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Strategic Technological Innovations Influencing Competitive Advantage Among Micro and Small Enterprises in Nairobi County, Kenya

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Abstract

Purpose: The ability of businesses to integrate information technology in their operations has been found to be an integral driver to their success. Through information technology, firms can utilize technological innovations to strengthen the uniqueness of their products in the market thus enhancing their competitive advantage. However, with limited evidence in the local context especially among the micro and small enterprises which continue to face a continuous decline, it warrants the study to assess how strategic technological innovations have been embraced among the small and micro enterprises and the role the innovations have played in enhancing the competitive advantage of the enterprises. Specifically, the study will examine the influence of enterprise's IT Capabilities on competitive advantage among Micro and Small Enterprises (MSEs); determine the influence of Technological resources on competitive advantage among Micro and Small Enterprises (MSEs); explore the influence of adopted new technologies on competitive advantage among Micro and Small Enterprises; and establish the influence of Technological Processes and Products (TPP) on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya. The objectives will be anchored on dynamic capabilities theory, Schumpeter theory of innovation, technology acceptance model and diffusion theory of innovation.

Methodology: Using a descriptive research approach, the study will collect and analyse both qualitative and quantitative data. This data was obtained from 386 micro and medium enterprises in Nairobi Central Business District, drawn from a population of 11,245 MSEs registered by the Nairobi City County in the CBD. A questionnaire was the main instrument of data collection, which was pilot-tested for validity and reliability. The collected data was analyzed using descriptive and inferential statistics.

Findings: The findings were presented using frequency tables and graphs. In conclusion, the findings emphasize the critical role of technology in driving market expansion, customer engagement, and operational efficiency. The study highlights the importance of strategic support and intervention to address technological adoption challenges. By encouraging technological development and integration, policymakers and other stakeholders can assist MSEs in improving their operations, boosting the economy of Nairobi County. Investing in technological education and infrastructure is essential for MSEs to optimally benefit from TPP in the contemporary digital economy.

Unique Contribution to theory, policy and practice: Training and development on how MSEs can use the platforms effectively, online marketing and selling needs to be promoted to help MSEs build their capacities. Therefore, when equipped with the appropriate knowledge and tools, the policymakers can help the MSEs to adopt e-commerce and increase their market access and productivity.

Keywords: *Enterprise's IT Capabilities, Technological Resources, Adopted New Technologies, Technological Processes and Products (TPP), And Competitive Advantage.*

Background of the Study

In the world of globalization, information technologies are becoming fundamental in changing the way organizations operate, both large and small-scale. This has hastened the need for innovation which is considered an essential driver to organizational success. A commitment to innovation has long been considered to be important to the success of entrepreneurial ventures and small firms (Hervas-Oliver, Sempere-Ripoll & Boronat-Moll, 2021). Research has shown that innovation stimulates ventures' growth (Haddoud, Kock, N., Onjewu, Jafari-Sadeghi, & Jones, 2023) and also provides a key source of competitive advantage in the absence of scale economies (Indrawati, 2020). Considered from the resource-based view of the firm (Bocquet, Le Bas, Mothe, & Poussing, 2019), successful innovation may be dependent on the presence of other organization-specific skills and capabilities. For example, substantial evidence has begun to accumulate that suggests that appropriate strategic employment of IT may be essential in translating strategies (e.g., innovation) into enhanced firm competitive advantage (Temel & Durst, 2021). A direct linkage between IT innovation and firm competitiveness was established by Temel & Durst, 2021). Bagheri, Mitchelmore, Bamiatzi, and Nikolopoulos (2019) found that high IT capable firms (those that invest heavily in IT) outperform competitors who do not invest to the same extent. These results suggest strategic technological innovation offers firms a competitive competency, which aids firms in differentiating themselves in the marketplace, such as through creating new products and enhancing their processes.

Technological innovation refers to any novel discovery that is different from existing products or the further development of existing technologies. Technological innovation consists of radical innovation and incremental innovation (Donbesuur, Ampong, Owusu-Yirenkyi, & Chu, 2020). Radical innovation consists of discovering new processes, discovering new products and services, exploiting new opportunities in new markets and developing new distribution channels (Adla, Gallego-Roquelaure, & Calamel, 2020). Incremental innovation consists of improving existing products and services, applying small adaptations to existing processes and products, increasing economies of scale in the current market and expanding existing client services (Woschke et al., 2017; Wang, 2019). Technological innovation can provide competitive advantages for SMEs (Wadhwa et al., 2017). Bagheri et al. (2019) refer to technological innovation as innovation in the form of inputs, activities and outputs. Such innovation by companies or corporations is key to the success of a business (Urbancova, 2013). The competitive advantage of MSEs implies that the firms have a capability to offer products and services that meet the needs of the customers and attract more customers than their competitors. To achieve this, MSEs ought to embrace strategic technological innovation. In Kenya, MSEs have been viewed on only the dimension of their entrepreneurial nature and capability, but their strategic point of view has not been adequately addressed.

Statement of the Problem

Report from the World Bank indicate that Micro and Small enterprises in Kenya are faced by a constant threat of failure, with a high collapse rate and limited potential for growth into large

enterprises (World Bank, 2020; GoK, 2020). According to a report by Price Waterhouse Coopers (PWC; 2021), 85% of MSEs in Kenya fail within their first five years of operation, highlighting the severe challenges they face. This is particularly concerning given that 70% of job opportunities created annually in Kenya rely on MSEs, making their survival crucial for the economy. One of the most pressing issues affecting small businesses is their ability to effectively incorporate existing technology to maintain a competitive advantage and ensure long-term survival. Despite the glaring importance of strategic technological innovation, empirical research has largely focused on large established firms, neglecting the specific challenges and opportunities faced by MSEs.MSEs in Kenya often struggle with limited access to finance, inadequate infrastructure, and a lack of digital literacy. These factors hinder their ability to invest in technology, adopt new processes, and compete effectively in the market. Additionally, the high cost of technology and the complexity of implementing it can be overwhelming for many MSEs.

The failure of MSEs has significant negative consequences for the broader economy. Job losses, reduced tax revenue, and hindered economic growth are just some of the potential impacts. Addressing the challenges faced by MSEs is essential for promoting sustainable economic development and improving the livelihoods of millions of Kenyans. The government of Kenya through different organization continue to encourage the growth of small businesses as they form the backbone of the country's economic growth. However, compared to large enterprises, MSEs in Kenya face many unique challenges such as reluctance by commercial banks to meet their financial needs like payment and transactional services. This is attributed to their financial situations that deny them access to credit or loans as they possess low capital base and lack of security to secure them. Therefore, this paper addresses the role played by strategic technological innovation on the competitive advantage of MSEs in Nairobi County, Kenya.

Research Objectives

i To examine the influence of enterprise's IT Capabilities on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya.
ii To determine the influence of Technological resources on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya.
iii To explore the influence of adopted new technologies on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya.
iv To establish the influence of Technological Processes and Products (TPP) on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya

LITERATURE REVIEW

Theoretical Review

Dynamic Capabilities Theory

Proposed by Teece, Pisano, and Shuen (1997), the dynamic capabilities theory states that as the world is turning into a radical and ever-change global network, it is fundamental for the managers and business owners to be at the forefront of embracing these changes, and acquiring the modern

techniques and capabilities that can enable them to sail through the dynamics. The theory upholds that in a technological world, dynamic skills and potentials are integral for modern businesses to thrive. Similarly, MSEs require these skills and competencies in order to be competitive. According to Basiouni, Hafizi, Akhtar, and Alojairi (2019), the ability of MSEs to thrive depends on the overall commitment and skills possessed by the owners or managers of these enterprises. One of these dynamic capabilities are the technological skills. The entrepreneurs ought to have adequate knowledge and knowhow on the use of technology for them to effectively lead their enterprises to embrace technology. With technology being the main driver of organizational success in the modern world, it proves the need for entrepreneurs to be technologically adept for them to embrace technology in their enterprises (Teece, 2007).

Dimache and Roche (2011) links the dynamic capabilities to technological innovation and reiterate that the successful innovators are organizations that build and manage knowledge based resources effectively. They are the most enthusiastic about pursuing knowledge and the most likely to harness the power of innovation (Bakar & Ahmad, 2010). From this view, the linkage to innovations and performance is well firmed. This study reinforces the view that MSEs superior performance can be harnessed from absorption and utilization of firms bundle of resources as a strategic competitive advantage. The study argues for a direct relationship between valuable, rare, inimitable, and non-substitutable capabilities and organizational performance. Particularly, having a broad strategic utilization of opportunities presented by internet evolution that enable the creation of a new range of product innovation, process innovation, new market dynamics, unique capabilities, products and services. This study therefore concludes that organizations that are able to integrate, build, and reconfigure internal and external competences to address rapidly changing environments where MSEs are under pressure to continuously adapt to the ever changing business environment (e.g. globalization, change in customer behavior, trends towards purchasing services as distinct from products. Therefore, MSEs, can no longer rely on the traditional product focused business models; they need to be highly adaptive and innovative in order to compete (Dimache & Roche, 2011).

Schumpeter Theory of Innovation

Schumpeter (1934) contended that entrepreneurs, who could be independent inventors or R&D engineers in large corporations, created the opportunity for new profits with their innovations. In turn, groups of imitators attracted by super-profits would start a wave of investment that would erode the profit margin for the innovation. However, before the economy could equilibrate a new innovation or set of innovations, conceptualized by Schumpeter (1934) as Kondratiev cycles, would emerge to begin the business cycle over again. Years later, Schumpeter (1942) when referring to the economic changes and replacing of products and process of the market and the industry, emphasized that the process of revolutionizing, destroying and creating a new economic structure, called “creative destruction,” is a fundamental fact for the capitalism must be continuous. In the beginning of the 1960s, Schumpeter (1961) describes innovation as major disruptions related to products, services and processes, representing a break with previous paradigms to generate

wealth and differentiation. Schumpeter argued that anyone seeking profits must innovate. That will cause the different employment of economic system's existing supplies of productive means (Schumpeter, 1942) Schumpeter believed that innovation is considered as an essential driver of competitiveness and economic dynamics (Hanush & Pyka, 2007). He also believed that innovation is the center of economic change causing gales of "creative destruction", which is a term created by Schumpeter in Capitalism, Socialism and Democracy. According to Schumpeter innovation is a "process of industrial mutation, that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one". In this vein, the study finds the theory informative to innovation strategies and performance of MSEs.

Technology Acceptance Model Theory

Devis (1986) came up with the technology acceptance theory. The theory holds that technological advancements will not enhance the effectiveness and performance within an organization if their users have not embraced change (Salford & Roche, 2010). This concept is among the most common in the understanding the acceptance of computer technologies. Embracing aspects such as online expression of interest, online notifications as opposed to the old ways like letters forms part of the acceptance model (Teo, Lin & Lai, 2009). The acceptance of any innovation particularly that which is based on information technology, calls for the acquisition of computer-based instruments that may facilitate the making of decisions as well as planning communication (Venkatesh & Bala, 2012). Nonetheless, there are risks with such systems. As such, it is extremely important that the new systems meet specifications derived from organizational preference and reasoning. Electronic informing requires infrastructure that was used in aspects such as vendor systems integration (Wang, Chang & Heng, 2014). According to the Arberdeen Group (2015) two hypotheses form the basis of the concept of technology acceptance: The supposed efficacy of the system, for example, enhanced performance and productivity from online expression of interest as well as more effective and efficient performance, and the perceptible simplicity of application of the new system in terms of the simplicity of learning, and how easy it is to control and remember (Ageshin, 2011). The model introduces the understanding that the willingness to accept and apply emerging communication technology is dependent on the feelings of the user regarding the system in relation to its supposed benefits (Azadegan & Teich, 2010).

Diffusion of Innovation Theory

Rogers' diffusion of innovations theory is ideally appropriate for investigating the adoption of innovation strategies within parameters of product, process, market and technology. In fact, much diffusion research involves technological innovations so Rogers (2003) usually used the word "technology" and "innovation" as synonyms. Rogers offered the following description of an innovation: "An innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption" (Rogers, 2003). An innovation may have been invented a long time ago, but if individuals perceive it as new, then it may still be an innovation for them. The newness characteristic of an adoption is more related to the three steps (knowledge, persuasion, and decision) of the innovation-decision process. Diffusion of innovations has been defined as a

process by which innovation is communicated through certain channels to members of the social system over time (Sampaio, et al. 2012). The theory focuses on the fact that new ideas (innovations) or technologies, are being created continually and that communication becomes vital in spreading or disseminating the innovation to society or communities. This is primarily because acceptance of the innovation or technology will depend on the individual's attitude towards that innovation. Also, communities have a choice in rejecting or accepting the innovation. The social networks or communication channels as an element of the diffusion of innovations process may be important in diffusion of innovation for MSEs. A channel is the means by which a message gets from the source to the receiver (Rogers, 2003). Mass media and interpersonal communication are two communication channels that are critical in diffusion since it is a social process that involves interpersonal communication relationships (Walton, 2013). Thus, interpersonal channels are more powerful to create or change strong attitudes held by an individual. The internet consists of a web of social systems that act as influencers in adoption of technology provided by the same channel or platform. Therefore, MSEs tend to provide data services in interpersonal channels, that have a characteristic of homophily, that is, "the degree to which two or more individuals who interact are similar in certain attributes, such as beliefs, education, socioeconomic status with a resulted end in adoption of products.

Conceptual Framework

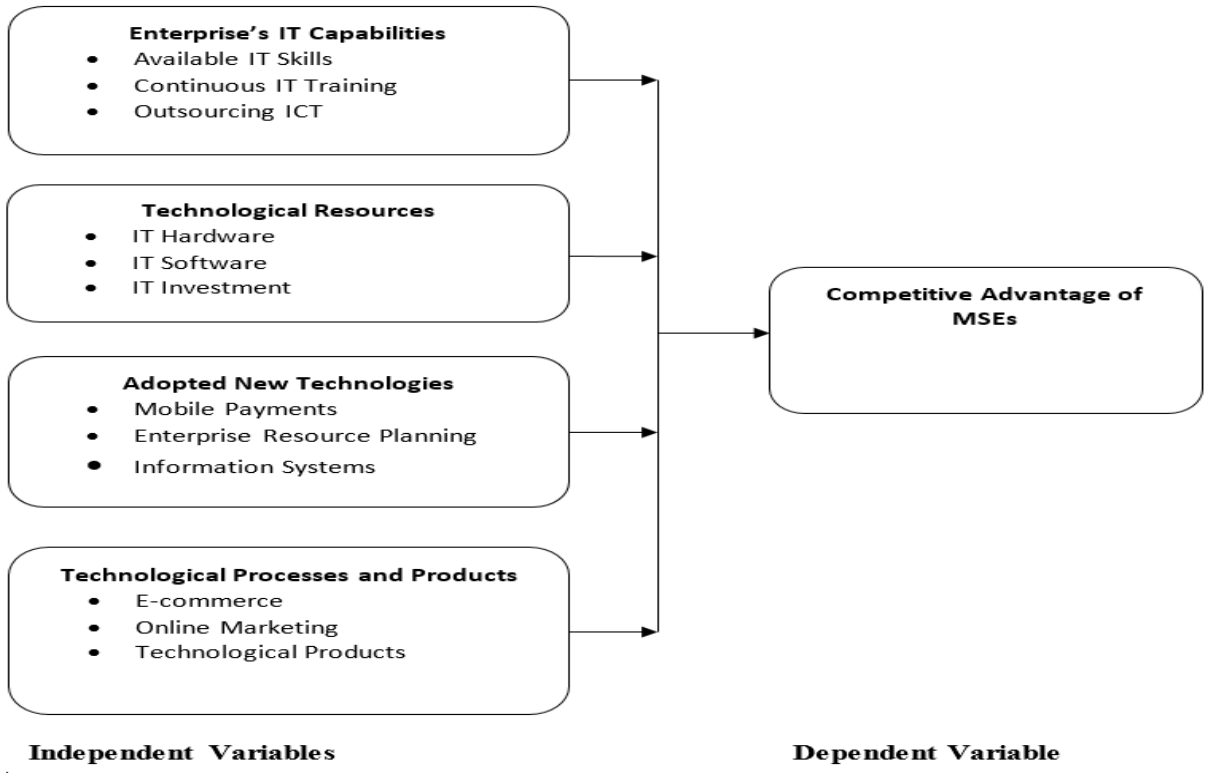


Figure 1: Conceptual Framework

Research Methodology

This study utilized the descriptive research design. The target population for this study will comprise of 11,245 Micro and Small Enterprises in Nairobi County's central business district. Yamane (1967) sampling formula was employed in calculating a sample size 386 MSEs. A questionnaire was used to collect the primary data for the study. This study used the Statistical Package for Social Sciences (SPSS version 26) to process the data. The software was used to produce frequencies, descriptive and inferential statistics which were used to derive generalizations and conclusions regarding the research questions. Qualitative data was analysed using content analysis, where the explanations and opinions by the respondents were thematically sorted and presented to support the quantitative data. This will allow the study to make inferences by objectively and systematically identifying specified characteristics of data flow. A regression was carried out to establish the statistical relationship between the variables. The model was in the form of:

$$\mathbf{Y= \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

Where; Y = Competitive Advantage of the MSEs, X1 = Enterprise Technological Capabilities, X2 = Technological Resources, X3 = Adopted new Technologies, X4 = Technological Processes and Products, β_0 represents the regression model Constant, β1, β2, β3, β4, = Regression coefficients and **ε**= Error term

FINDINGS OF THE STUDY

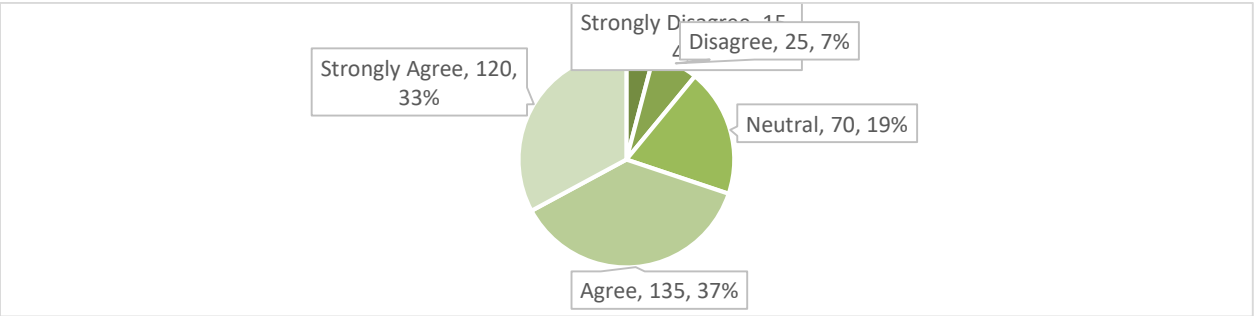
Response Rate

The study distributed 386 questionnaires to the target respondents. 365 questionnaires were fully filled and returned for analysis. This accounted for 94.6% response rate. This high response rate highlights the significant interest and concern of MSEs in Nairobi County.

Descriptive Statistics

The influence of enterprise's IT Capabilities on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya

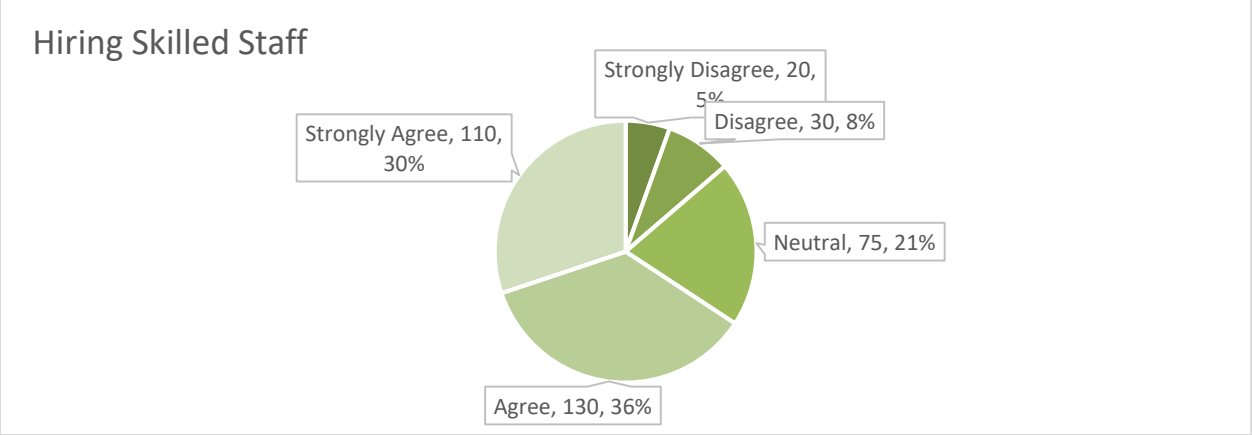
Staff Skills Findings



The analysis of staff skills in relation to IT capabilities reveals the following distribution: Strongly Disagree - 15 respondents (4%), Disagree - 25 respondents (7%), Neutral - 70 respondents (19%), Agree - 135 respondents (37%), and Strongly Agree - 120 respondents (37%). The total number

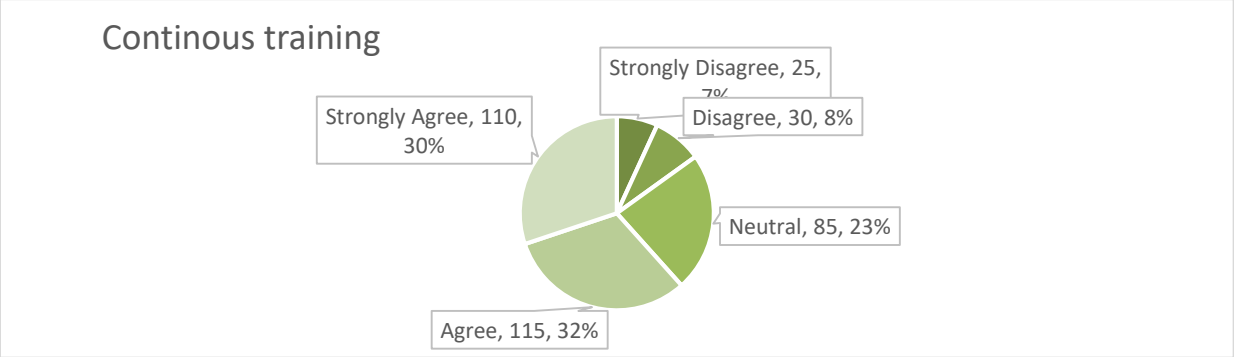
of respondents is 365. A clear majority of the respondents (70%) either agree or strongly agree with the statement on the role and relevance of staff skills in utilizing IT as a means of a competitive edge. This suggests understanding that properly trained staff is a key factor in leveraging technological resources appropriately. The relatively high proportion of the Neutral responses (19%) might point at a lack of awareness or misconception among some participants regarding the relationship between staff skills and IT enablers. Furthering this by providing a targeted training and development program could help increase MSE's aptitude to use IT for competitive advantage in Nairobi County, Kenya.

Influence of Hiring Skilled Staff on Competitive Advantage



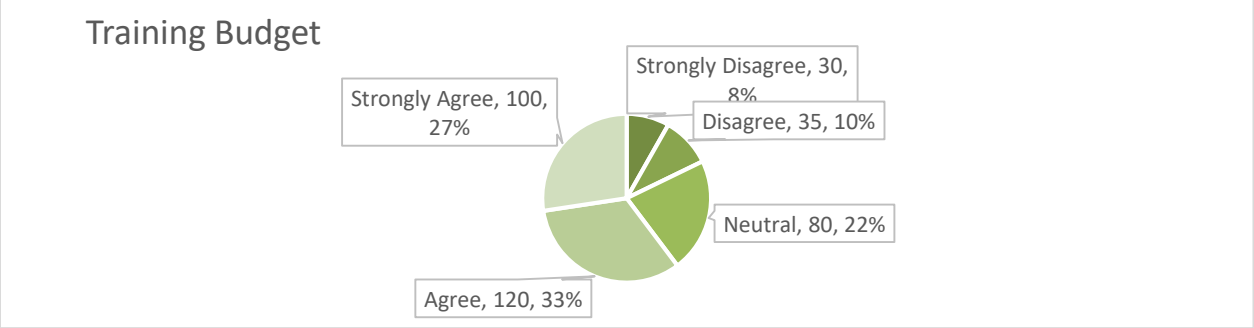
The analysis reveals the following distribution regarding the influence of hiring skilled staff: Strongly Disagree - 20 respondents (5%), Disagree - 30 respondents (8%), Neutral - 75 respondents (21%), Agree - 130 respondents (36%), and Strongly Agree - 110 respondents (30%). The total number of respondents is 365. One of the critical success factors when it comes to MSEs is the ability to employ and retain competent human resource. Regarding the necessity of employing skilled human resources for the purpose of developing competitive capabilities through IT, 76% of respondents either Agree or Strongly Agree. This is something we have seen portrays importance which human capital plays in the proper deployment of technology. Nevertheless, the significant number of Neutral responses (21%) hints at certain discrepancies as to the relevance of professional staffing for a strategy. Overcoming this challenge through recruitment policies and training interventions could notably impact the competitiveness of MSEs in Nairobi County, Kenya.

Continuous Training Findings



The analysis includes responses from 365 participants regarding the importance of continuous training. The distribution is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 30 respondents (8%), Neutral - 85 respondents (23%), Agree - 115 respondents (32%), and Strongly Agree - 110 respondents (30%). The findings showed that people have different perception on continuous training for improving IT capabilities. Specifically, 32% of the respondents stated 'Agree' and 30% 'Strongly Agree' with the necessity of continuous training arguing it is vital to sustain competitive advantage. On the other hand, 8% responding with Disagree and 7% responding with Strongly Disagree indicated a certain level of disbelief or potential challenges for ongoing training. Responding to these issues circumstantially may go a long way to place comprehensive focus on continuous training as a means of realizing the full potential of MSEs in Nairobi County in terms of IT efficiency for sustainable competitiveness.

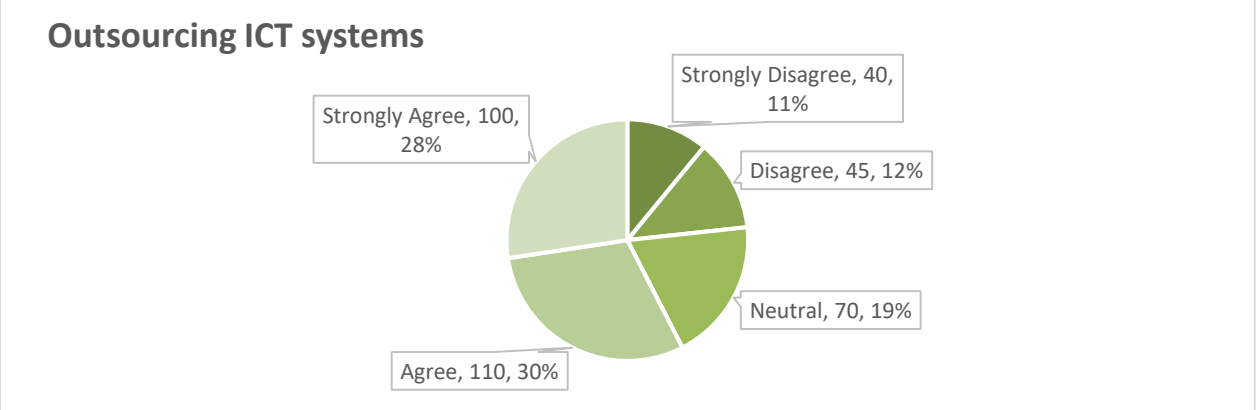
The Significance of Training Budget for Competency Development



The analysis of responses regarding the significance of a training budget unveils the following distribution: Strongly Disagree - 30 respondents (8%), Disagree - 35 respondents (10%), Neutral - 80 respondents (22%), Agree - 120 respondents (33%), and Strongly Agree - 100 respondents (27%). The total number of respondents is 365. Analyzing the responses shows that participants have different views regarding the necessity of a training budget. Of the responses, 60% show some level of agreement towards the importance of resource provision for training endeavors; 33% agreed while 27% strongly agreed. Nonetheless, it is slightly worrisome that 18% responded either 'Disagree' or 'Strongly Disagree' with putting aside a training budget, meaning that there may be issues with budgeting or priorities plaguing MSEs. It is therefore important to address these

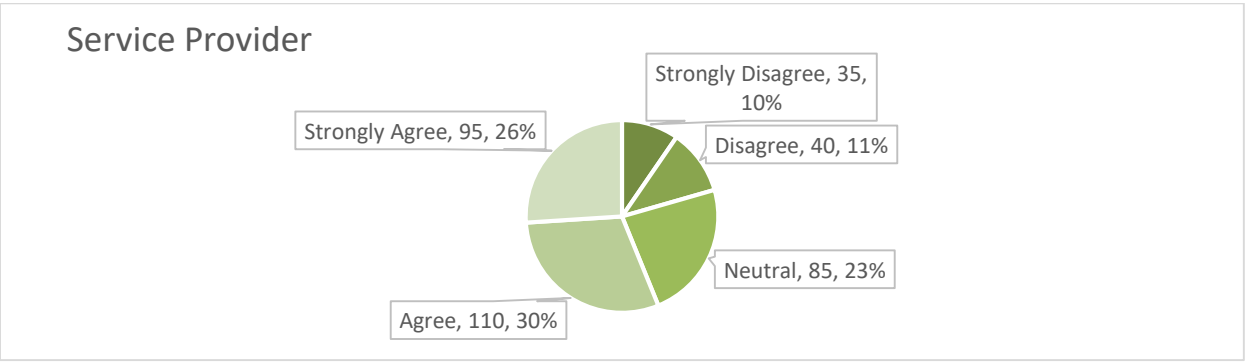
discrepancies so that sufficient investment could be made to build competency that is essential for getting optimal value out of IT and to sustain competitiveness in the market.

Evaluating the Practice of Outsourcing ICT Systems



The analysis reveals the following distribution concerning the practice of outsourcing ICT systems: Strongly Disagree - 40 respondents (11%), Disagree - 45 respondents (12%), Neutral - 70 respondents (19%), Agree - 110 respondents (30%), and Strongly Agree - 100 respondents (28%). The total number of respondents is 365. The study presents contrasting perceptions of MSEs on the outsourcing of ICT systems. Notably, 57% of respondents either Disagree (12%) or Strongly Disagree (11%) with the practice, while 57% either Agree (30%) or Strongly Agree (27%). This shows a divergence of opinion concerning the efficiency and advantages of outsourcing ICT systems. Future studies are required to establish more details regarding these perceptions and to identify the appropriate approach to deploying the ICT assets effectively in MSEs. These insights are very important for purposes of making decisions within organizations and in the enhancement of competitiveness in the business environment of Nairobi County.

Assessment of Service Providers in IT Solutions

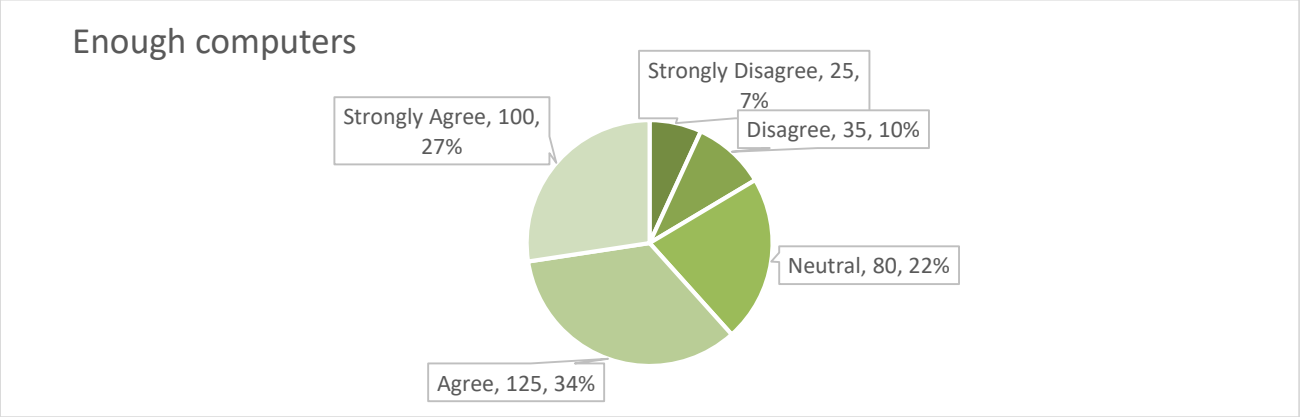


Upon analysis, the distribution concerning perceptions of service providers in IT solutions is as follows: Strongly Disagree - 35 respondents (10%), Disagree - 40 respondents (11%), Neutral - 85 respondents (23%), Agree - 110 respondents (30%), and Strongly Agree - 95 respondents (26%). The total number of respondents is 365. The responses indicate several views that people have concerning service providers in IT solutions. More specifically, a large number of respondents

(56%) responded with either agree (30%) or strongly agree (26%) to the issue on the perceived efficiency or quality of service providers. However, it's concerning that 21% either Disagree (11%) or Strongly Disagree (10%), indicating dissatisfaction or skepticism towards service providers. The implications of these perceptions to MSEs involve recognizing the factors that influence them such as reliability, expertise, and cost and using this knowledge to select the best service provider to enhance MSE IT infrastructure and capacity. Such insights can be useful for tactical planning activities and facilitate improvement in the competitive position of businesses operating in Nairobi County.

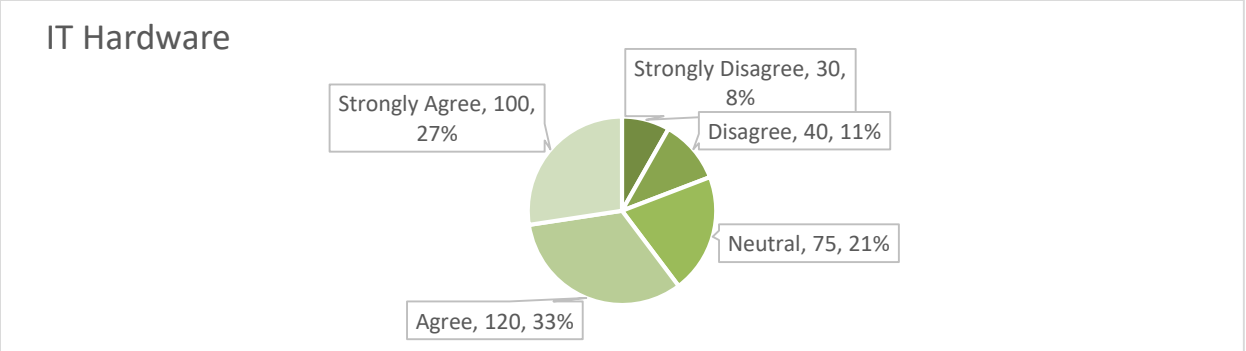
The influence of Technological resources on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya

Influence of Technological Resources for Enough Computers



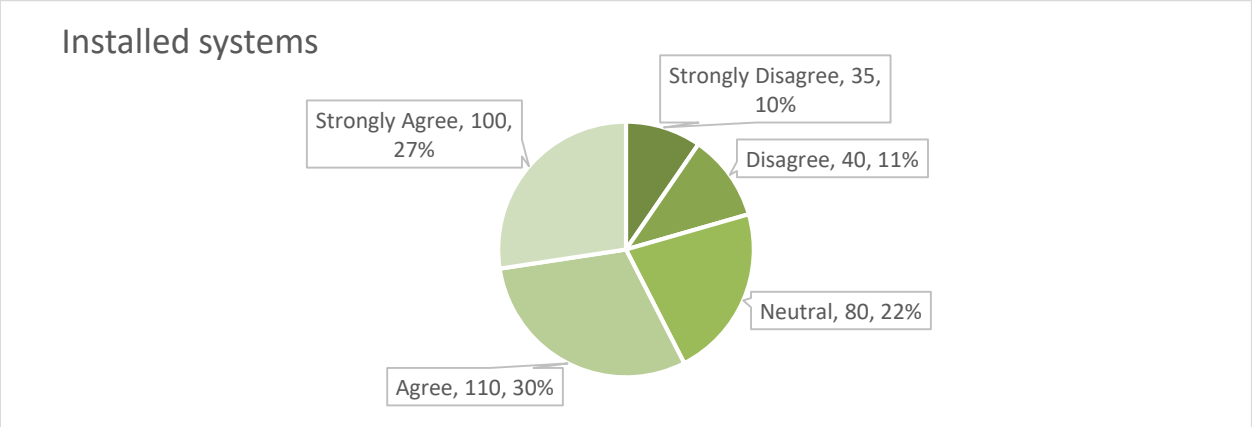
From the distribution regarding the availability of enough computers were as follows: Strongly Disagree - 25 respondents (7%), Disagree - 35 respondents (10%), Neutral - 80 respondents (22%), Agree - 125 respondents (34%), and Strongly Agree - 100 respondents (27%). A challenging outlook is reflected by the data regarding MSEs' perception of the availability of computers, an essential innovation input. While a significant proportion (61%) either Agree (34%) or Strongly Agree (27%) that there are enough computers, it's concerning that 17% either Disagree (10%) or Strongly Disagree (7%). Limited use of computers in a workplace may lead to reduced performance and restricted incorporation of technologies in the functioning of MSEs and may affect their competitiveness. The problem must be solved by increasing investment into computer related services such as building computer infrastructure and embracing other related technologies in Nairobi County to increase competitiveness in business.

Influence of Technological Resources for IT Hardware



The total findings regarding the availability of IT hardware respondents from 365 respondents. Strongly Disagree - 30 respondents (8%), Disagree - 40 respondents (11%), Neutral - 75 respondents (21%), Agree - 120 respondents (33%), and Strongly Agree - 100 respondents (27%). The selection indicates that there is channel cross between MSEs on use, relevance and adequacy of IT hardware. While a significant proportion (60%) either Agree (33%) or Strongly Agree (27%) that there is sufficient IT hardware, it's concerning that 19% either Disagree (11%) or Strongly Disagree (8%). Lack of proper IT hardware can slow down the development of numerous technology solutions and also place constraints on the MSEs' potential for utilizing IT as a strategic resource. Traversing this dire concern by investing in hardware infrastructure and subsequently in maintenance is paramount to upgrade the technological status as well as the competitiveness of the MSEs in Nairobi County.

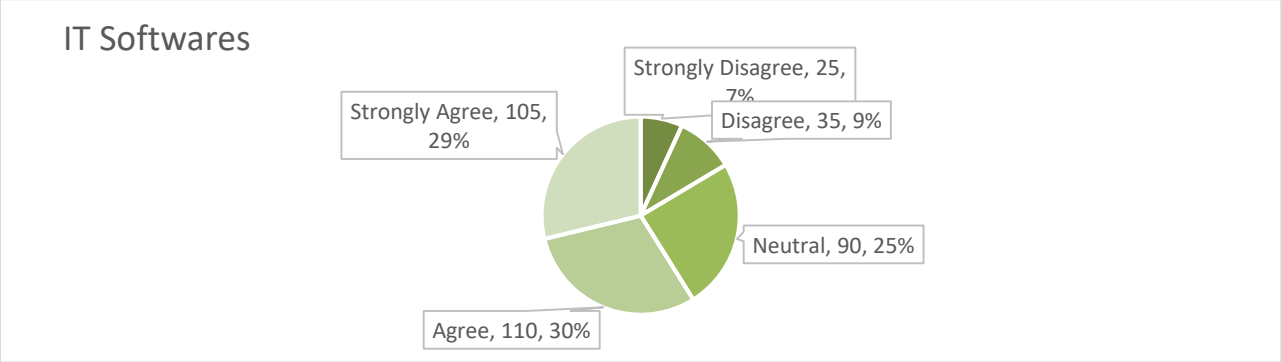
Influence of Technological Resources for Installed Systems



The distribution concerning the presence of installed systems for a 365 respondents were distributed as follows. Strongly Disagree - 35 respondents (10%), Disagree - 40 respondents (11%), Neutral - 80 respondents (22%), Agree - 110 respondents (30%), and Strongly Agree - 100 respondents (27%). The observations based on the survey show that there is a divergence of opinions among MSEs with regard to the existence of installed systems. While a significant proportion (57%) either Agree (30%) or Strongly Agree (27%) that there are sufficient installed systems, it's concerning that 21% either Disagree (11%) or Strongly Disagree (10%). The lack of installed systems can delay the process of integration of technologies and restrain the performance of MSEs. To address this challenge, there is a need to undertake systematic evaluation of the

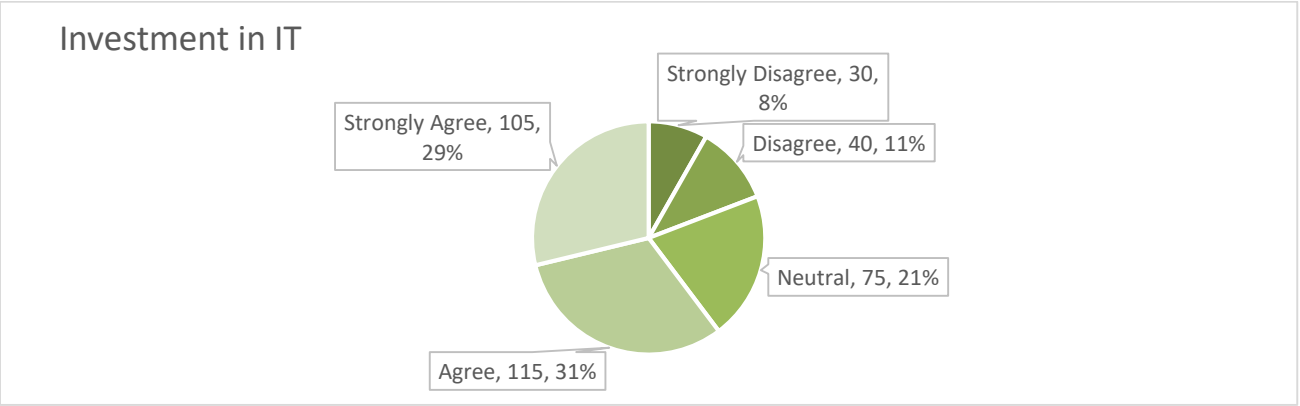
current systems, upgrading or improving the existing ones and where necessary, to install others so as to improving technological capacities and hence expand competitiveness of MSEs within Nairobi County.

Influence of Technological Resources on IT Software



The analysis of responses regarding IT software included 365 respondents. The distribution is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 35 respondents (10%), Neutral - 90 respondents (25%), Agree - 110 respondents (30%), and Strongly Agree - 105 respondents (29%). The above findings show that most of the respondents have a positive attitude towards the availability and efficiency of IT software. Specifically, 30% Agree and 29% Strongly Agree that their current IT software meets their needs, reflecting a strong endorsement of the software's role in enhancing operational efficiency and competitive advantage. This majority shows that many MSEs in Nairobi County appreciate and acknowledge the role of IT software in their business outcomes. However, it is important to address the remaining 10% who Disagree and 7% who Strongly Disagree to make sure that all enterprises can gain similar benefits. Further enhancement and optimization of IT software can strengthen the competitive advantage of MSEs in the region.

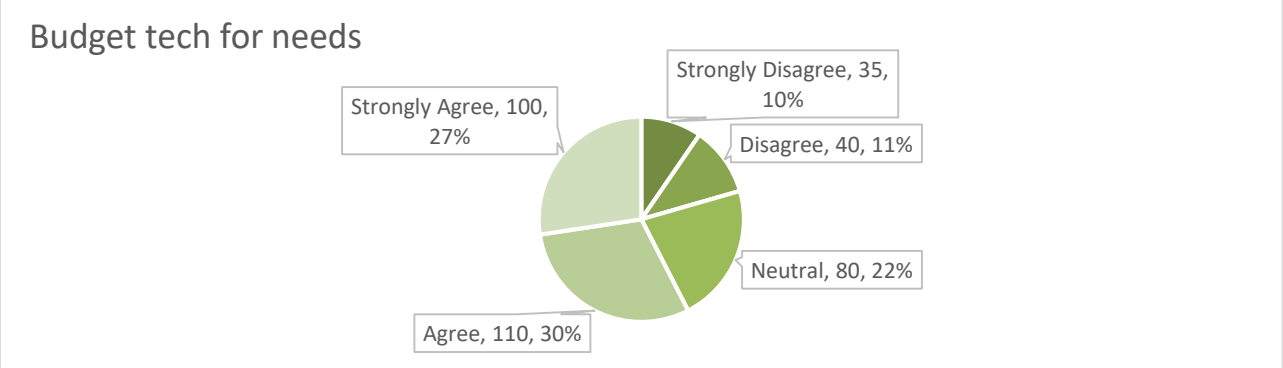
Influence of Technological Resources on Investment in IT



The total number of respondents is 365. The distribution concerning investment in IT is as follows: Strongly Disagree - 30 respondents (8%), Disagree - 40 respondents (11%), Neutral - 75 respondents (21%), Agree - 115 respondents (32%), and Strongly Agree - 105 respondents (29%). Concerning the level of investment in IT, the data shows that MSEs have contrasting views. Specifically, 32 % of the respondents have selected Agree while 29% strongly agree with the

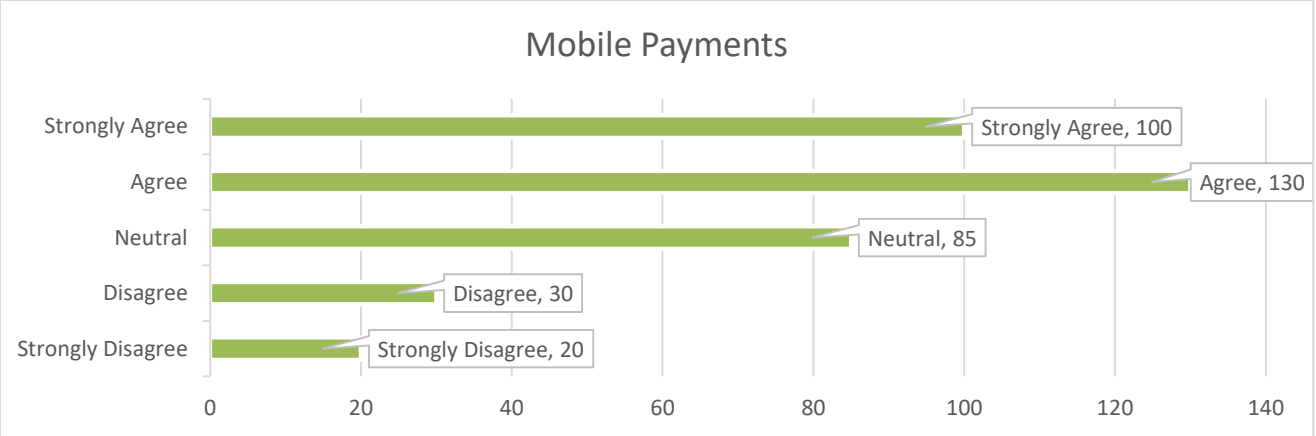
statement indicating that their businesses have invested a lot of money in IT and thus has embraced technology. However, 11% Disagree and 8% Strongly Disagree, signaling that a portion of MSEs may face challenges or have reservations about IT investment. These disparities imply the need to understand and reduce the challenges of investing in IT that is critical in improving the competiveness and performance of MSEs in Nairobi County.

Influence of Technological Resources in Budget for Tech Needs



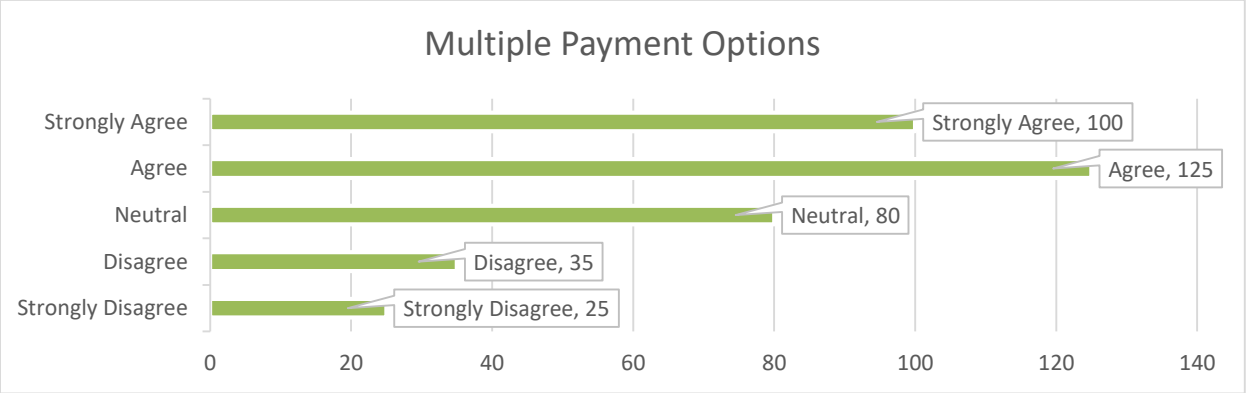
The analysis of responses regarding the budget for tech needs includes 365 respondents. The distribution is as follows: Strongly Disagree - 35 respondents (10%), Disagree - 40 respondents (11%), Neutral - 80 respondents (22%), Agree - 110 respondents (30%), and Strongly Agree - 100 respondents (27%). The study shows that there is variation in the perceived sufficiency of the budgets provided to cater for technological requirements among MSEs. A significant portion, 30% of respondents Agree and 27% Strongly Agree, reflects a positive view towards sufficient budgeting for technology. However, 11% Disagree and 10% Strongly Disagree, suggesting that a notable segment of MSEs may struggle with or undervalue the importance of allocating adequate funds for technological advancements. This study also shows the importance of addressing these concerns since MSEs need to harness technology for competitive advantage, and thereby increase their operational efficiency in Nairobi County.5.6 Exploring the influence of adopted new technologies on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya.

Influence of Adopted New Technologies: Mobile Payments



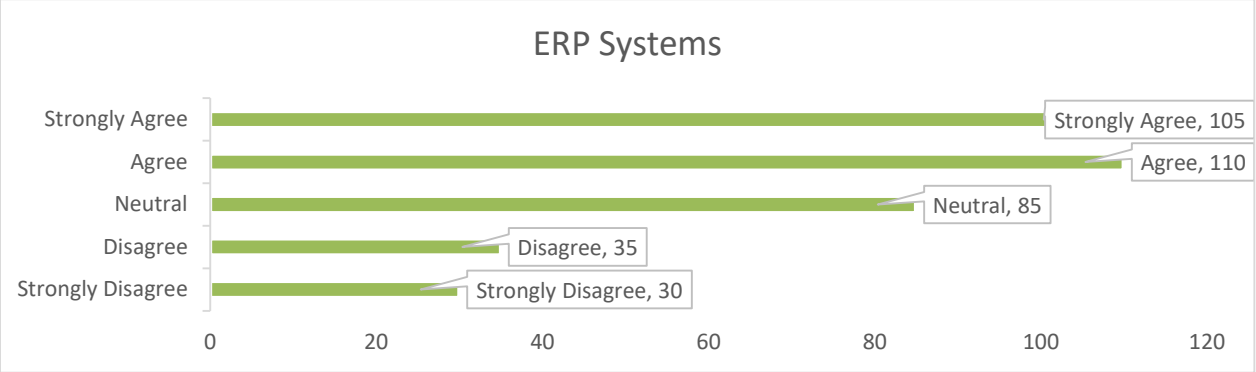
The analysis of responses regarding the influence of mobile payments on competitive advantage includes 365 respondents. The distribution is as follows: Strongly Disagree - 20 respondents (5%), Disagree - 30 respondents (8%), Neutral - 85 respondents (23%), Agree - 130 respondents (36%), and Strongly Agree - 100 respondents (27%). The use of mobile payments has influenced the competitiveness of MSEs as they seek to offer the most appropriate services. Convenient payment solutions for mobile users attracted the highest response with the majority being 36% who agreed and22% who strongly agreed that the company could secure competitive advantage through the implementation of the mobile payment solutions. This positive response suggests that many businesses seen the opportunities associated with mobile payments that create more convenience, increase the efficiency and promotes customer satisfaction in improving its market standing. Nonetheless, those who hold 8% for Disagree and 5% for Strongly Disagree imply that more modification and adjustments might still be needed. Mobile payment technology has a broad potential for MSEs in Nairobi County and with adequate consideration of the barriers for its implementation, all MSEs can harness this innovation for continuous competitive advantage.

Influence of Adopted New Technologies: Multiple Payment Options



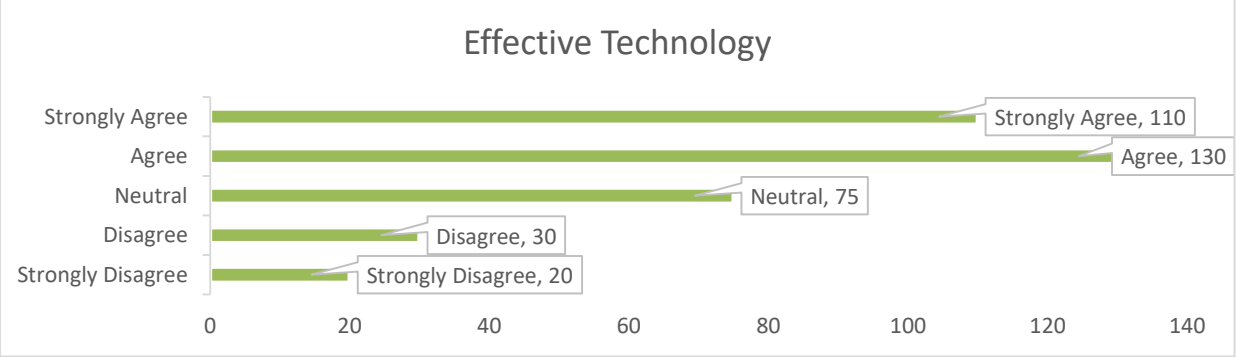
The analysis of responses regarding the influence of multiple payment options on competitive advantage includes 365 respondents. The distribution is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 35 respondents (10%), Neutral - 80 respondents (22%), Agree - 125 respondents (34%), and Strongly Agree - 100 respondents (27%). Accepting various types of payment has become one of the competitive strengths for many MSEs. The large portion of the Agree (34%) and Strongly Agree (27%) indicates that the customers have realized the importance of the offered different payment methods to improve the customer satisfaction. This majority supports the fact that availability of multiple payment methods can greatly enhance the competitive strength of a firm. Still, the 10% that answered Disagree and 7% that Strongly Disagree indicate that there are some businesses that still require more clarity and application of such technologies. By filling these gaps through targeted support and education, all MSEs in Nairobi County could fully leverage multiple payment options for growth and competitiveness.

Influence of Adopted New Technologies: ERP Systems



In analyzing the influence of ERP systems on competitive advantage, data from 365 respondents was examined. The distribution is as follows: Strongly Disagree - 30 respondents (8%), Disagree - 35 respondents (10%), Neutral - 85 respondents (23%), Agree - 110 respondents (30%), and Strongly Agree - 105 respondents (29%). Enterprise Resource Planning systems play major roles in managing and controlling organization activities to improve their effectiveness. The majority of respondents, comprising 30% who Agree and 29% who Strongly Agree, acknowledge the positive impact of ERP systems on competitive advantage. This indicates a recognition of the benefits such systems bring in terms of process optimization and data management. However, the 10% who Disagree and 8% who Strongly Disagree suggest a segment of Still can be a group of MSEs with limited knowledge about ERP systems or difficulties in adopting them. Evaluating and filling this gap through education and support can assist all MSEs to optimality utilize ERP technology for perpetual competitive advantage in Nairobi County.

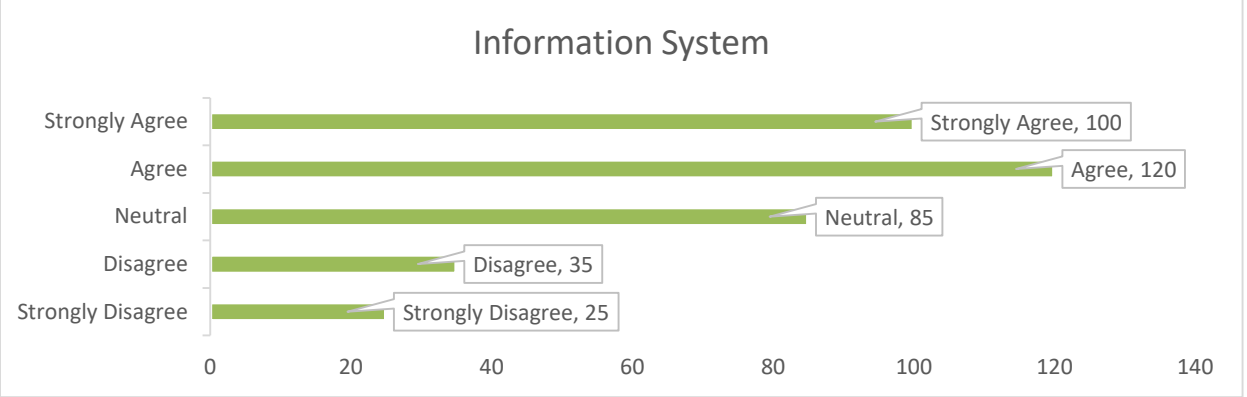
Influence of Adopted New Technologies: Effective Technology



The analysis of responses regarding the perception of effective technology includes 365 respondents. The distribution is as follows: Strongly Disagree - 20 respondents (5%), Disagree - 30 respondents (8%), Neutral - 75 respondents (21%), Agree - 130 respondents (36%), and Strongly Agree - 110 respondents (30%). Most of the respondents acknowledge that the technology used in a business should be effective so as to improve competitiveness. As shown in the figures above, 36% of the respondents agreed with the statement and 30% strongly agreed with the statement that indicated that technology has a positive effect on MSEs in Nairobi County. This conforms to the current strategic leadership and management philosophies that highlight the

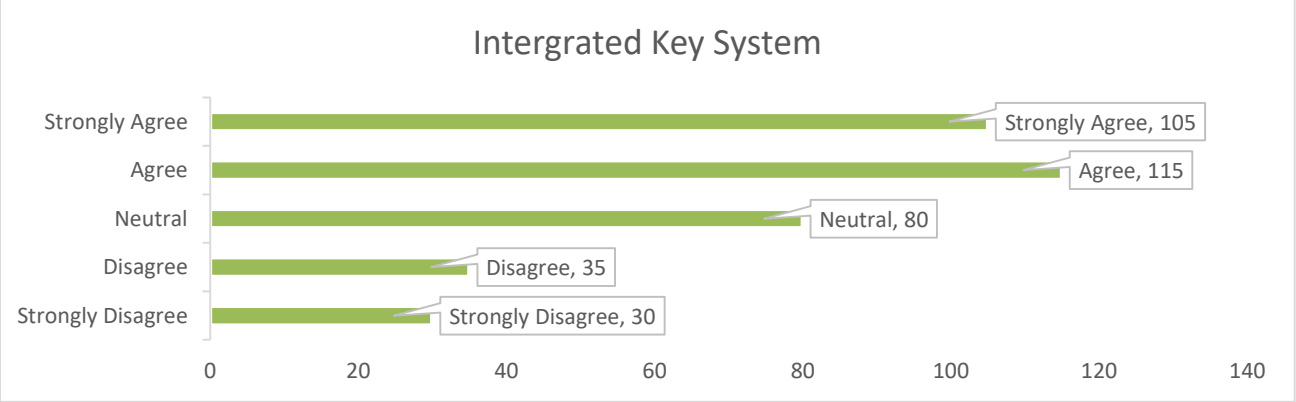
centrality of technology in today's business environments. Nonetheless, 8% of the respondents Disagree, and 5% Strongly Disagree that they may encounter difficulties or have concerns with transitioning to technological efficiency. By addressing these issues, through training and funding MSEs to adapt to the technology solutions, the best can be harnessed for MSEs and enhance local competition.

Influence of Adopted New Technologies: Information Systems



Upon analyzing responses from 365 respondents, the distribution concerning the perception of information systems is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 35 respondents (10%), Neutral - 85 respondents (23%), Agree - 120 respondents (33%), and Strongly Agree - 100 respondents (27%). The study reveals that information systems are critically important for the operation and management of MSEs. A majority of the respondents admitted to the Role of Information Systems in the improvement of Competitive Advantage with 33% agreeing while 27% strongly agreeing. This assertion implies that there is apparently a consensus as to the importance of implementing information systems effectively in businesses. On the other hand, 10% of the respondents who Disagree and 7% who strongly Disagree imply that there may be challenges or limitations to MSEs' ability to embrace and fully benefit from information systems. Meeting these concerns through training and support activities can help build the capacity of MSEs to harness information systems for competitive advantage in Nairobi County

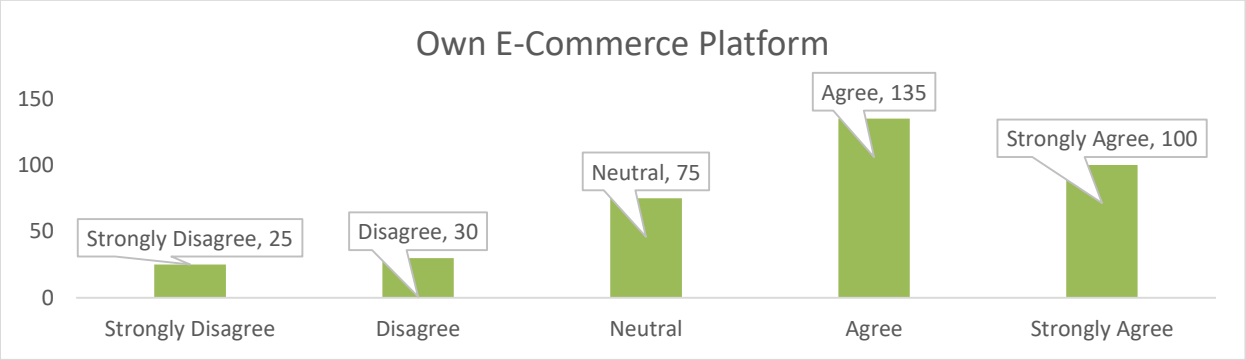
Influence of Adopted New Technologies for Integrated Key Systems



From a total of 365 respondents, the analysis reveals the following distribution regarding integrated key systems: Strongly Disagree - 30 respondents (8%), Disagree - 35 respondents (10%), Neutral - 80 respondents (22%), Agree - 115 respondents (32%), and Strongly Agree - 105 respondents (29%). Key systems are basic in promoting the integration and organization of business processes. The majority of respondents, with 32% Agreeing and 29% Strongly Agreeing, recognize the importance of integrated key systems in driving competitive advantage. This collective understanding highlights the need for interoperability between different business processes. However, 10% of the respondents Disagree and 8% of the respondents Strongly Disagree, which may suggest that some MSEs may experience difficulties or perceive some constraints in the effective implementation of the integrated key systems. Mitigating these issues by providing the necessary support and training to MSEs can assist them in improving their overall functioning, profitability and competitiveness in Nairobi County.

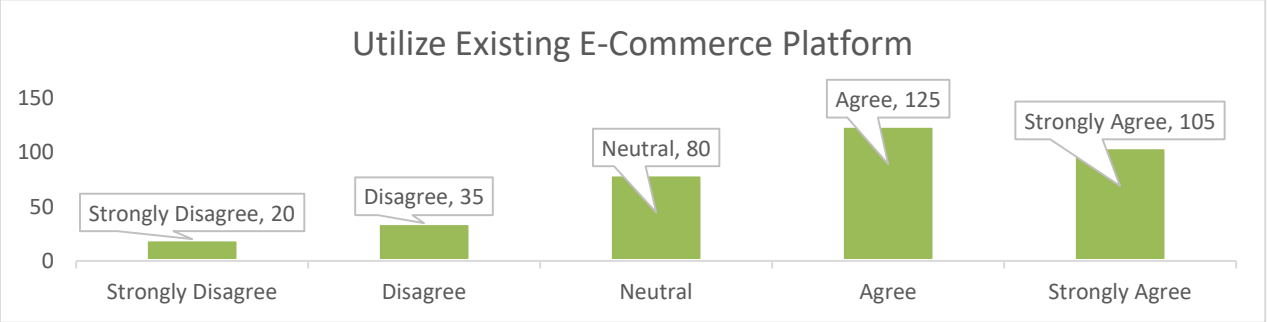
Establishing the influence of Technological Processes and Products (TPP) on competitive advantage among Micro and Small Enterprises (MSEs) in Nairobi County, Kenya

Influence of Technological Processes and Products (TPP) on Owning E-commerce Platform



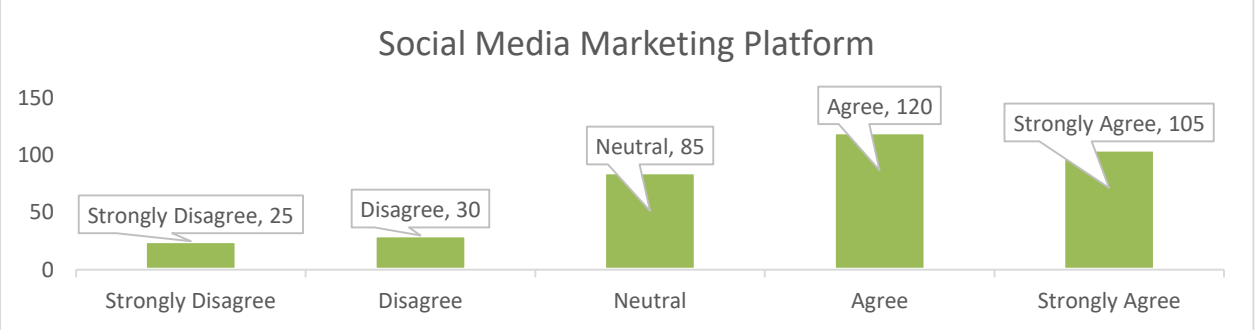
Out of 365 respondents analyzed to establish the influence of technological processes and products on competitive advantage, the distribution regarding own e-commerce platforms is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 30 respondents (8%), Neutral - 75 respondents (21%), Agree - 135 respondents (37%), and Strongly Agree - 100 respondents (27%). The implementation of own e-commerce platforms is gradually considered as a successful step that promotes the improvement of the competitive position of MSEs. 37% of respondents agreed on the statement while 27% strongly agreed that owning e-commerce platforms is important to grow the market and customers. This shows a positive shift in MSEs in as much as they have embraced e-commerce as an effective tool in today's digital economy. Still, the 8% of the respondents Disagree and 7% Strongly Disagree, which may point to existing limitations or reluctance to implement this technology. Addressing these barriers by directing resources and support towards MSEs can help the businesses optimize their benefit from e-commerce opportunities and improve the overall competitiveness of Nairobi County.

Influence of Technological Processes and Products (TPP) to Utilize Existing E-commerce Platforms



From a total of 365 respondents analyzed to establish the influence of technological processes and products on competitive advantage, the distribution regarding utilizing existing e-commerce platforms is as follows: Strongly Disagree - 20 respondents (5%), Disagree - 35 respondents (10%), Neutral - 80 respondents (22%), Agree - 125 respondents (34%), and Strongly Agree - 105 respondents (29%). The use of existing e-commerce platforms therefore contains realised opportunities through which MSEs can exploit existing structures to access a larger market. Survey respondents also showed appreciation of the use of these platforms in the improvement of competitive advantage as 34% of the respondents agreed while 29% strongly agreed to the statement. This suggests the increasing acknowledgment by MSEs of the usefulness of the internet when it comes to conducting business nowadays. On the other hand, there are 10 percent that Disagree with the statement and 5 percent that Strongly Disagree, which may indicate some concerns or issues encountered in implementing extant e-commerce platforms. Addressing the challenges through proper collaborations and investments can help MSEs achieve the maximum benefits of e-commerce, which would assist in enhancing competitiveness in Nairobi County.

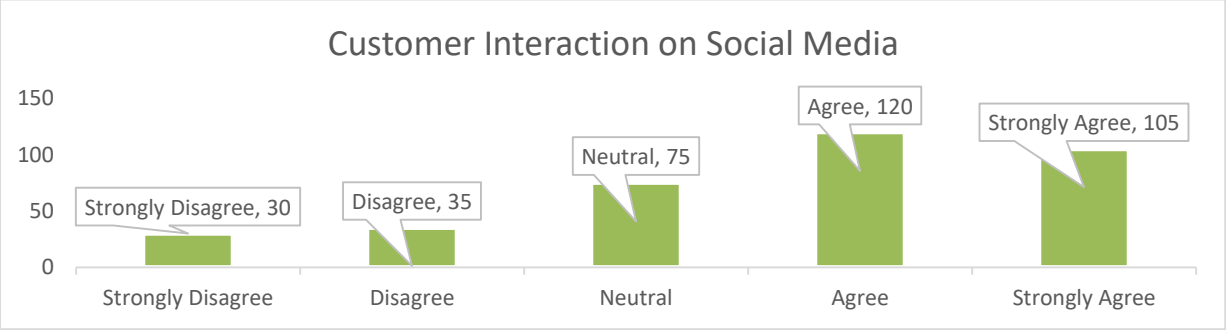
Influence of Technological Processes and Products (TPP) for Social Media Marketing



Out of 365 respondents analyzed to establish the influence of technological processes and products on competitive advantage, the distribution regarding social media marketing is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 30 respondents (8%), Neutral - 85 respondents (23%), Agree - 120 respondents (33%), and Strongly Agree - 105 respondents (29%). Social media marketing has become one of the most effective strategies that MSEs can use to increase their marketing reach and interact with customers. The largest portion of respondents, 33% Agreeing

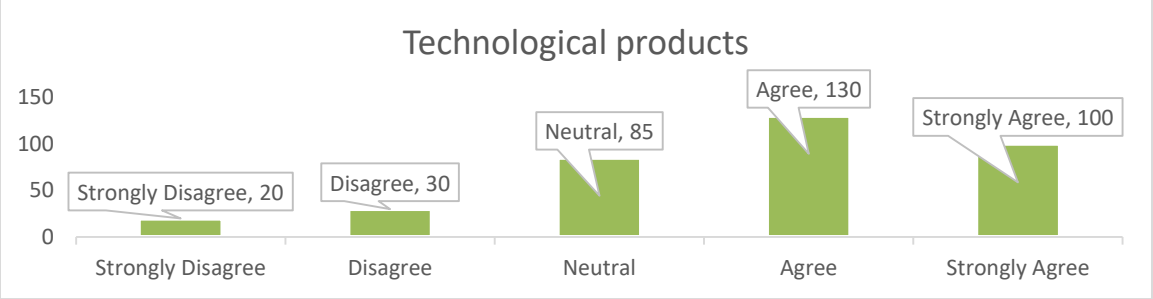
and 29% Strongly Agreeing, appreciate the role of social media marketing in achieving competitive advantage. This makes it even more clear that digital platforms are playing key roles in influencing consumer decisions and the market environment. Nonetheless, 8% of the participants Disagree, and 7% Strongly Disagree, indicating that there may be challenges or skepticism about the efficiency of social media marketing. Through addressing these barriers through specific interventions and training, MSEs were in a better position to harness on social media hence boosting their competitiveness in Nairobi County.

Customer Interaction on Social Media



Among the 365 respondents surveyed to evaluate customer interaction on social media, the distribution is as follows: Strongly Disagree - 30 respondents (8%), Disagree - 35 respondents (10%), Neutral - 75 respondents (21%), Agree - 120 respondents (33%), and Strongly Agree - 105 respondents (29%). Social media engagement with the customers is now known to be a crucial component of the current business trends. A large number of respondents support the strategy of using social networks to communicate with customers, with 33% of respondents who said 'Agree' and 29% of respondents, who said 'Strongly Agree.' This shows how useful social media can be as a tool in relation building as well as feedback and answering to questions. Nevertheless, the 10% of respondents who Disagree and 8% of those who Strongly Disagree may indicate some difficulties or unwillingness to adopt social media for communicating with customers. Addressing these challenges through training and active participation may help MSEs to achieve full benefits from social media, which will in turn improve their competitiveness in Nairobi County.

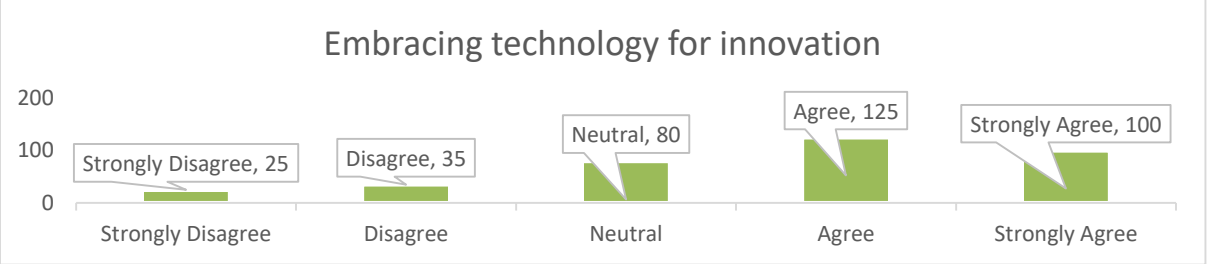
Technological Products



Among the 365 respondents surveyed to evaluate perceptions of technological products, the distribution is as follows: Strongly Disagree - 20 respondents (5%), Disagree - 30 respondents (8%), Neutral - 85 respondents (23%), Agree - 130 respondents (36%), and Strongly Agree - 100

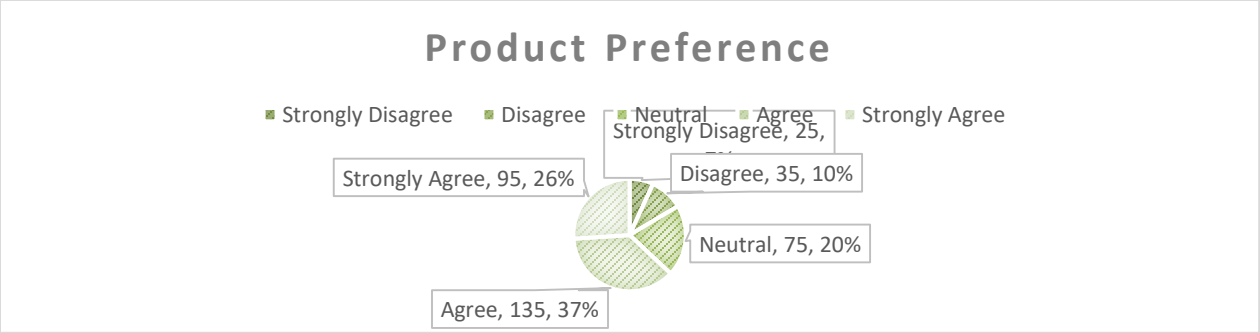
respondents (27%). The study reveals that MSEs in Nairobi County have a positive attitude towards technological products. A significant majority, comprising 36% who Agree and 27% who Strongly Agree, recognize the value and potential of technological products in enhancing competitive advantage. This shows that it is important to embrace innovation in order to remain competitive in today's ever-shifting business environment. On the other hand, the findings where 8% Disagree and 5% Strongly Disagree may depict some reservations or constraints that some MSEs may encounter in using technological products. These issues may be dealt through education and support programs for technological solutions so as to help MSEs to embrace technological advancement and compete favorably in the digital economy.

Embracing Technology for Innovation



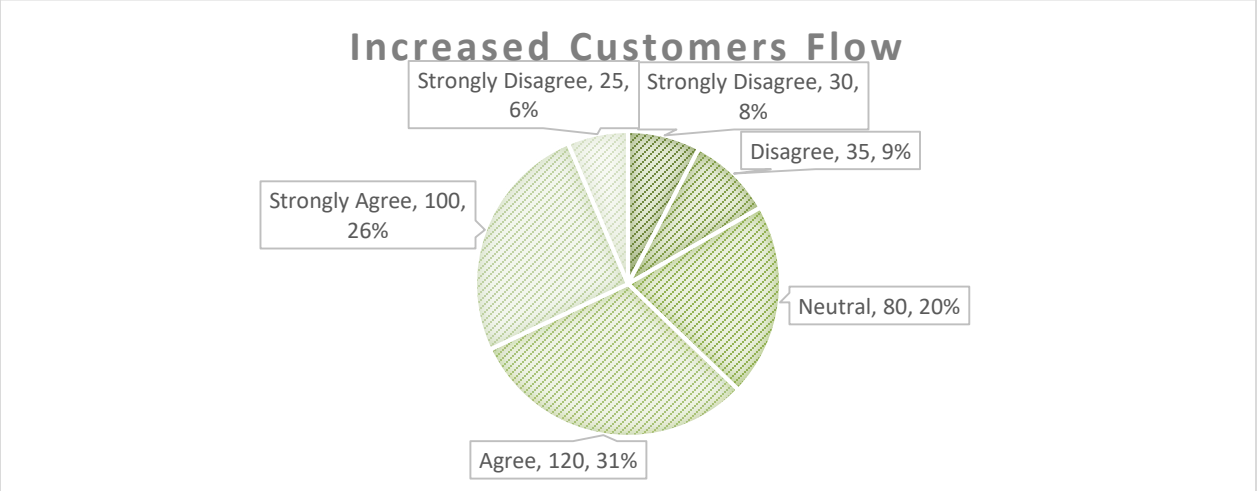
Out of the 365 respondents surveyed regarding embracing technology for innovation, the distribution is as follows: Strongly Disagree - 25 respondents (7%), Disagree - 35 respondents (10%), Neutral - 80 respondents (22%), Agree - 125 respondents (34%), and Strongly Agree - 100 respondents (27%). The study establishes that there is a high level of awareness on the role of adopting technology to foster innovation among MSEs in Nairobi County. A total of 34% agreed, while 27% strongly agreed with the assertion that technology is key to innovations and gaining competitive advantage. This has underscored a progressive attitude within the business fraternity in embracing technology for expansion. Nonetheless, the 10% who Disagree and 7% who Strongly Disagree indicate that there could be some anti–technology sentiments or constraints that might deter certain MSEs from adopting technology solutions. Education, training and a culture change can help MSEs to overcome these challenges and effectively unlock the potential of technological advancement hence paving way for the MSEs to embrace success in the digital age.

Competitive Advantage of Micro and Small Enterprises
Product Preference



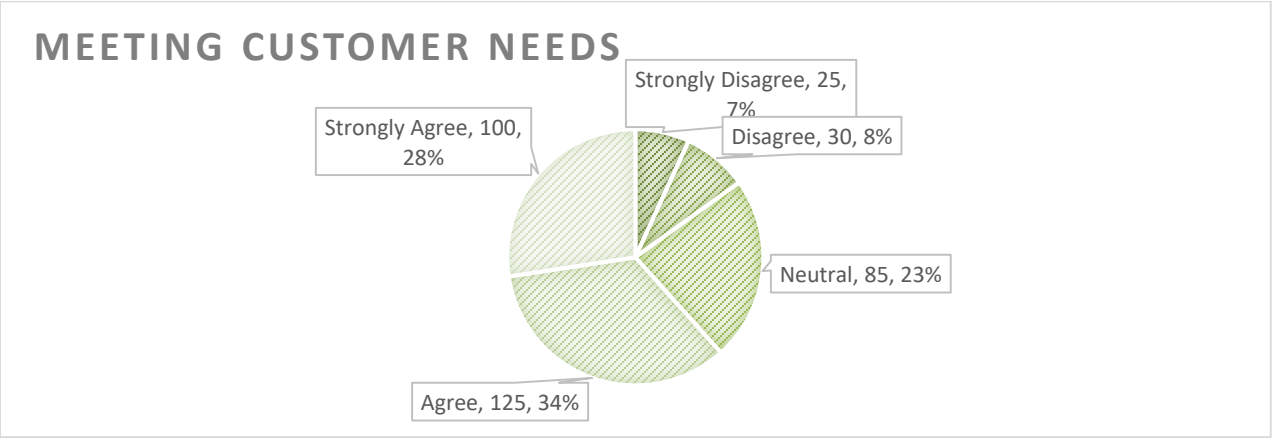
The findings revealed from the respondent gave different opinions regarding the product preference. 135 (37%) Agree and 95 (26%) Strongly Agree that product preference contributes to competitive advantage, while 25 (7%) Strongly Disagree and 35 (10%) Disagree. The responses provided show high agreement concerning product preference, which underscores the importance of product selection for competitive competence and proactive management of consumer requirements. This is a significant insight for MSEs, which should leverage it when positioning their products in the market, obtaining an advantage over similar players.

Increased Customer Flow



The findings revealed from the respondent gave different opinions regarding the Increased Customer Flow. 120 (33%) Agree and 100 (27%) Strongly Agree that increased customer flow enhances competitive advantage, contrasting with 30 (8%) who Strongly Disagree. An important and widespread idea is the link between the growth of the flow of customers and business success. MSEs need to consider customer attraction and retention as crucial activities that will help them put down roots of sustainable growth and profitability.

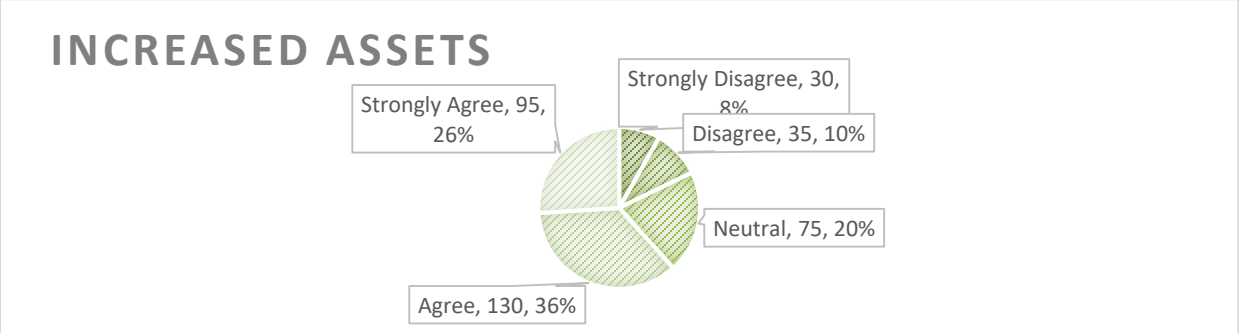
Meeting Customer Needs



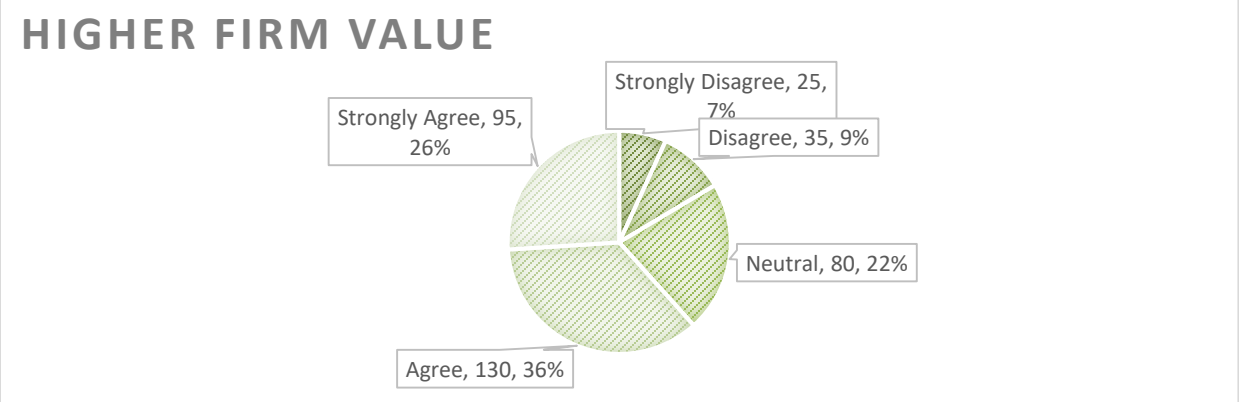
The findings revealed from the respondent gave different opinions regarding the Increased Customer Flow. A significant 125 (34%) Agree and 100 (27%) Strongly Agree that meeting

customer needs is crucial for competitive advantage, compared to 25 (7%) who Strongly Disagree. Satisfying the customers' demands is recognized as basic, underlining the importance of strategies focusing on customer requirements that contribute to competitiveness and sustainability.

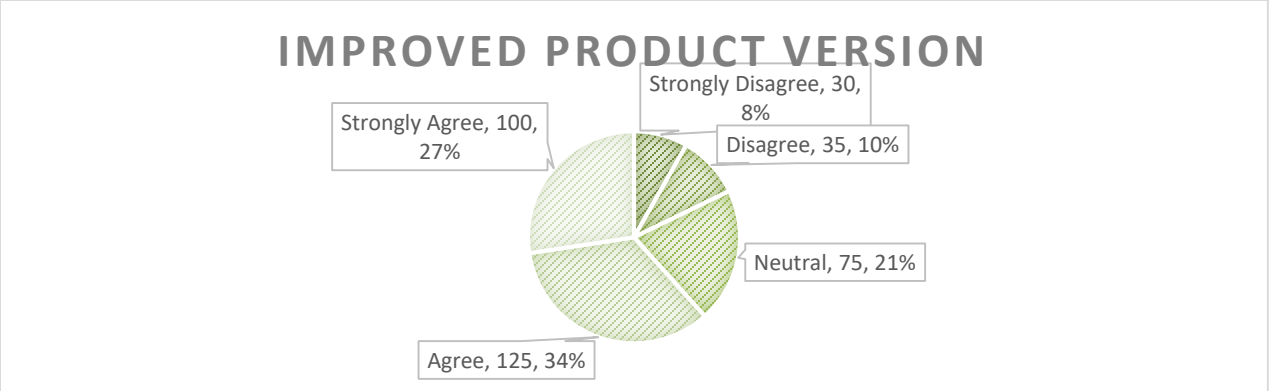
Increased Assets



The findings revealed from the respondent gave different opinions regarding the Increased Customer Flow. 130 (36%) Agree that increased assets impact competitive advantage, while 95 (26%) Strongly Agree, with 30 (8%) Strongly Disagree. Acknowledging the dynamics in the level of assets implies knowledge of the relationship between the amounts of resources committed and the level of the business, forcing the MSEs owners and managers to spend more and improve their competitiveness.

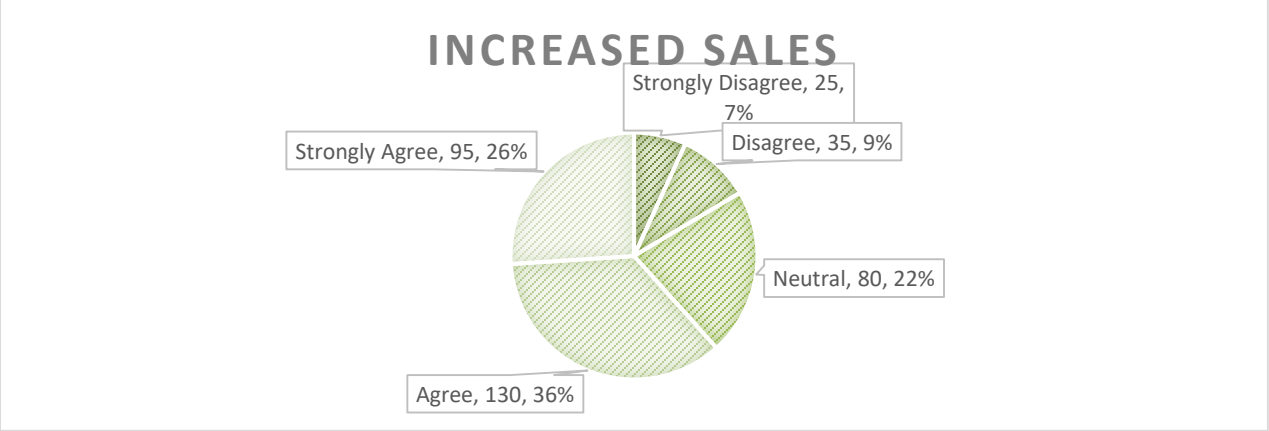


The findings revealed from the respondent gave different opinions regarding the Increased Customer Flow. 130 (36%) Agree and 95 (26%) Strongly Agree on higher firm value's significance, while 25 (7%) Strongly Disagree. The increase in higher firm value highlights the significance of developing a long-lasting brand and reputation to give the firm a competitive edge over others in terms of quality and potential customer appeal.



The findings revealed from the respondent gave different opinions regarding the Increased Customer Flow. 125 (34%) Agree and 100 (27%) Strongly Agree on the importance of improved product versions, compared to 30 (8%) who Strongly Disagree. Although adjusting to the customers' needs implies the necessity to develop new versions of products, its recognition can demonstrate the organization's desire to continue innovating and improving the product quality in times of more competitiveness.

Increased Sales



The findings revealed from the respondent gave different opinions regarding the Increased Customer Flow. 130 (36%) Agree and 95 (26%) Strongly Agree that increased sales contribute to competitive advantage, while 25 (7%) Strongly Disagree. The recognition of the need to increase sales means acknowledgement of the need for revenue generation and market share expansion, which speaks of anticipatory measures for growth and competitive pursuits.

Conclusion

In conclusion, the findings emphasize the critical role of technology in driving market expansion, customer engagement, and operational efficiency. The study highlights the importance of strategic support and intervention to address technological adoption challenges. By encouraging technological development and integration, policymakers and other stakeholders can assist MSEs in improving their operations, boosting the economy of Nairobi County. Investing in technological education and infrastructure is essential for MSEs to optimally benefit from TPP in the contemporary digital economy.

Recommendations

Training and development on how MSEs can use the platforms effectively, online marketing and selling needs to be promoted to help MSEs build their capacities. Therefore, when equipped with the appropriate knowledge and tools, the policymakers can help the MSEs to adopt e-commerce and increase their market access and productivity. Realizing the increased relevance of SMM in the current world of business, it is crucial to establish programmes which focus specifically on the requirements of MSEs. MSEs should make these programs to educate them on how to use the available social media platforms to market their products and interact with the customers. Moreover, training programs that involve pairing of MSEs with professional digital marketers may prove beneficial in offering knowledge and direction on how to proceed. Through these training programs, MSEs will indeed be equipped with strategies to properly embark on social media marketing, thus improving their brands' visibility and overall competitive advantage. To ensure that MSEs embrace the aspect of innovation, the policies should support technological risk-taking and creativity among the MSEs. This could entail putting in place innovation centres or incubation centres where the MSEs can associate and share new ideas. Furthermore, the availability of grants or funding for technological innovative project can encourage MSEs to engage in research. Therefore, by advocating for technological advancement among MSEs, there will be social and economic development of Nairobi County business environment. One of the major challenges that currently hinder most MSEs seeking to implement technological solutions is the issue of financing. There is a need for policy makers to engage actively financial institutions to improve on the availability of specific loan products or financing structures for MSEs that are willing to invest on technology.

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