer feedback also influences customers' purchase decision apart from just increasing product sales (Sridhar & Srinivasan, 2012; Park & Nicolau, 2015). Therefore, online reviews significantly affect consumer evaluation of a product, increasing customer trust and purchase intention.

1.1.4 E-Commerce Retail Market in Kenya

Retailing is distribution link where there are participants in the market that produce, sell products to retailers who then sell products to direct consumers. E-commerce in Kenya is a vital driver of the economy. In 2019, e-commerce retailing in Kenya contributed USD 640 million to the Economy and this is expected to expand to USD 1,961 million by 2023 (Australian Government report, 2020). Average amount spent on e-commerce per person in Kenya stood at USD 42.15 in 2019 (Statista report, 2019). In 2019, revenue generated from e-commerce household appliances was USD38 million, personal care products USD27 million, consumer electronics USD 237 million and fashion products USD 188 million. It is expected that revenue from the specified e-

commerce products to grow to USD 104 million for household appliances, USD 92 million for personal care products, USD 690 million for consumer electronics and USD 635 million for fashion products by 2023. The growing e-commerce retail business in Kenya according to the Australian Government report (2020) is attributed to rapid growing internet penetration. In 2019, internet user penetration in Kenya was 84%; highest level in comparison to internet user penetration in other Sub-Saharan countries like Nigeria, at 50% internet user penetration and South Africa at 54% internet users' penetration. In Kenya, common retail products in the e-commerce retail channel include household appliance, personal care products, furniture products, consumer electronics and fashion products.

Retail e-commerce in Kenya is one of the major drivers of the economy. In 2019, e-commerce retailing in Kenya contributed USD 640 million to the Economy and this is expected to expand to USD 1,961 million by 2023 (Australian Government report, 2020). Technological disruption is forcing many retail shops to review their business models. With the competitive business environment in the retail sector, retail firms are forced to identify opportunities that enable them to diversify and reach their clients or customers (Chesula & Nkobe, 2018). Many potential retail customers are opting for online shopping impacting the traditional mode of retailing. The shift from buying products physically from the stores to buying them online, has been gaining momentum among customers and retailers.

E-commerce retailers hope to cut on costs of renting or leasing physical operational space while on the other hand customers seek to reduce on the inconvenience of having to visit a retailer store in order to buy product or service (Mwencha, 2015). E-commerce retail shops are spending sleepless nights trying to identify cheaper and convenient ways to reach out to many customers (Cytonn report, 2016). Retailers are resorting selling their products online, for instance, Carrefour partnered with Jumia to sell their products through their online platform in 2018.

Products and services are now available online courtesy of growing e-commerce business platforms. In Kenya, some of the online shopping retailers include OLX, Kilimall, Jumia, and Facebook (Chesula & Nkobe, 2018). Online retail shops grew rapidly since early 2000 owing to rapid changing technological innovations that support online businesses (Cytonn report, 2016). As indicated in Oxford Business Group (2016) report, 35% of retail businesses in Kenya have some sought of established online platforms to buy and sell their products.

This study focused to retailers with online presence who deal with designable products; some of the products that constantly require design improvement include household appliances, personal care products, furniture products, consumer electronics and fashion products. Customers are usually specific in what they are looking for while searching products to purchase from the retailers' online platforms e.g., social media pages, websites and other online platforms. As per reports by CAK and KNBS estimated 27% of firms sold their products/items and services via online platforms in 2017 (Nordea trade report, 2021). E-commerce via use of apps in buying and selling products online has gained much momentum and recognition among online customers and product owners. Many businesses are opting for online sales as it is perceived to increase more sales 25 times more than traditional brick and mortar forms of retailing.

1.2 Research Problem

E-Commerce creates online platforms from where customers can share their compliments and raise complaints about the products (Chesula & Nkobe, 2018). However, the manner in which online customer feedback is employed to enhance product design, online retailing services and improved customer experience with online shopping is not evidently clear among scholars (Cytonn report, 2016). Many online retailers are not paying close attention to customer feedback (Mwencha, 2015) regarding the products and services sold and therefore miss the opportunity to improve their products and services. Online business is anchored on trust that the seller will genuinely sell quality product of the specified design as displayed online (Gilal, Zhang & Gilal, 2018). However, many online customers who bought products have been dissatisfied by the design of products shipped to them in terms of functionality, quality and outward appearance (Mpinganjira, 2016). Online sale of products that do not meet the preference of the customer or fulfill the buyer-seller product terms breeds dissatisfaction among customers while also undermining the growth of online business activities.

Retail e-commerce in Kenya is one of the major drivers of the economy. In 2019, e-commerce retailing in Kenya contributed USD 640 million to the Economy and this is expected to expand to USD 1,961 million by 2023 (Australian Government report, 2020). However, technological disruption is forcing many retail shops to review their business models. With the competitive business environment in the retail sector, retail firms are forced to identify opportunities that enable them to diversify and reach their clients or customers (Chesula & Nkobe, 2018). Many potential retail customers are opting for online shopping

impacting the traditional mode of retailing. The shift from buying products physically from the stores to buying them online has been gaining momentum among customers. As a result of the Covid 19 pandemic, most businesses and individuals have experienced financial constraints both in the formal and informal sectors (Banga, 2020). Furthermore, the emergence and spread of Covid 19 virus has fueled the increase in use of Ecommerce as an avenue to conduct business both between customers and retailers and business-to-business (Banga, 2020). The impact of Covid 19 has further fueled the adoption of online shopping as people try to comply with WHO restrictions to stop further spread of the virus (Banga, 2020).

Many empirical studies in the past did not illustrate how online customer feedback impacts product design. Kim, et al (2018) while studying how online customer reviews influence customer purchase indicated that online ratings, customer review comments likely influenced online customers to make purchase. However, the study did not illustrate how online customer feedback impacts product design presenting a conceptual gap. Cui, et al (2012) studied how online consumer reviews affected aggregate product sales and found that volume of reviews significantly influenced the volume of product sales with high volumes of sale recorded at the start but declined with time. However, the study did not illustrate how online customer feedback impacts product design presenting conceptual gap. In Kenya, Mwencha (2015) looked at consumers' perceptions in the use of online retail shops to make purchases and found the perceptions of consumers about online shops significantly affected their decision to buy online. However, the study did not illustrate how online customer feedback impacts product design presenting conceptual gap. Because of the knowledge gaps identified, this study seeks to fill the gaps by answering the question; what is the impact of online customer feedback on product design in retail market in Kenya?

1.3 Research Objective

This study seeks to determine:

i. The extent of customer feedback regarding online products of e-commerce retail market in Kenya.

ii. The impact of online customer feedback on product design in e-commerce retail market in Kenya.

1.4 Value of the Study

With increased market globalization and a competitive business environment, operations managers and business development managers need to identify new and emerging opportunities presented by internet penetration to reach out to more customers. This study therefore helps retail operation managers to align their strategy towards the e-commerce platform and increase revenue streams for their companies.

Many international investors have shown interest in entering the Kenyan retail market which is still not fully occupied. This study therefore offers them more insight into the penetration rate of electronic commerce in Kenya. This study gives them a picture on the opportunities available for investment.

The study findings also inform the policymakers in the retail sector particularly the Kenya National Chamber of Commerce (KNCC) and the Retailers Trade Association of Kenya (RETRAK) in setting policies and regulations that can stimulate growth of e-commerce retail businesses.

Since this field of electronic commerce is still new, this study offers future researchers interested in this field a point of references in their future studies. The findings add into the existing knowledge in the field of operations management.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter outlines the model and theories underpinning this research. It also presents an empirical review of past studies. Also, critique of existing studies is conducted to reveal knowledge gaps of the study.

2.2 Theoretical Literature Review

The Theory of Planned Behavior was anchored in this study. In addition, the study was also guided by the Theory of Planned Behavior and Commitment-Trust Theory.

2.2.1 Theory of Planned Behavior

Ajzen (1991) came up with Theory of Planned Behavior (TPB) with the aim of understanding human behaviors. According to TPB, the behavior of people are tied to social pressure, attitude and individual control over the behavior (Ajzen, 1991). TPB has been found to be useful in understanding peoples' choices, decisions and engagement (Conner, 2020). TPB is critical in understanding the intentions and drivers of a person to engage in certain sought of behavior (Ajzen, 1991).

Theory of Planned Behavior is important in understanding customer behavior based on reviews and feedback. The reviews and feedback by customers are supposed to guide organizations on how to address issues or complaints raised by customers and make an attempt to improve product and service delivery. For a firm to attain any meaningful product or service sales, it ought to pay close attention to customer desires, perception, beliefs and preferences.

2.2.2 Technology Acceptance Model

Technology Acceptance Model (TAM) advanced by Davis (1989) states that accepting any technology is influenced by benefits and ease of using it. As per the TAM, to adopt or reject a particular technology lies squarely on benefits and ease in using it (Surendran, 2012). The ease of use and perceived benefits significantly impacts actual use of a system (Venkatesh, Thong & Xu, 2012). Expected benefits of the new technology and the ease of using it would impact people's choice to use e-commerce platforms.

Technological changes and changing business environment are pushing many organizations to implement online businesses. As such business enterprises have to develop and implement online customer support system to collect customer complaints and suggestions. The online customer support system acts as a communication channel between organization and their customers. It is through such feedback mechanisms that retailers get suggestions to guide product design or redesign.

2.2.3 Commitment-Trust Theory

Morgan and Hunt (1994) advanced Commitment-Trust Theory where they contended that the key mediators in exchange among the participants are commitment and trust that leads to building interpersonal collaboration. According to the theory, the development of different forms of relationships requires the trust to be center stage essentially because of the widely held belief that establishing a cooperative relationship requires trust. In addition, Hashim and Tan (2015) argued that the participants who have interacted emotionally and built trust seem to keep on sharing knowledge with online business communities. Partners who are in relationship and are committed would put more effort to strengthen relational bonds that influence their cooperation positively, as well as their financial performance including other positive results (Wang, Wang & Liu, 2016).

With its effect on commitment, trust records an indirect influence as well as a direct influence on the results of a relationship. An organization that lacks platform structure to get in touch and build strong and trustworthy bond with customers may not be able to maintain an online business shop. The growth of e-commerce channel in Kenya's retail market has to be supported by owners' desire to fulfill customer needs and create trust with them. A firm must be committed to the needs of the customer in order to retain them.

2.3 Online Customer feedback

Firms have over time relied on traditional ways of gathering customer feedback including toll free calls, customer comment cards and onsite customer complaints. However, in the advent of changing technology, dynamic business environment, rising market competitiveness, meeting customer demands and changing customer behaviour, desire and preferences, the need for online customer feedback has been growing tremendously (Mourtzis, et al., 2018). Because of the increasing competition among market actors and also wide range of customers' opinions, business enterprises have to fetch useful information from customers'

feedback about the products and services (Dewi, et al. 2018). Firms have the responsibility to fetch customer feedback, sieve them for meaningful ones and use them to improve the quality of their products and services.

 It is of great importance for a business to obtain the feedback from customers to correct any defect in the product and also to improve on the products development process (Park & Nicolau, 2015). After releasing a new product to the market, the firm has the responsibility of making a follow up of the product by creating platforms to fetch customers' feedback, extract the customers' opinion and exploit this information for future product design and improvement (Chen, Wu, & Yoon, 2004). The same can be applied by a retailer through gathering data on product presented in the store or its online platforms. The feedback data from the customers can be employed by business to check on quality, identify product defects and suggest ways of improving the product for enhanced customer experience.

Online customer reviews are personalized opinions, views on experiences, attitudes and opinions from customers regarding product and services (Floh et al., 2013; Lu, Chang, & Chang, 2014). Online experiences and opinions about services and products as put over online review platforms are helpful in making purchase decisions (Chua & Banerjee, 2015; Huang & Benyoucef, 2013). Prospective customers rely on online customer feedback to decide on what and where to make product or service purchase (Holleschovsky & Constantinides, 2016). It is viewed that customer feedback is low cost for seeking information about product or service before actual purchase (Becker & Nobre, 2014; Chua & Banerjee, 2015). Some customers tend to trust customer feedback regarding the product or service compared to information provided by product and service marketers

Online retail shops have to comprehend the dynamics in online customer review feedback, sort the reviews according to relevance and sources of the feedback (where customer feedback posted from). The sites include enterprise retail sites to online customers, personal blogs and independent review sites (Lee, 2013). Various metrics are used to operationalize online customer feedback, and include volume of reviews, sales rank, star ratings, review content, review richness, valence and dispersion (Kim, et al., 2018; Cui, Lui & Guo, 2012). The rationale beneath scrutinizing volume of product and service reviews is to allow the firms understand what customers desire in the products sold. The average ratings also called

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valence; weighted measure of negative versus positive comments carries useful and vital description of the quality of online product or service for customers aspiring to make online purchases (Cui, Lui & Guo, 2012). The dispersion, or the spread, of communication measures how fast customer reviews regarding a product spreads within and across customers. Also, star ratings on online reviews form a critical heuristic element of the perceived evaluation of online consumer information (Holleschovsky, 2015).

2.3.1 Sales Rank

Sales rank is a number that represents the item's popularity in a main category or sub-category. Sales rank highlights how a product is selling well in comparison to other product within the same group (Hu, Koh & Reddy, 2014). The sales rank is operationalized as, number of sales of a particular product identified using standard unique identifier set by the seller in comparison to the number of sales of other similar products (Ghose, & Ipeirotis, 2006). According to Suryadi and Kim (2018) when calculating sales rank, products within the same category are considered. Sales rank doesn't tell the quantity sold of a particular product; it just indicates relationship among products. The lower the rank, the better a product is selling.

Sales rank is used to track online sales, using unique identifiers for every category of products (Hu, Liu & Zhang, 2008). Sales rank is calculated by looking at the aggregate sales made within 24 hours in comparison to similar products within the same category. Sales rank tend to change more often for lower ranked (more sale volume) items/products (Wang, 2019). The ranks are constantly updating throughout the day. Any given rank at any particular time is only a snapshot of the relationship among product identified using standard unique identifier at that particular time (Alzate, et al., 2021). Lower sales rank implies that the product attracted more sales than other similar products from other businesses. It is possible to see histories of ranks on particular dates on sites.

2.3.2 Volume of reviews

Online reviews provide a significant source of information which enables customers shopping online to appraise the quality of products or services (Yang, Sarathy & Lee, 2016). Volume of review is the quantity of reviews and therefore reveals the volume of information online shoppers can access. According to Chintagunta et al. (2010) volume mean the number of online ratings or comments on a particular product or brand. Higher volume of reviews

relates to higher product awareness and therefore high sales volume (Anderson and Salisbury 2003; Archak et al. 2011). Consumers are convinced more by products or brands which have high online reviews, since opinion shared by many consumers increases the perceived correctness of that opinion (Floyd et al. 2014). Moreover, consumers can be more informed about a product with high online reviews, which results in increased sales of the product.

Large review volumes are usually an indicator of popularity of a product and are linked to increased product sales (Wang, 2019). High average rating combined with high volume of reviews gives a good prediction of high product sales (Chen, Wu & Yoon, 2004). Volume of reviews influences shoppers' intention to buy a product by influencing their perceived risk and doubt, and also their attitude towards buying the product (Zablocki, et al. 2018). An increase in volume of reviews should lead to increased sales for an average rating above a particular anchor point; depending on the context and vice versa (Etzion & Awad, 2007).

2.3.3 Valence

Valence of online reviews indicates the nature of comments/reviews; both negative and positive, from product consumers. Valence is a measure of quality of product particularly for credential and experiential quality (Bae & Lee, 2011). Valence reviews are helpful in reducing information asymmetry in the market. In line with signaling theory, positive valence reviews (Spence, 1973) result to higher perceived quality which impacts the attitude of customers towards products. Online reviews impact online shoppers' attitude. Valence is a vital source of product information for prospective customers who want to buy online. Valence can either be negative, positive or neutral (Purnawirawan et al. 2012, p. 245).

Valence reviews have positive effects of sales volume of products and also impacts product purchase attitude. Also negative valence reviews may reduce sales volume of products and customers' attitude toward products. Positive reviews trigger positive attitudes resulting to enhanced customers' intentions to purchase, negative reviews demoralize customers' attitude resulting to lower purchase intentions (Lin & Xu, 2017). According to Koo, (2015) positive valence reviews stimulates higher purchase desires whereas negative valence reduces purchase intentions, and Ye et al. (2009) also acknowledges that positive valence significantly increases sales volume. According to Purnawirawan et al. (2015), positive valence reviews greatly impacts choice of products, likewise to negative valence reviews. Neutral valence reviews also impacts choice of product and this depend on whether the

comment is mixed; negative and positive comments are same in number or the positive and negative comments are different in number.

2.4 Product design

Product design is the development of a new product of unique features that suit customer choice and preferences. Product design can drive consumers' behavioral responses. According to Holleschovsky (2015), product design is multi-dimensional consisting symbolism, functionality and aesthetics constructs. Product design plays the lead role in defining the functionality, aesthetic and symbolic features of a product to best meet customer needs (Zablocki, et al., 2018).

Aesthetic design defines the perception of the beauty and appeals of a product to the senses (Liu, Li, Chen, & Balachander, 2017). Aesthetic design influences the purchase and consumption behavior of the customer. Brakus et al. (2009) note that consumers' senses influence their purchase behaviour. Aesthetic design grabs the attention of the consumer, which influences their purchase intentions and consumer choice behaviors (Hoegg & Alba, 2011). It also enhances consumers' desire to purchase or interact with products hence contributing to enterprise's sales revenue, growth and profitability.

Functional design depicts what the item/product can do, and entail utility, functions and technology supporting it (Bloch, 2011). Functional design ensures that the item/product functions as expected and is safe, reliable and economical (Bloch, 2011). Allen and Ng (1999) assesses functionality design by basing on tangible attributes and that these attributes results in high purchase intentions. Negative online comments regarding functional aspect of a product may reduce cognitive attitude of consumers, particularly when there is also low variance and low volume (Candi, Jae, Makarem & Mohan, 2017).

Symbolic design describes how an item or product compares with customers'/consumers personality, self-image or values. It also communicates gender, status, social roles and social group. Symbolic design focuses on how product related features and non-product related features like customers' need for social acceptance, own expression, personal image and self-worth. Product symbolic designs are helpful in creating sense consumer identity, status and lifestyle (Zablocki, et al., 2018). Symbolic design creates high sense of personal identity with certain products impacting their purchase. Symbolic design influences emotions of the consumer and these impacts purchase desire and behaviour. For symbolic items/ product,

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marketers have to constantly provide positive reviews to satisfy consumers/customers view of the nature of products being sold.

In the retail industry product design is critical not only for physical retail shops but for the online retail industry. Prospective customers visit the online retail shop seeking more information about product the product. The specific information sought by the prospective customer includes design, price and availability among other information. Product design is a very important feature associated with products merchandised or sold by retailers and so largely impacts potential purchase by customers though online channel or brick and mortar. Online business is anchored on trust that the seller will genuinely sell quality product of the specified design as displayed in online retail stores (Gilal, Zhang & Gilal, 2018).

2.5 Empirical Review

Past studies are reviewed in this section to uncover knowledge gaps. The empirical review is based on online customer reviews and product design.

Kim, et al. (2018) undertook a study to understand how online review features affect consumers' probability to purchase a product online. The study utilized purchase data and product reviews sourced from online retailer website. It was found that online reviews about product affected the purchase decision of a product by prospective consumers. However, the study did not illustrate how online customer feedback impacts product design presenting conceptual gap.

Cui, et al. (2012) studied how sales of new products are affected by online consumer reviews. The results of the study indicated that volume of reviews considerably affects sales volume of products in sale with more sales at beginning, but this tends to decrease overtime. In addition, the proportion of negative review comments has greater effects on sales volume compared to positive reviews an indication of negativity bias. However, the study did not illustrate how online customer feedback impacts product design presenting conceptual gap.

Zablocki, et al (2018) investigated the influence of volume, variance of online reviews and volume on brand attitude toward a product. Volume and variance were conceptualized as moderator variables to the valence. It was found that positive reviews trigger high purchase intentions whereas negative reviews significantly reduce purchase intentions among prospective customers. Online products with high volume persuade consumers to make

purchase. Nonetheless, the level in which variance of online reviews, volume and valence impacts product design has not been investigated.

Yang, Sarathy and Walsh (2016) studied how valence reviews; volume of reviews affects consumers' purchase decisions. Online questionnaires using quasi-experimental design were employed. The results of the study revealed that valence reviews strongly impact consumers' purchase decisions than volume of reviews. Negative valence reviews result in higher negative perception and less favorable perception about product purchases in comparison to positive valence reviews.

Yang, Sarathy and Lee (2016) conducted a research on how product review balance and volume affect purchase intention and online shoppers' product perception. The study found that online reviews particularly negative reviews impacts negatively the consumers purchase intentions. Prospective customers are more attentive to the negative reviews compared to positive reviews and therefore businesses have to pay closer attention to the negative comments. Web developers and recommender systems need to rank products more by review balance as opposed to volume of reviews.

Candi, et al. (2017) investigated consumer response to aesthetic, symbolic and functional product design in online reviews and how these features impacts customer purchase intentions via emotion arousal. It was found that the effectiveness of each product design varies and this depends on the product development environment. The three product designs impact consumers purchase intentions though symbolic design has received little attention by scholars.

Wang (2019) investigated how signals and signal generation impacts sales rank of products at Amazon online store. This was analyzed using panel regression data covering 30 days from the Scrub category. It was established that Amazon generated signals have more impact on sales rank than sponsored signals or user generated signals. Product recommendations from sponsors are not as effective as Amazon own generated signals.

Kordrostami (2016) investigated how volume of reviews and valence impacts sales made across products, consumers and marketing platforms. The study employed both real world and lab experiment data. Products with online reviews are considered more by consumers than products with no or little online reviews. Online reviews and consumer-produced content, impacts customers/consumers purchase decisions. Volume of online reviews and valence positively affects sales volume. Nonetheless, the result from the study is

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inconclusive. Some scholars indicated positive significant impact of valence reviews and volume on sales made, but other studies failed to establish any significant relationship.

Mwencha (2015) looked at consumers' perceptions and use of online retail services in Nairobi City County. The study utilized a descriptive survey design, explanatory and cross-sectional research designs. It was found that consumers' perceptions significantly affect the use of online retail services. However, the research focused on retail firms in Indonesia where retail business environment may be differing from that of Kenya presenting contextual gap.

2.6 Conceptual Model

In figure 2.1, online customer feedback is the independent element. The outcome variable is product design.

Figure 2.1: Conceptual Model


```
┌─────────────────────────────────┐                    ┌─────────────────────────────────┐
│ Online customer feedback        │                    │ Product design                  │
│ Sales rank,                     │ ─────────────────► │ Aesthetic design                │
│ Volume of reviews,              │                    │ Functional design               │
│ Valence.                        │                    │ Symbolic design                 │
└─────────────────────────────────┘                    └─────────────────────────────────┘
```

 Independent variable   Dependent Variable

 Source: (Kim, et al., 2018; Cui, Lui & Guo, 2012; Holleschovsky 2015)

Figure 2.1 shows the diagrammatical representation of online customer feedback and product design. Online customer feedback, as the independent variable is measured using sales rank, volume of reviews and valence. Product design the dependent variable is measured in terms of aesthetic design, functional and symbolic design. It is hypothesized that online customer feedback impacts product design in the retail industry.

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2.7 Summary of Literature Review

The study was guided by Theory of Planned Behavior, Technology Acceptance Model (TAM) and Commitment-Trust Theory. Ajzen (1991) came up with the Theory of Planned Behavior (TPB) with aim of understanding human behaviours. According to TPB, the behavior of people are tied to social pressure, attitude and individual control over the behavior (Ajzen, 1991). On the other hand, Technology Acceptance Model (TAM) advanced by Davis (1989) states that accepting any technology is influenced by benefits and ease of using it. As per the TAM, to adopt or reject a particular technology lies squarely on benefits and ease in using it. Morgan and Hunt (1994) developed Commitment-Trust Theory where they contended that the key mediators in exchange among the participants are commitment and trust that leads to building interpersonal collaboration.

An empirical critique of past studies has also been conducted to uncover knowledge gaps. Dewi, et al. (2018) investigated how online customer review and emotional design affects consumer repeat purchase behavior in online shops and found that online reviews particularly the objective reviews significantly affect consumer repeat purchase. However, the study focused on retail firms in Indonesia where retail business environment may be differing from that of Kenya presenting contextual gap. Likewise, in Nigeria, Jenyo and Soyoye (2015) studied online business and customer purchase behaviour of online firms and showed that online business significantly impacts consumer purchase decisions. However, the study did not illustrate how online customer feedback impacts product design presenting conceptual gap. Moreover, the study focused on retail firms in Nigeria where retail business environment may be differing from that of Kenya presenting contextual gap. In Nairobi County, Kenya, Mwencha (2015) looked at consumers' perceptions and use of online retail services in Nairobi City County and found that consumers' perceptions significantly affect the use of online retail services. However, the study did not illustrate how online customer feedback impacts product design presenting conceptual gap. It is a result of this gap that the current study sought to determine the impact of online customer feedback on product design in retail market in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The section presents the methodology and procedures which was adopted to carry out the research. It shows the study design, target population, sampling frame and sample size, sampling technique, data collection tools, pilot study and data analysis.

3.2 Research Design

Descriptive survey design was employed in this study. Descriptive survey targets to systematically and accurately describe a situation, population or phenomenon that is being studied (Zurmuehlen, 1982). Descriptive survey design is appropriate when information regarding the what, how, when and where answers of research problem. The method is appropriate in studying a phenomenon or population from unknown to known using empirical evidence supported by results (Creswell & Creswell, 2017). Descriptive survey gives in-depth inquiry to the problem under study. The study employed the descriptive survey design to determine the effect of online customer feedback on product design in retail market in Kenya.

3.3 Target Population

Population defines group of items or elements to be studied in a research (Sekeran & Bougie, 2010). The study population was 31 e-commerce retail businesses with established online customer feedback platforms in Kenya (CAK report, 2020). The unit of analysis was the e-commerce retail markets whereas the unit of observation was 1 customer relations manager and 1 product designer from each of the e-commerce retail enterprise. The study therefore targeted a population 31 customer relations managers and 31 product designers.

3.4 Data Collection

The study employed online based questionnaires to gather primary data since secondary data was not readily available. Roopa and Rani, (2012) indicate that questionnaires are suitable in understanding views, opinions, attitudes, feelings and behavior of individuals. A 5-point likert scale questionnaire was developed as per the objectives. The likert scale was labeled as 1 for strongly disagree, 2 for disagree, 3 for don't know, 4 for agree and 5 for strongly agree. Online based questionnaires were sent to customer relations managers of the selected retail e-commerce enterprises. Questionnaires that were filled immediately were collected. For those

respondents who required more time to fill the questionnaire, their request was granted unto them and the questionnaires collected later.

3.5 Data Analysis

Data analysis entails cleaning, inspecting, entering data into statistical software, transforming and modeling to generate useful results that can inform result conclusions and recommendations (Zikmund, et al. 2010). The primary data collected using questionnaire was entered in an excel sheet and exported to statistical package for social sciences (SPSS) version 20.0 for analysis. This study included both descriptive and inferential statistics. Particular descriptive statistics are means and standard deviation. Inferential statistic involved multiple regression modeled as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.1$$

Where;

Y =Product design was measured using aesthetic measures, functional measures and symbolic designs measures. Thus, three models were estimated;

$$\text{Aesthetic design} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots 3.2$$

$$\text{Functionality design} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \dots\dots\dots\dots\dots\dots\dots\dots 3.3$$

$$\text{Symbolic design} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots 3.4$$

Online customer feedback was operationalized into sales rank, volume of reviews and valence where X_1=Sales rank, X_2=Volume of reviews and X_3=Valence

β_0 = the constant term and ϵ = error term, β_1 = Beta coefficient which measures the change in the dependent variable Y, to unit change independent variable X_1, X_2 and X_3.

Table 3.2: Summary of Data Analysis

Research Objective	Type data	Analysis	Specific tests
To determine the extent of customer feedback regarding online products of e-commerce retail market in Kenya	Quantitative	Descriptive statistics	Descriptive statistics include percentages means and standard deviations.
To determine the impact of online customer feedback on product design in retail market in Kenya	Quantitative	inferential statistics	Inferential entailed the multiple regression models

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter represents the findings and discussions. The response rate, descriptive statistics and regression analyses have been presented in this chapter.

4.1 Response Rate

The number of questionnaires that were administered was 62 and a total of 57 questionnaires were duly filled and returned. The result on response rate is as shown in Table 4.1.

Table 4.1: Response Rate

Response	Frequency	Percent
Returned	57	91.9%
Unreturned	5	8.1%
Total	**62**	**100%**

Out of the 62 questionnaires administered, 57 questionnaires were properly filled and returned representing 91.9 percent response rate. This response rate is considered satisfactory to make conclusions for the study. Bailey (2000) stated that a response rate of 50% is adequate while a response rate greater than 70 percent is very good. This implies that based on this assertion, the response rate in this case of 91.9 percent is therefore very good. The data collection procedures used could have attributed to this high response rate. These included pre-notification of respondents and voluntary participation by respondents; drop and pick of questionnaires to allow for ample time to fill; assurance of confidentiality and anonymity and follow up calls to clarify queries from the respondents.

4.2 Profile information of the E-Commerce retail enterprises

The study investigated the key profile information of the e-commerce retail enterprises. Particular profile information studied include age of the retail enterprise, size of the e-commerce retail enterprise in terms of the number of employees, monthly sales revenue in KES and the available platforms to fetch customer feedback.

4.2.1 Age of the e-commerce retail enterprise

The study sought to establish the number of years the e-commerce retail enterprise has been operating. The results are presented in Figure 4.1.
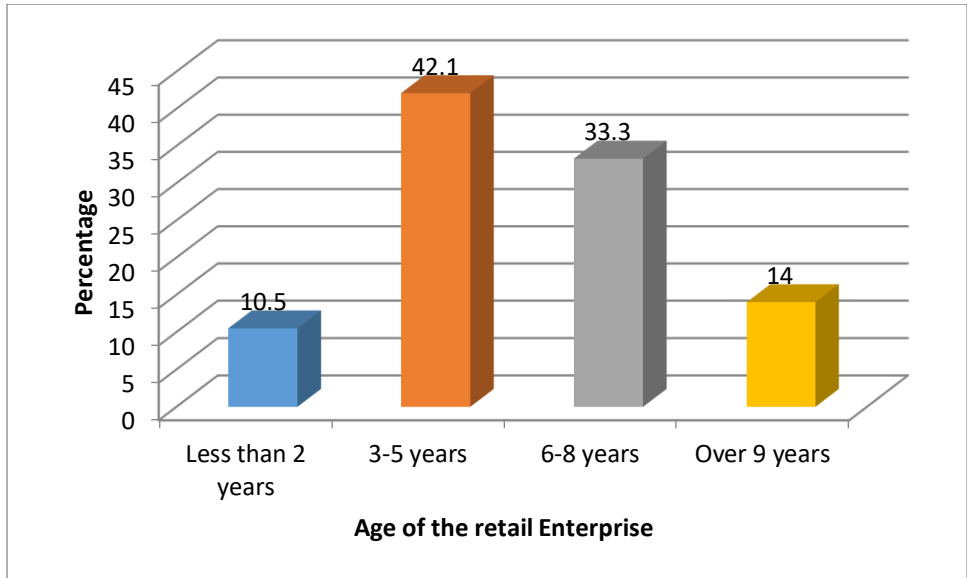
Figure 4.1 Number of years of operation

Results in figure 4.1 showed that most 42.1% of the e-commerce retail enterprises have been in operation for 3-5 years. It was also established that 33.3 percent of the e-commerce retail enterprises have been in existence for 6-8 years, 14.0 percent for over 9 years while 10.5 percent for less than 2 years. The results imply that majority of e-commerce retail enterprises were established less than a decade ago.

4.2.2 Number of employees in this retail e-commerce enterprise

The study investigated the number of employees in this retail e-commerce enterprise. The results are presented in Figure 4.2.
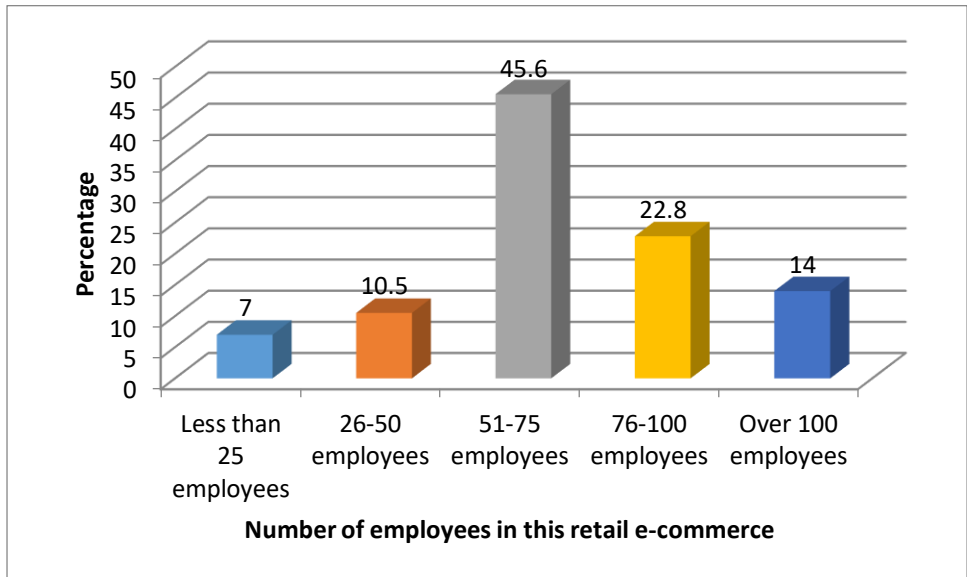
Figure 4.2 Number of employees in this retail e-commerce enterprise

It was established that most 45.6 percent of the retail e-commerce enterprises have 51-75 employees. Results also showed that 22.8% of the e-commerce retail enterprises have between 76-100 employees. In addition, 14.3 percent of the e-commerce retail enterprises had over 100 employees, 10.5 percent 26- 50 employees while 7.0 percent had less than 25 employees. The number of employees determines task allocation and efficiency of the e-commerce enterprise.

4.2.3 Monthly sales revenue

The study established the monthly sales revenues for the e-commerce retail enterprises in KES. The results are presented in Figure 4.3.
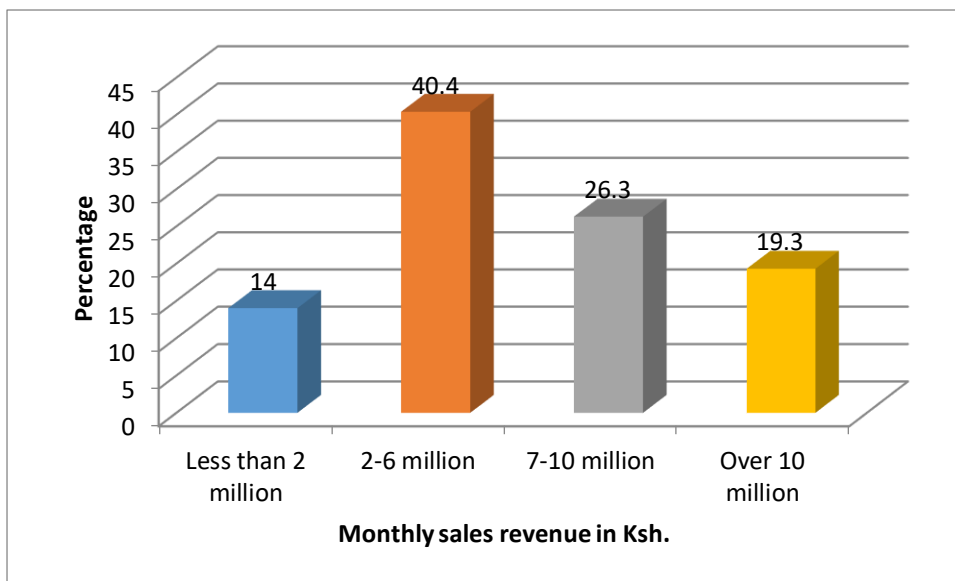
Figure 4.3 Monthly sales revenue

Results in 4.3 showed that most 40.4 percent of the retail e-commerce enterprises generated monthly revenue of Ksh.2-6 million. Results also showed that 26.3% of the e-commerce retail enterprises earned monthly revenue of ksh 7-10 million. In addition, 19.3 percent of the e-commerce retail enterprises generated monthly revenue of over ksh.10 million while 14.0 percent the e-commerce retail enterprises generated monthly revenue of less than ksh.2 million. The amount of revenue generated by the e-commerce retail enterprise is important in sustaining the operations of the enterprise, expanding and maintaining the e-commerce infrastructure.

4.3 Extent of online customer feedback

This section presents the descriptive results for the variables of the study that include sales rank, volume of reviews, valence and online product design in Kenya's e-commerce retail market. Results output are in form of percentages, means and standard deviations.

4.3.1 Descriptive on Online customer feedback

The study tabulated participants' responses regarding online customer feedback. A likert scale with options of 1-strongly disagree; 2- disagree; 3-don't know; 4- agree; 5- strongly agree was used. The results are shown in Table 4.2.

Table 4.2 Online customer feedback

Online customer feedback	Strongly disagree	disagree	don't know	Agree	Strongly agree	Mean	SD
Sales rank							
The sales ranks fetched from the retail's enterprise network have greatly helped enhance the design of products sold.	15.8%	8.8%	10.5%	36.8%	28.1%	3.5	1.4
Sales rank has helped improve functionality design of various products sold in this e-commerce enterprise.	8.8%	5.3%	15.8%	40.4%	29.8%	3.8	1.2
Volume reviews from the retail's enterprise network are carefully scrutinized by customer experts with aim of using them to improve the design of our products	14.0%	10.5%	10.5%	38.6%	26.3%	3.5	1.4
Volume of reviews							
The star ratings of our products reflects the adequacy of the design of our products.	8.8%	8.8%	7.0%	42.1%	33.3%	3.8	1.2
This retail enterprise conducts periodic quality review of customer feedback fetched in the network with aim of ascertaining the nature of our products	12.3%	0.0%	15.8%	43.9%	28.1%	3.8	1.2
Valence							
Important customer feedback comments are archived for research inquiry on product designs.	7.0%	12.3%	17.5%	33.3%	29.8%	3.7	1.2
Review valence of customer comments are always categorized into positive, negative and neutral comments with aim of rating the credibility of our products.	10.5%	15.8%	8.8%	36.8%	28.1%	3.6	1.3
Comments from customer are used to improved functionality and aesthetic designs of the product.	12.3%	10.5%	3.5%	38.6%	35.1%	3.7	1.4

Regarding sales rank, majority of respondents agreed that the sales ranks fetched from the retail's enterprise network have greatly helped enhance the design of products sold as indicated by mean response of 3.5 and standard deviation of 1.4. The results also showed that majority of the respondents agreed that the sales rank has helped improve functionality design of various products sold in the e-commerce enterprises as indicated by mean response of 3.8 and standard deviation of 1.2. It was also found that majority of respondents agreed that the volume reviews from the retail's enterprise network are carefully scrutinized by customer experts with aim of using them to improve the design of our products as indicated by mean response of 3.5 and standard deviation of 1.4. The results imply that sales rank has significant impact on product design for online e-commerce enterprises.

In addition, majority of respondents asked to respond on statements regarding volume of reviews and product design, majority were in agreement that the star ratings of our products reflects the adequacy of the design of our products as indicated by mean response of 3.8 and standard deviation of 1.2. Regarding the statement that the retail enterprises conducts periodic quality review of customer feedback fetched in the network with aim of ascertaining the nature of our products, majority agreed as indicated by mean response of 3.8 and standard deviation of 1.2. The results imply that volume of reviews have significant impact on product design for online e-commerce enterprises.

The study further presented the responses from participants relating to valence. Majority of respondents agreed that important customer feedback comments are archived for research inquiry on product designs as indicated by mean response of 3.7 and standard deviation of 1.2. Descriptive results also indicated that majority of the respondents agreed that review valence of customer comments are always categorized into positive, negative and neutral comments with aim of rating the credibility of our products as indicated by mean response of 3.6 and standard deviation of 1.3. It was also established that majority of respondents agreed that comments from customer are used to improved functionality and aesthetic designs of the product as indicated by mean response of 3.7 and standard deviation of 1.2. The results imply that valence has significant impact on product design for online e-commerce enterprises.

4.3.2 Descriptive on online product design of e-commerce retail enterprises

The study tabulated participants' responses regarding online product design of e-commerce retail enterprises. Particular online product designs explored include aesthetics, functional and symbolic designs. A likert scale with options of 1-strongly disagree; 2- disagree; 3-don't know; 4- agree; 5- strongly agree was used. The results are shown in Table 4.3.

Table 4.3 Online product design

Online product design	Strongly disagree	disagree	don't know	Agree	Strongly agree	Mean	SD
Aesthetics							
Our products are packaged in attractive packages.	5.3%	8.8%	3.5%	56.1%	26.3%	3.9	1.1
The aesthetic design of our products has influence on brand choice of customers.	12.3%	1.8%	14.0%	38.6%	33.3%	3.8	1.3
The aesthetic product design has significantly improved consumer behavior.	3.5%	10.5%	3.5%	54.4%	28.1%	3.9	1.0
Functional design							
The products sold here match customer needs.	5.3%	15.8%	7.0%	43.9%	28.1%	3.7	1.2
The products sold by this retail enterprise adequately serve the purpose meant for.	10.5%	14.0%	5.3%	47.4%	22.8%	3.6	1.3
Symbolic							
The items sold in this retail enterprise are properly labeled with proper instructions on how to use	8.8%	14.0%	0.0%	43.9%	33.3%	3.8	1.3
Consumer safety precautions are well labeled in the products sold by this retail enterprise.	14.0%	1.8%	7.0%	54.4%	22.8%	3.7	1.3

Regarding aesthetics, majority of respondents agreed that the products are packaged in attractive packages as indicated by mean response of 3.9 and standard deviation of 1.1. The results also showed that majority of the respondents agreed that the aesthetic design of the products influence brand choice of customers as indicated by mean response of 3.8 and standard deviation of 1.3. Participants' responses also revealed majority of respondents were agreeing that the aesthetic product design has significantly improved consumer behavior as indicated by mean response of 3.9 and standard deviation of 1.0. The results imply that aesthetics is an important feature of product design that customers consider pertaining online products.

In addition, majority of respondents asked to respond on statements regarding functional design as a feature of online products, majority agreed that the products sold here match customer needs as indicated by mean response of 3.7 and standard deviation of 1.2. Regarding the statement that the products sold by this retail enterprise adequately serve the purpose meant for, majority agreed as indicated by mean response of 3.6 and standard deviation of 1.3. The results imply that functional design is an important feature of product design that customers consider pertaining online products.

The study further presented the participants' responses regarding symbolic as a feature of online product design. Majority of respondents agreed that the items sold in this retail enterprise are properly labeled with proper instructions on how to use as indicated by mean response of 3.8 and standard deviation of 1.3. It was also established that majority of respondents agreed that consumer safety precautions are well labeled in the products sold by this retail enterprise as indicated by mean response of 3.7 and standard deviation of 1.3. The results imply that symbolic design is an important feature of product design that customers consider pertaining online products.

4.4 Impact of online customer feedback

The section uses regression analysis to measure impact of online customer feedback on product design. It presents the inferential results for the effect of sales rank, volume of reviews and valence on product design in e-commerce retail market. Product design was operationalized as aesthetic design, functional design and symbolic design.

4.4.1 Impact of online customer feedback on aesthetic product design

The study determined the impact of online customer feedback on aesthetic product design. Inferential results in this section include model fitness, ANOVA tests and regression coefficients. The model summary results are presented in Table 4.4.

Table 4.4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.772[a]	.596	.574	.64408

 a. Predictors: (Constant), Valence, Volume of reviews, Sales rank

Sales rank, volume of reviews and valence were found to be satisfactory in explaining aesthetic product design in e-commerce retail market in Kenya. This is supported by the R square of .596. This implies that sales rank, volume of reviews and valence explained 59.6%

of the aesthetic product design in e-commerce retail market. The ANOVA results obtained are presented in Table 4.5.

Table 4.5 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	32.487	3	10.829	26.105	.000[b]
1	Residual	21.986	53	.415		
	Total	54.474	56			

a. Dependent Variable: Aesthetics
b. Predictors: (Constant), valence, volume of reviews, sales rank

The results indicate that the overall model was statistically significant. Further, the results imply sales rank, volume of reviews and valence are satisfactory predictors of aesthetic product design in the e-commerce retail market. This was supported by an F statistic of 26.105 and the calculated p value of 0.000<0.05. Regression of coefficient results is presented in Table 4.5. To interpret the regression coefficient results, calculated p value is compared with 0.05 level of significance. If the p value is less than 0.05, then the relationship between variables is significant otherwise insignificant.

Table 4.6 Regression of coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.287	.418		.688	.494
1	Sales rank	.318	.124	.299	2.558	.013
	Volume of reviews	.132	.131	.116	1.012	.316
	Valence	.509	.126	.470	4.035	.000

a. Dependent Variable: Aesthetics

The estimated multiple regression model explaining aesthetic product design in the e-commerce retail market is presented as;

$Y= .287+.318X_1+ .132X_2+.509X_3$

Where

Y = Aesthetic product design in the e-commerce retail market

X_1 = Sales rank

X_2= Volume of reviews

X_3 = Valence

The constant value of .287 indicates the level of aesthetic product design in the e-commerce retail market in the absence of sales rank, volume of reviews and sales rank. Volume of reviews had the greatest impact on aesthetic product design in the e-commerce retail market, followed by sales rank (β=.318).

The coefficients of sales rank has a positive and significant impact on aesthetic product design in the e-commerce retail market (β=.318, p=.013<0.05). The regression of coefficient implies that a one-unit change in sales rank results to .318 unit increase in aesthetic product design in the e-commerce retail market.

Model results also revealed that coefficient of valence has a positive and significant impact on aesthetic product design in the e-commerce retail market (β=.509, p=.013<0.05). The regression of coefficient implies that a one-unit change in valence results to .509 units' improvement in aesthetic product design in the e-commerce retail market.

Volume of reviews had positive but insignificant impact on aesthetic product design in the e-commerce retail market. The volume of reviews did not have significant impact on aesthetic product design in the e-commerce retail market (β=.132, p=.316>0.05).

4.4.2 Impact of online customer feedback on functional product design

The study determined the impact of online customer feedback on functional product design. Inferential results included the model fitness, ANOVA tests and regression coefficients. The model summary results are presented in Table 4.7.

Table 4.7 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.731[a]	.534	.508	.76779

a. Predictors: (Constant), Valence, Volume of reviews, Sales rank

Sales rank, volume of reviews and valence are satisfactory in explaining functional product design in e-commerce retail market in Kenya. This is supported by the R square of .534. The model summary output implies that sales rank, volume of reviews and valence explains 53.4% of the functional product design in e-commerce retail market. The ANOVA results obtained are presented in Table 4.8.

Table 4.8 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	35.826	3	11.942	20.258	.000[b]
1	Residual	31.243	53	.589		
	Total	67.069	56			

a. Dependent Variable: Functional design

b. Predictors: (Constant), Valence, Volume o _reviews, Sales rank

The ANOVA results in Table 4.8 indicate that the overall model is statistically significant. Further, the results imply sales rank, volume of reviews and valence are satisfactory predictors that explain functional product design in the e-commerce retail market. This is supported by an F statistic of 20.258 and the calculated p value of 0.000<0.05. The regression of coefficient results is presented in Table 4.9.

Table 4.9 Regression of coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.081	.498		.163	.871
1	Sales rank	.378	.148	.320	2.546	.014
	Volume of reviews	.361	.156	.284	2.318	.024
	Valence	.305	.150	.254	2.027	.048

a. Dependent Variable: Functional design

The estimated multiple regression model explaining functional product design in the e-commerce retail market is presented as;

$Y = .081 + .378X_1 + .361X_2 + .305X_3$

Where

Y = Functional product design in the e-commerce retail market

X_1 = Sales rank

X_2 = Volume of reviews

X_3 = Valence

The constant figure of .081 indicates the level of functional product design in the e-commerce retail market in the absence of sales rank, volume of reviews and sales rank. Sales rank had the greatest positive impact on functional product design in the e-commerce retail market, followed by volume of reviews (β=.378) and finally valence (β=.305).

Regression of coefficients indicated that the coefficients of sales rank has a positive and significant impact on functional product design in the e-commerce retail market (β=.378, p=.014<0.05). The regression of coefficient implies that a one-unit change in sales rank results to .378 positive units' improvement in functional product design in the e-commerce retail market.

The results also revealed that the coefficients of volume of reviews has a positive and significant impact on functional product design in the e-commerce retail market (β=.361, p=.024<0.05). The regression of coefficient implies that a one-unit change in volume of reviews results to .361 positive units' improvement in functional product design in the e-commerce retail market.

Model results also showed that the coefficients of valence has a positive and significant impact on functional product design in the e-commerce retail market (β=.305, p=.048<0.05). The regression of coefficient implies that a one-unit change in valence results to .305 positive units' improvement in functional product design in the e-commerce retail market.

4.4.3 Impact of online customer feedback on symbolic product design

Further, the study determined the impact of online customer feedback on symbolic product design. Inferential results included the model fitness, ANOVA tests and regression coefficients. The model summary results are presented in Table 4.10.

Table 4.10 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.646[a]	.417	.384	.62651

 a. Predictors: (Constant), Valence, Volume of reviews, Sales rank

Sales rank, volume of reviews and valence were found to be satisfactory in explaining symbolic product design in e-commerce retail market in Kenya. This is supported by the R square of .417. This implies that sales rank, volume of reviews and valence explained 41.7% of the symbolic product design in e-commerce retail market. The ANOVA results obtained are presented in Table 4.11.

Table 4.11 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	14.898	3	4.966	12.652	.000[b]
1	Residual	20.803	53	.393		
	Total	35.701	56			

a. Dependent Variable: Symbolic

b. Predictors: (Constant), Valence, Volume of reviews, Sales rank

Table 4.11 shows that the overall model is statistically significant. Further, the results imply sales rank, volume of reviews and valence are satisfactory predictors of symbolic product design in the e-commerce retail market. This is supported by an F statistic of 12.652 and the calculated p value of 0.000<0.05. Regression of coefficient results is presented in Table 4.12.

Table 4.12 Regression of coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	1.495	.406		3.681	.001
1	Sales rank	.252	.121	.293	2.082	.042
	Volume of reviews	.101	.127	.109	.797	.429
	Valence	.301	.123	.344	2.453	.017

a. Dependent Variable: Symbolic

The estimated multiple regression model explaining symbolic product design in the e-commerce retail market is presented as;

$Y = 1.495 + .252X_1 + .101X_2 + .301X_3$

Where

Y = Symbolic product design in the e-commerce retail market

X_1 = Sales rank

X_2 = Volume of reviews

X_3 = Valence

The constant value of 1.495 indicates the level of symbolic product design in the e-commerce retail market in the absence of sales rank, volume of reviews and sales rank. Valence had the greatest impact on symbolic product design in the e-commerce retail market, followed by sales rank (β=.318). The volume of reviews did not have significant impact on symbolic product design in the e-commerce retail market (β=.101, p=.429>0.05).

The coefficients of sales rank has a positive and significant impact on symbolic product design in the e-commerce retail market (β=.252, p=.042<0.05). The regression of coefficient implies that a one-unit change in sales rank results to .252 positive units' improvement in symbolic product design in the e-commerce retail market.

Model results also revealed that coefficient of valence has a positive and significant impact on symbolic product design in the e-commerce retail market (β=.301, p=.017<0.05). The regression of coefficient implies that a one-unit change in valence results to .301 positive units' improvement in symbolic product design in the e-commerce retail market.

4.5 Discussion of Research Findings

Sales rank, volume of reviews and valence explained 59.6% of the aesthetic product design, 53.4% of the functional product design and 41.7% of the symbolic product design in e-commerce retail market. The results imply that online customer feedback that includes sales rank, volume of reviews and valence are essential in enhancing product design retailed by e-commerce enterprises. Consumers tend to rely on previous online customers' feedback as an avenue to understand more about a product and service before deciding whether to buy a product online or not. In addition, product owners/retailers tend to use the information provided by customers to improve the design of their products with a view of providing what customers prefer hence attracting more customers.

The coefficients of sales rank has a positive and significant impact on aesthetic product design in the e-commerce retail market (β=.318, p=.013<0.05), a positive and significant impact on functional product design in the e-commerce retail market (β=.318, p=.013<0.05) and a positive and significant impact on symbolic product design in the e-commerce retail market (β=.252, p=.042<0.05). The results imply that sales rank impacts the product design of products in the e-commerce retail market. The regression of coefficient implies that a one-unit change in sales rank results to .318 unit increase in aesthetic product design, .378 positive units' improvement in functional product design and .252 positive units' improvement in symbolic product design in the e-commerce retail market.

Sales rank is used to track online sales, using unique identifiers for every category of products. Sales rank is calculated by looking at the aggregate sales made within 24 hours in comparison to similar products within the same category. The lower the rank, the better a

product is selling. Lower sales rank implies that the product attracted more sales than other similar products from other businesses. It is possible to see histories of ranks on particular dates on sites. The results agree with Wang (2019) who investigated how signals and signal generation impacts sales rank of products at Amazon online store and established that Amazon generated signals have more impact on sales rank than sponsored signals or user generated signals. However, the results do not agree with Kordrostami (2016) who investigated how volume of reviews and valence impacts sales made across products, consumers and marketing platforms and found that sales rank did not have impact on product design.

Model results also revealed that coefficient of volume of reviews has a positive and significant impact on functional product design in the e-commerce retail market (β=.361, p=.024<0.05). The results imply that a one-unit change in volume of reviews results to .361 positive units' improvement in functional product design in the e-commerce retail market. However, volume of reviews did not have significant impact on aesthetic product design and symbolic product design in the e-commerce retail market. Volumes of review are the quantity of reviews and therefore reveal the volume of information online shoppers can access. Online reviews provide a significant source of information which enables customers shopping online to appraise the quality of products or services. Higher volume of reviews relates to higher product awareness and therefore high sales volume.

Consumers are convinced more by products or brands which have high online reviews, since opinion shared by many consumers increases the perceived correctness of that opinion. Moreover, consumers can be more informed about a product with high online reviews, which results in increased sales of the product. Much attention is paid on the volume of online reviews about product and service just to increase product and service awareness among prospective customers. The results agree with Cui, et al. (2012) who studied how sales of new products are affected by online consumer reviews and indicated that volume of reviews considerably affects sales volume of products in sale with more sales at beginning, but this tends to decrease over time. In addition, Zablocki, et al (2018) investigated the influence of volume of online reviews on brand attitude toward a product and found that positive reviews trigger high purchase intentions whereas negative reviews significantly reduce purchase intentions among prospective customers. Likewise, Yang, Sarathy and Walsh (2016) while studying how valence reviews; volume of reviews affects consumers' purchase decisions and

revealed that negative valence reviews result to higher negative perception and less favorable perception about product purchases in comparison to positive valence reviews.

The coefficient of valence has a positive and significant impact on aesthetic product design (β=.509, p=.013<0.05), a positive and significant impact on functional product design (β=.305, p=.048<0.05) and a positive and significant impact on symbolic product design (β=.301, p=.017<0.05) in the e-commerce retail market. The results imply that a one-unit change in valence results to .509 units improvement in aesthetic product design in the e-commerce retail market, a one-unit change in valence results to .305 positive units improvement in functional product design in the e-commerce retail market while a one-unit change in valence results to .301 positive units improvement in symbolic product design in the e-commerce retail market.

Valence of online reviews indicates the nature of comments/reviews; both negative and positive, from product consumers. Valence reviews are helpful in reducing information asymmetry in the market. In line with signaling theory, positive valence reviews result to higher perceived quality which impacts the attitude of customers towards products. Valence is a vital source of product information for prospective customers who want to buy online and can either be negative, positive or neutral. Valence reviews have positive effects of sales volume of products and also impacts product purchase attitude. Also negative valence reviews may reduce sales volume of products and customers' attitude toward products. The results agree with Zablocki, et al (2018) who investigated the influence of volume, variance of online reviews and volume on brand attitude toward a product and found that positive reviews trigger high purchase intentions whereas negative reviews significantly reduce purchase intentions among prospective customers. Also Yang, Sarathy and Walsh (2016) who studied how valence reviews; volume of reviews affects consumers' purchase decisions revealed that valence reviews strongly impact consumers' purchase decisions than volume of reviews. Kordrostami (2016) studying how volume of reviews and valence impacts sales made across products, consumers and marketing platforms indicated that valence positively affects sales volume.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the previous chapter, conclusion and limitations encountered during the study. This chapter also highlights the policy recommendations. Lastly, the chapter presents suggestions for further research that can be useful by future researchers.

5.2 Summary of Findings

The study sought to determine the impact of online customer feedback on product design in retail market in Kenya. The particular items studied included sales rank, volume of reviews and valence and how they influence product design in the e-commerce retail market. The study employed descriptive survey design. The results were analyzed using statistical package of social sciences (SPSS) software.

Model summary results revealed that sales rank, volume of reviews and valence explained 59.6% of the aesthetic product design, 53.4% of the functional product design and 41.7% of the symbolic product design in e-commerce retail market. The results imply that online customer feedback that includes sales rank, volume of reviews and valence are essential in enhancing product design retailed by e-commerce enterprises.

The coefficient of sales rank has a positive and significant impact on aesthetic product design, functional product design and symbolic product design in the e-commerce retail market. The coefficient of volume of reviews had a positive and significant impact on functional product design in the e-commerce retail market. Valence had a positive and significant impact on aesthetic product design, functional product design and symbolic product design in the e-commerce retail market. The volume of reviews did not have significant impact on aesthetic product design and symbolic product design in the e-commerce retail market.

5.3 Conclusion

The first objective of the study was to determine the extent of customer feedback regarding online products of e-commerce retail market in Kenya. It was established that e-commerce retails are putting emphasis on sales rank, volume of reviews and valence with aim of improving product design of the products. The study thus concludes that sales rank, volume of reviews and valence are vital constructs of online feedback used by online markets to shape the design of products demanded by customers.

The second objective of the study was to determine the impact of online customer feedback on product design in e-commerce retail market in Kenya. The study found that sales rank has a positive and significant impact on aesthetic product design, functional product design and symbolic product design in the e-commerce retail market. The study thus concludes that sales rank as a product of online customer feedback impacts product design in the e-commerce market. Sales rank is useful in tracking online sales, using unique identifiers for every category of products and thus e-commerce can use them to enhance the product designs during production.

It was found that volume of reviews had a positive and significant impact on functional product design in the e-commerce retail market. The study therefore concludes that volume of reviews impacts the functional product design of items sold in the e-commerce retail market. Consumers are convinced more by products or brands which have high online reviews, since opinion shared by many consumers increases the perceived correctness of that opinion

Valence had a positive and significant impact on aesthetic product design, functional product design and symbolic product design in the e-commerce retail market. A conclusion is thus made that valence impacts the aesthetic, functional and symbolic product design in the e-commerce retail market. The online comments from online customers may compel the e-commerce enterprise to consider improving the design of their products based on customer feedback.

5.4 Recommendations

The study established that sales rank, volume of reviews and valence are vital constructs of online feedback used by online markets to shape the design of products demanded by customers. Sales rank positively and significantly impact the aesthetic product design, functional product design and symbolic product design of products sold in the e-commerce retail market. The study recommends that e-commerce need to rank the various products sold in the e-commerce retail market to aid in the selection and improvement of product design. The ranking of products need to be automated showing the products ranking top and those ranking lower.

Volume of reviews impact the functional product design of products traded in the e-commerce retail market. Volume of reviews reveals the volume of information online shoppers can access. Higher volume of reviews relates to higher product awareness and therefore high sales volume. The e-commerce retail shop need to fetch the reviews made by customers and filters them by importance to aid in online sales decision making and marketing of the product. The volume of reviews shared by many consumers increases the perceived correctness of that opinion.

Valence impacts the aesthetic, functional and symbolic product design in the e-commerce retail market. The online comments from online customers may compel the e-commerce enterprise to consider improving the design of their products based on customer feedback. The e-commerce retail market may use the comments raised by online customers to improve of the products traded online

5.5 Limitations of the Study

The approach used in this study has limitations and the findings are not exhaustive; requiring further scrutiny. Retrieving online reviews from the e-commerce markets was not easy tasks as some e-commerce retail market were reluctant to share the information. However, the limitation was mitigated by making a solemn promise to the study population that the information provided would be used for purposes of academic research only. In addition, some e-commerce retail markets did not have well established online platforms to fetch and store customer comments about the products sold.

5.6 Suggestions for Further Research

The study relied much on primary data collected through questionnaires. Further research may entail employing secondary data by fetching secondary data and using them to model the impact of online customer feedback on product design in e-commerce retail market. Future research may also focus at the impact of online customer feedback on sales revenue in the e-commerce retail sector.

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APPENDICES

Appendix I: Letter of Introduction

Dear Sir/Madam,

RE: REQUEST TO COLLECT DATA FOR ACADEMIC RESEARCH PROPOSAL

I am a post graduate student from the University of Nairobi. I am doing a research proposal to **"determine the impact of online customer feedback on product design in retail market in Kenya".** Your participation in filing this questionnaire is highly regarded. Data presented herein will only be used for academic research purposes.

Thank you.

Yours faithfully,

Ronoh Davis Kipngenoh

Appendix II: Questionnaire

This questionnaire is aimed at collecting data on online customer feedback and product design in e-commerce retail market in Kenya. Information provided was held in confidence.

INSTRUCTIONS

Fill the questionnaire by ticking (√) where best suits.

SECTION A: PROFILE INFORMATION OF THE E-COMMERCE RETAIL ENTERPRISES

1. Age of the retail enterprise;
   Less than 2 years   { }   3-5 years   { }
   6-8 years   { }   Over 9 years   { }

2. Size of the e-commerce retail enterprise in terms of the number of employees
   Less than 25 employees { }   26-50 employees   { }
   51-75 employees   { }   76-100 employees   { }
   Over 100 employees   { }

3. Monthly sales revenue in ksh
   Less than 2 million   { }   2-6 million { }
   7-10 million { }   Over 10 million { }

4. What are the available platforms to fetch customer feedback?
   …………………………………………………………………………………………
   …………………………………………………………………………………..

5. How is the nature of customer feedback comments about products in this e-commerce retail enterprise? Probe negative, positive and how it impacts product design

   …………………………………………………………………………………………
   …………………………………………………………………………………..

6. How does your enterprise sieve the high volume of online consumer reviews to identify the crucial ones and use them to improve the design of the products?

   …………………………………………………………………………………………
   …………………………………………………………………………………..

7. How do the sales ranks of products in this e-commerce retail enterprise perform in relation to sales ranks of similar products in other e-commerce retail shops?

   …………………………………………………………………………………………
   …………………………………………………………………………………..

Section B: Online customer feedback

Please tick (√) one cell for each statement on how online customer feedback impacts product design in e-commerce retail market in Kenya. Use the scale where **1:** Strongly disagree; **2**: disagree; **3**: don't know; **4**: Agree; **5**: Strongly agree.

Online customer feedback	1	2	3	4	5
Sales rank The sales ranks fetched from the retail's enterprise network have greatly helped enhance the design of products sold					
Sales rank has helped improve functionality design of various products sold in this e-commerce enterprise					
Volume of reviews Volume reviews from the retail's enterprise network are carefully scrutinized by customer experts with aim of using them to improve the design of our products					
The star ratings of our products reflects the adequacy of the design of our products					
This retail enterprise conducts periodic quality review of customer feedback fetched in the network with aim of ascertaining the nature of our products					
Valence Important customer feedback comments are archived for research inquiry on product designs					
Review valence of customer comments are always categorized into positive, negative and neutral comments with aim of rating the credibility of our products					
Comments from customer are used to improved functionality and aesthetic designs of the product					

What is the nature of nature of customer feedback regarding online products of this retail e-commerce?

………………………………………………………………………………………

……………………………………………………………………………………..

Section C: Product design in e-commerce retail market

Indicate level of agreement to the statements on product design in e-commerce retail market?

Use the scale where **1:** Strongly disagree; **2**: disagree; **3**: don't know; **4**: Agree; **5**: Strongly agree.

Product design	1	2	3	4	5
Aesthetics					
Our products are packaged in attractive packages					
The aesthetic design of our products has influence brand choice of customers					
The aesthetic product design has significantly improved consumer behavior					
Functional design					
The products sold here match customer needs					
The products sold by this retail enterprise adequately serve the purpose meant for					
Symbolic					
The items sold in this retail enterprise are properly labeled with proper instructions on how to use					
Consumer safety precautions are well labeled in the products sold by this retail enterprise.					

Appendix III: List of Retail-ecommerce operating in Kenya

1. Alibaba Kenya
2. Amazon kenya
3. Avechi
4. Bidrobuy
5. Buyandsell.co.ke
6. Buyrentkenya.com
7. Cheki Kenya
8. Closet 49.co.ke
9. DPO
10. Gadzone
11. Glovo
12. Jade collections Online
13. Jambo Shop
14. Jiji Kenya
15. Jovago
16. Jumia mall
17. Kenyabuzz
18. Kilimall
19. Lamudi
20. Masoko
21. Mimi Online Shop
22. Naivas Online Supermarket
23. N-soko property
24. OLX
25. Pigiame
26. Property24.co.ke
27. Rupu
28. Sendy
29. ShopIt
30. Sky Garden
31. Tuskeys Online Supermarket
CAK report, 2020

Appendix IV: Plagiarism Report

ONLINE CUSTOMER FEEDBACK AND PRODUCT DESIGN IN
E-COMMERCE CHANNEL UNDER THE RETAIL MARKET IN
KENYA

ORIGINALITY REPORT

13%	11%	7%	6%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

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