

Influence of Conceptual Skills and Sustained Competitive Advantage among IT Networking SMEs in Kenya

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Cite: Mogeni, J., Kaluyu, V., & Okello, G. (2026). Influence of Conceptual Skills and Sustained Competitive Advantage among IT Networking SMEs in Kenya. *The University Journal*, 8(2 Sup. Issue II), 70-85.

Abstract

The purpose of this study was to examine the influence of managerial skills on sustained competitive advantage among IT Networking SMEs in Kenya. The study was anchored on Katz's Managerial Skills Theory. A positivist research philosophy and descriptive correlational research design were adopted. The unit of analysis comprised 365 licensed IT networking SMEs in Kenya, while the unit of observation comprised 1,078 senior employees drawn from these firms. A stratified random sampling technique was used to select a sample of 292 respondents. Of the 292 questionnaires distributed, 242 were completed and returned, yielding a response rate of 82.9%. Primary data were collected using a structured questionnaire and analyzed using SPSS version 30 using descriptive and inferential statistics. Correlation ($r=0.585$, $p<0.01$) and regression ($\beta=0.585$, $B=0.312$, $p<0.001$; $R^2=0.342$) indicate significant positive influence. Strategic thinking ($M=3.93$), innovative thinking ($M=3.90$), and systems thinking ($M=3.87$) were highly developed. The study concludes that conceptual skills explain 34.2% of the variation in competitive advantage; hence, H_{01} is rejected. Further, it concludes that managers' strategic thinking, ICT systems thinking, and innovative thinking capabilities enhance organizational competitiveness. The study recommends that SMEs strengthen market intelligence, institutionalize strategic planning and innovation management practices, and promote cross-functional collaboration to improve adaptability, decision-making, and long-term competitiveness. The findings provide practical insights for SME managers, policymakers, and ICT industry stakeholders by highlighting the importance of strengthening managers' conceptual skills to enhance sustained competitive advantage in Kenya's digital economy.

Keywords: Conceptual Skills, Innovative Thinking, Strategic Thinking, Sustained Competitive Advantage, Systems Thinking, IT networking SMEs

Introduction

Small and Medium Enterprises (SMEs) are central to Kenya's economy, accounting for approximately 98% of all business establishments, contributing about 30% of Gross Domestic Product (GDP), and generating more than 80% of employment opportunities (Kenya National Bureau of Statistics, 2021). Within this sector, IT networking SMEs play a critical role in designing, deploying, and maintaining communication infrastructure that supports Kenya's digital transformation and expanding knowledge economy (Masip et al., 2021). Despite the rapid expansion of Kenya's digital economy, the sustainability of IT networking SMEs remains a significant challenge. Although these firms operate in a sector experiencing increasing

connectivity, many struggle to achieve sustained competitive advantage and long-term survival (Mbaya et al., 2026). National statistics indicate that more than 75% of SMEs fail within their first three years of operation (KNBS, 2021), suggesting that growth opportunities created by digital transformation have not translated into sustained organizational success. This challenge persists even as Kenya's digital ecosystem continues to expand, with mobile subscriptions exceeding 76 million and broadband penetration surpassing 145% by March 2025 (Communications Authority of Kenya, 2025). The coexistence of rapid ICT growth and high SME failure rates suggests that many IT networking SMEs are unable to transform available market opportunities into sustained competitive advantage, raising concerns about the effectiveness of managerial capabilities in supporting long-term business performance.

The primary determinants of an organization's sustained competitive advantage are its resources (Haseeb et al., 2019). The Resource-Based View theory posits that to attain sustained competitive advantage, a firm must acquire and manage valuable, rare, inimitable, and non-substitutable (VRIN) resources, supported by an organizational structure that can effectively absorb and implement them (Barney, 1991; Barney, 2012). By attaining a sustained competitive advantage, a company can effectively compete with other business units in similar sectors (Kero & Bogale, 2023). To achieve this competitive edge, the RBV theory can be employed.

Katz's (1955) managerial skills framework facilitates sustained competitive advantage by establishing a foundation for effective management through the cultivation of technical, human, and conceptual skills to enable organizations to align resources effectively, thereby generating unique value that is challenging for competitors to replicate and securing a competitive edge (Ruckhart et al., 2022). Since most companies are established to maximize profits, for Porter and Porter (1998), a firm is considered to have attained a sustained competitive advantage when it successfully sustains profits above the industry average. However, this focus alone does not ensure long-term survival, and therefore, companies must consider strategies for acquiring, increasing, and sustaining long-term profitability (Mailani et al., 2024). Generating products and competing on costs poses a greater challenge for most SMEs compared to larger industries (Fatonah & Haryanto, 2022). Based on this explanation, business entities should not concentrate solely on profits. Sustainable competitive advantage (SCA) grows fundamentally out of the firm's efforts to provide VRINO products and services, with the firm having the ability to utilize the organizational capabilities and resources (Kero & Bogale, 2023). SCA is very important if SMEs are to survive and thrive in a globally competitive environment despite the view that SMEs are vulnerable and not robust enough to withstand the onslaught of economic and global competition (Nghah et al., 2015).

Conceptual skills facilitate the processing and articulation of ideas, enabling leaders to define organizational vision and understand the economic principles underpinning effectiveness (Katz, 1974). Conceptual skills are primarily relevant to upper-level thinking and are frequently regarded as critical success factors for upper management functions. While these skills are paramount for top managers, managers at all tiers must cultivate and demonstrate conceptual skills, as they can be learned and developed through experience (Northouse, 2013). For most SMEs, such as in Kenya, limited exposure to strategic education or mentoring can weaken conceptual skills. In addition, the emphasis on operational survival often marginalizes strategic thinking. This neglect can impede the development of essential conceptual competencies (Laghari et al., 2024). In this study, conceptual skills were measured in the context of strategic thinking, system thinking, and innovative thinking skills. Conceptual skills enable early issue identification within organizations, facilitate long-term decision-making, strategic allocation of resources, and the anticipation of future trends (Nair et al., 2023). Given the dynamic and

technology-intensive nature of the IT networking sector, these capabilities are expected to play a significant role in shaping sustained competitive advantage among Kenyan SMEs.

In pursuing their goals and objectives, businesses frequently encounter issues that can have an impact on the business. Managers must therefore develop strategies to effectively manage challenges and mitigate their impact on the organization (AlQershi, 2021). Strategic thinking is crucial for transforming ideas into actionable plans that enhance organizational competitiveness. The main attributes of strategic thinking include visioning, innovative orientation, prioritization, and risk awareness (Asobee, 2021). Strategic thinking skills are vital in enabling digital transformation, global scalability, and scenario planning in scanning environmental opportunities and threats. In a rapidly changing business environment, firms must adopt practices that ensure long-term competitive advantage. Traditional decision-making methods have proven inadequate, highlighting the necessity for strategic thinking to effectively create customer value (Ndei & Kinyua, 2024).

According to Leung et al. (2024), systems thinking entails possession of unique skills that facilitate a holistic view of the organization, enabling the analysis of cause-and-effect relationships, awareness of interdependence, recognition of feedback loops, and maintenance of a long-term organizational perspective. It enhances managerial teams' effectiveness by offering a framework for understanding cause-and-effect relationships throughout the organization (Tran, 2023). It elucidates the connections between actions and outcomes, enabling a focus on critical issues. The application of systems thinking and its concomitant tools to the sustainability of SMEs has grown significantly over the years, presenting research gaps and opportunities for further exploration (Abonguie et al., 2025). IT networking SMEs, just as most SMEs, operate with constrained resources and heightened risk exposure, where a single decision can affect multiple areas of the business simultaneously.

Innovative thinking skills are essential within the framework of a knowledge-based economy, and they encompass generating creative ideas, solution identification, and adopting diverse perspectives (Gökalp, 2024). In a rapidly evolving environment, managers must acquire these competencies. Innovative thinking skills involve the ability to generate original, creative, and novel solutions to problems, challenge the status quo, and envision possibilities that extend beyond current limitations. Innovation is brought about by critical and strategic thinking (AlQershi, 2021). Consequently, through the creativity and openness inherent in strategic thinking, IT SMEs can foster innovative solutions that will help them gain a competitive advantage.

Although previous studies have established positive relationships between managerial competencies and organizational performance, most have examined managerial skills as a composite construct or focused on general SME performance rather than sustained competitive advantage (Agyapong et al., 2021; Penagos Guzman & García Solarte, 2024; Emmanuel et al., 2023). Furthermore, existing studies have predominantly been conducted in the manufacturing sector (Kimaru et al., 2022; Wachira et al., 2024), with limited empirical evidence from Kenyan IT networking SMEs operating in rapidly changing technological environments. Little is therefore known about how the specific dimensions of conceptual skills; strategic thinking, systems thinking, and innovative thinking influence sustained competitive advantage. This study therefore addresses this gap by examining the effect of conceptual skills on sustained competitive advantage among IT networking SMEs in Kenya.

The study is based was developed on the following hypotheses:

H₀₁: Conceptual skills have no statistically significant influence on sustained competitive advantage among IT networking SMEs in Kenya.

H_{01a}: Strategic thinking has no statistically significant influence on sustained competitive advantage among IT networking SMEs in Kenya.

H_{01b}: Systems thinking has no statistically significant influence on sustained competitive advantage among IT networking SMEs in Kenya.

H_{01c}: Innovative thinking has no statistically significant influence on sustained competitive advantage among IT networking SMEs in Kenya.

The findings obtained in this study contribute to managerial skills theory by extending Katz's managerial skills framework to the context of Kenyan IT networking SMEs and examining the individual effects of strategic thinking, systems thinking, and innovative thinking on sustained competitive advantage. The findings also provide practical insights for SME managers and policymakers seeking to strengthen managerial capabilities that support long-term organizational competitiveness.

Literature Review

Theoretical Framework

This study was guided by the Managerial Skills theory which according to Robert L. Katz (1955) highlights the challenge of pinpointing the specific skills required for effective managerial performance (Barker et al., 2021). Katz posits that effective administration is contingent upon technical skills, human skills, and conceptual skills. He argued that effective managerial performance depends on three categories of skills: technical, human, and conceptual skills. The theory therefore rests on three assumptions; management is a teachable professional discipline rather than an innate ability; organizations operate within hierarchical structures; and managerial skills are observable behaviours that can be developed through training. According to Barker et al. (2021), a skill is the integration of domain-specific knowledge and the capacity to access it and apply it through behaviours or cognitive processes to complete tasks. A central proposition of Katz's theory is that the relative importance of these three skills varies systematically across different levels of the managerial hierarchy. Katz explains that though each skill category is separately examined, they are interconnected when addressing managerial issues. While managers should possess all three skills, the importance of each skill varies depending on the manager's position within the organizational structure, and the correct balance, based on prevailing circumstances, will help the organization gain a competitive advantage (Laghari et al., 2024).

Technical skills denote the knowledge and proficiency in a specific type of work or activity. They encompass competencies in a specialized area, analytical abilities, and the capability to use relevant tools and techniques (Jaqua & Jaqua, 2021). These skills are most critical at the lower and middle management levels where managers are directly involved in operational activities. Human skills refer to the knowledge of and ability to work with and relate to people through communication, collaboration, conflict resolution, and teamwork (Katz, 1955; Northouse, 2013). Human skills are vital across all management levels. While managers at lower levels may interact with a larger number of employees, these skills are equally crucial for those in middle and upper management.

Conceptual skills involve cognitive abilities to understand complex situations and devise strategic responses (Katz, 1955). Conceptual skills are most crucial at the top management levels. While they also hold significance in the middle management level, their importance diminishes as we move down to the lower management levels. From a management perspective, individuals with these skills can approach intricate situations from multiple angles,

improving problem-solving effectiveness (Odinga et al., 2024). A conceptual leader effectively translates ideas into actionable solutions, earning recognition as a strategic leader due to their capacity to strategize potential scenarios and develop resolutions (Arifin et al., 2024). Samera and Paalisbo (2020) opine that, using conceptual skills, top management assesses the external environment for potential threats and opportunities, mitigating risks while capitalizing on opportunities.

In this study, conceptual skills constitute a core variable because they provide the strategic intelligence required for sustained competitive advantage among Kenyan IT networking SMEs. Through strategic thinking, systems thinking, and innovation, managers can anticipate technological changes, identify emerging opportunities, and develop adaptive strategies that enhance long-term competitiveness. Figure 1 represents the conceptual framework for the study

Conceptual Framework

Independent Variable (Conceptual Skills) (SCA)

Dependent Variable

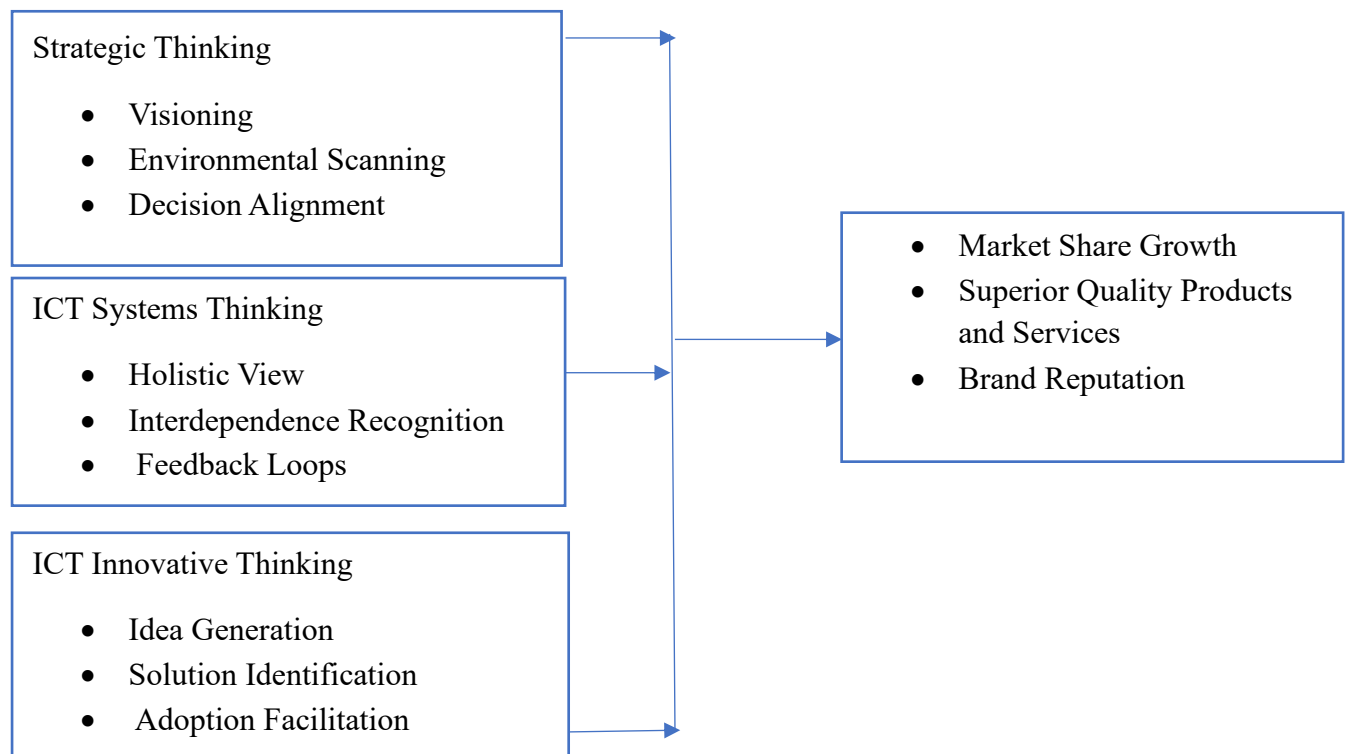


Figure 1

Conceptual Framework

Methodology

This study adopted a positivist research philosophy, which emphasizes that social reality exists independently of individual perceptions and can be objectively measured (Saunders et al., 2019). The philosophy was appropriate because the study sought to test hypothesized relationships between conceptual skills and sustained competitive advantage among IT networking SMEs in Kenya using quantitative methods. Consistent with this philosophical orientation, the study employed a descriptive correlational research design which enabled the systematic description of the characteristics and distribution of the study variables without

manipulating the research environment (Cooper & Schindler, 2019). The correlational component facilitated the examination of the nature, direction, and strength of relationships between variables and the testing of hypotheses using statistical techniques (Saunders et al., 2019).

The population for this study comprised senior managerial employees from all licensed IT networking SMEs in Kenya. The unit of analysis was the IT networking SME ($N = 365$), since sustained competitive advantage is an organizational outcome measured at the firm level. According to the ICT Authority of Kenya registry of August 2025, 365 licensed IT networking SMEs classified under ICTA tiers 1 to 8 formed the study population. The unit of observation comprised senior managerial employees ($N = 1,078$), who provided information on behalf of their respective firms regarding conceptual skills and sustained competitive advantage.

A stratified random sampling technique was used to select respondents from the eight ICTA licensing tiers to ensure adequate representation of all categories of IT networking SMEs. The sample size of 292 respondents was determined using the Yamane (1967) sample size determination formula at a 95% confidence level and a 5% margin of error:

$$n = \frac{N}{1 + N(e)^2}$$
$$n = \frac{1078}{(1 + 1078(0.05^2))} = 292$$

where n is the sample size, N is the target population (1,078), and e is the alpha level of 0.05. The calculated sample size was 292 respondents, ensuring adequate statistical power.

Primary data were collected using a structured questionnaire comprising closed-ended questions measured on a five-point Likert scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The Likert scale was appropriate because it enabled respondents to indicate the extent of their agreement with statements measuring conceptual skills and sustained competitive advantage while facilitating quantitative analysis.

A pilot study involving 30 respondents, representing approximately 10% of the sample size, was conducted to refine the research instrument and validate data collection procedures prior to the main study (Cooper & Schindler, 2021). The pilot participants were drawn from firms with characteristics similar to those of the target population but were excluded from the final study sample. Reliability was evaluated using Cronbach's alpha, with conceptual skills recording a Cronbach's alpha of 0.712, which was above the minimum acceptable threshold of 0.70. Construct validity was assessed using Exploratory Factor Analysis (EFA) through Principal Component Analysis (PCA) with Varimax rotation. The Kaiser-Meyer-Olkin (KMO) measure was 0.911, exceeding the recommended 0.50 threshold, while Bartlett's Test of Sphericity was significant ($\chi^2 = 751.731$, $df = 105$, $p < 0.001$), confirming the data's suitability for factor analysis. Two factors with eigenvalues above one explained 38.79% of the total variance. Factor loadings ranged from 0.49 to 0.68, exceeding the recommended minimum of 0.40 and confirming satisfactory construct validity.

The data were analysed using SPSS version 30 by descriptive (frequencies, percentages, means, and standard deviations) and inferential statistics (Pearson's correlation). The regression model was evaluated at $p < 0.05$ level of significance. Before regression analysis, diagnostic tests were conducted to assess the assumptions of normality {Shapiro–Wilk (S-W) and Kolmogorov–Smirnov (K-S) tests}, linearity (scatterplots), homoscedasticity (Breusch–Pagan

test), and multicollinearity (VIF and tolerance statistics). Values of VIF < 5.0 and tolerance > 0.10 indicated no multicollinearity.

Results

Demographic Characteristics

From the 292 questionnaires distributed, 242 were completed and returned, yielding a response rate of 82.9%. This exceeds the accepted threshold of 70%, hence minimizing non-response bias and ensuring data reliability (Sataloff & Vontela, 2021). The respondents were predominantly male (72.3%) and largely aged between 30 and 49 years (62.8%), indicating that most participants were in their prime managerial and productive years. The majority (91.7%) possessed at least a bachelor's degree, with 41.7% holding postgraduate qualifications, suggesting that respondents had the educational background necessary to provide informed responses on managerial skills. Additionally, 58.6% had more than six years of professional experience, demonstrating substantial organizational and industry knowledge. Management representation was relatively balanced, with 31.0% of respondents from top management, 36.0% from middle management, and 33.1% from lower management, ensuring that perspectives from different managerial levels were captured. The respondents were drawn from firms across all eight ICT Authority licensing bands, with the highest representation from ICTA 1 (21.1%) and ICTA 3 (19.4%), indicating broad sector coverage. Regarding firm size, nearly half of the firms (48.8%) employed between 10 and 49 employees, followed by 19.8% employing 50–99 employees, 16.5% employing fewer than 10 employees, and 14.9% employing more than 100 employees. The predominance of firms employing 10–49 employees is an indication that the study primarily captured small enterprises. Overall, the demographic profile demonstrates adequate representation of Kenya's IT networking SMEs, supporting the generalizability of the study findings.

Table 1

Reliability of Instruments

Variable	Cronbach's alpha	Verdict
Conceptual Skills	.712	Acceptable
Sustained Competitive Advantage	.718	Acceptable

Table 2

Validity of Instruments

Validity Test	Result	Recommended Threshold
KMO Measure of Sampling Adequacy	0.911	> 0.50
Bartlett's Test of Sphericity	$\chi^2 = 751.731$, df = 105, p < 0.001	p < 0.05
Number of Factors Extracted	2	Eigenvalue > 1
Total Variance Explained	38.79%	Context dependent
Factor Loadings	0.49–0.68	≥ 0.40

Descriptive Analysis

The findings indicate that strategic thinking skills were highly developed among respondents, recording an overall mean score of 3.93 (SD = 0.70). Managers strongly agreed that they think ahead about technological changes that may affect their work (M = 3.98, SD = 0.71), ensure daily activities align with long-term organizational goals (M = 3.95, SD = 0.71), and make decisions consistent with organizational strategy (M = 3.95, SD = 0.70). Comparatively lower mean scores were reported for identifying market shifts before they occur (M = 3.88, SD = 0.68) and monitoring industry trends to prepare for future challenges (M = 3.86, SD = 0.69), suggesting that external environmental scanning was less developed than internal strategic alignment.

The results on ICT systems thinking skills indicate a generally high level of agreement among respondents, with an overall mean score of 3.87 (SD = 0.71), suggesting that systems thinking capabilities are well developed among managers in IT networking SMEs. Respondents agreed that they consider the whole system when making decisions rather than focusing on a single area (M = 3.89, SD = 0.66), use a step-by-step approach to diagnose recurring problems (M = 3.88, SD = 0.74), and understand how changes in one part of the system affect other parts (M = 3.87, SD = 0.67). In addition, ensuring that different components of ICT work fit together effectively (M = 3.86, SD = 0.75) and the ability to integrate network, security, and cloud functions into a unified process (M = 3.86, SD = 0.74) further indicate competence in coordinating interconnected technological domains.

ICT innovative thinking skills were similarly highly rated with an overall mean score of 3.90 (SD = 0.73), suggesting that innovative thinking is well developed among managers in IT networking SMEs. Respondents strongly agreed that they encourage trying out new digital platforms that may benefit the firm (M = 3.95, SD = 0.71) and that they enjoy thinking of new approaches when conventional methods fail (M = 3.93, SD = 0.74). Additionally, relatively high mean scores were observed for the ability to refine new ideas or tools until they are effective (M = 3.88, SD = 0.75) and to generate new ideas that improve services or work processes (M = 3.88, SD = 0.72). However, helping teams adopt new digital tools recorded a relatively lower mean score (M = 3.84, SD = 0.75), indicating that while innovation is encouraged at an individual level, the process of translating ideas into team-wide adoption may face minor constraints.

Inferential Statistics

Correlation Analysis

Conceptual skills recorded a positive and moderate correlation with sustained competitive advantage ($r = 0.585$, $p < 0.001$). This suggests that firms with stronger strategic thinking, systems thinking, and innovative thinking capabilities are more likely to achieve higher levels of sustained competitive advantage. The magnitude of the correlation suggests that conceptual skills constitute an important strategic capability, enabling managers to anticipate environmental changes, formulate long-term strategies, and effectively align organizational resources with competitive opportunities. The finding provides preliminary empirical support for Katz's Managerial Skills Theory, which identifies conceptual skills as fundamental for strategic organizational performance.

Table 3

Correlation between Conceptual Skills and Sustained Competitive Advantage

		Sustained Competitive Advantage
Conceptual Skills	Pearson Correlation	.585
	Sig. (2-tailed)	.000

** Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

The coefficient of determination ($R^2 = 0.342$) shows that 34.2% of the variation in sustained competitive advantage is explained by conceptual skills; the other extent 65.8% of the variation in SCA is explained by other factors outside this model.

Table 4

Model Summary on Conceptual Skills and Sustained Competitive Advantage

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.585a	0.342	0.339	0.28936

a Predictors: (Constant), Conceptual Skills

The ANOVA results show that the overall regression model is statistically significant, with an F-value of 124.563 and a corresponding p-value of 0.000 ($p < 0.01$). This demonstrates that the model provides a significantly better fit to the data, confirming that conceptual skills meaningfully explain variations in SCA.

Table 5

ANOVA on Conceptual Skills and Sustained Competitive Advantage

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.429	1	10.429	124.563	.000b
	Residual	20.094	240	0.084		
	Total	30.524	241			

a Dependent Variable: SCA

b Predictors: (Constant), Conceptual Skills

The unstandardized coefficient for conceptual skills ($B = 0.312$, $SE = 0.028$) shows that a one-unit increase in conceptual skills leads to a 0.312 increase in SCA, holding other factors constant. This demonstrates a significant effect of conceptual capabilities on firm performance. The associated t-value ($t = 11.161$) is large and statistically significant ($p = 0.000$, $p < 0.01$), providing strong evidence that the effect is not due to random variation.

Table 6
Coefficients on Conceptual Skills and Sustained Competitive Advantage

Model		Unstandardized	Standardized	t	Sig.
		Coefficients	Coefficients		
		B	Beta		
1	(Constant)	2.665		24.348	.000
	Conceptual Skills	0.312	0.585	11.161	.000

a Dependent Variable: SCA

Regression Model Assumptions

The results of the normality tests indicate SCA recorded K–S ($D = 0.046$, $p = 0.200$) and S–W ($W = 0.993$, $p = 0.315$), indicating a normal distribution. Conceptual skills also satisfied the normality assumption with K–S ($D = 0.055$, $p = 0.073$) and S–W ($W = 0.992$, $p = 0.254$). Further, for conceptual skills and SCA, the linearity effect was significant ($F = 124.623$, $p < 0.001$), while the deviation from linearity was not significant ($F = 1.058$, $p = 0.349$). This indicates that the relationship between conceptual skills and sustained competitive advantage is linear. The standardized residual scatterplots further supported these findings by showing that the residuals were randomly scattered around the zero line without discernible systematic patterns or curved relationships. The results indicate that conceptual skills met the acceptable thresholds for multicollinearity, recording a tolerance value of 0.365 and a VIF of 2.737. Homoscedasticity results showed that the regression model using the squared residuals as the dependent variable was not statistically insignificant, as indicated by $F = 0.639$ and $p = 0.635$. Since the significance value is greater than the threshold of 0.05, the null hypothesis of constant error variance cannot be rejected. This finding suggests that the residuals are evenly distributed across the values of the predictor variable.

Discussions of Findings

The descriptive findings indicate that conceptual skills were generally well developed among managers in IT networking SMEs, as reflected by high mean scores across strategic thinking ($M = 3.93$), ICT innovative thinking ($M = 3.90$), and ICT systems thinking ($M = 3.87$). These findings support the argument by Dixit et al. (2024) and Christian et al. (2024) that managers operating in dynamic and technology-driven environments require strong conceptual capabilities to anticipate change, formulate strategic responses, and sustain organizational competitiveness. The prominence of conceptual skills in the present study is not surprising given the nature of the ICT industry, where firms operate in rapidly changing technological environments that demand continuous strategic adaptation. In the Kenyan context, the prominence of conceptual skills reflects the rapidly evolving digital landscape characterized by increasing adoption of cloud computing, mobile money platforms, artificial intelligence, cybersecurity requirements, and digital transformation initiatives. Consequently, managers of IT networking SMEs must continuously anticipate technological shifts and respond strategically to remain competitive within the East African ICT market. The prominence of strategic thinking ($M = 3.93$) therefore reflects the dynamic ICT landscape in Kenya, where managers are required to respond to emerging digital technologies, increasing cybersecurity risks, and changing customer demands that characterize the East African digital economy.

Among the conceptual skill dimensions, strategic thinking recorded the highest overall mean, with technological foresight emerging as the strongest capability ($M = 3.98$). This finding aligns with Dixit et al. (2024), who found that strategic thinking enhances organizational

adaptability and resilience in uncertain environments. Similarly, Kimaru et al. (2022) argued that managers who can anticipate future developments are better positioned to identify opportunities and respond proactively to environmental changes. In the context of IT networking SMEs, technological foresight is particularly important because emerging technologies, cybersecurity threats, cloud computing developments, and digital transformation trends can quickly alter competitive conditions.

Similarly, ICT innovative thinking recorded a high mean score ($M = 3.90$), supporting the findings of Asghar et al. (2023) and Okoli et al. (2024), who reported that innovative thinking enhances organizational performance by developing new products, services, and processes. However, the relatively lower score for facilitating team-wide adoption of digital tools ($M = 3.84$) suggests that although managers can generate innovative ideas, challenges remain in translating those ideas into organization-wide practice. This finding supports innovation diffusion theory, which argues that the implementation and institutionalization of innovations often present greater challenges than their creation.

Inferential analysis further revealed a positive and statistically significant relationship between conceptual skills and sustained competitive advantage. The significant F-statistic ($F = 124.563$, $p < 0.01$) and t-statistic ($t = 11.161$, $p < 0.01$) support the findings of Niguse et al. (2025), who identified significant pathways between strategic foresight and competitive advantage in manufacturing firms. Since the p-value is less than the significance level of 0.05, the null hypothesis (H_0) is rejected. The findings provide sufficient evidence to conclude that conceptual skills significantly influence sustained competitive advantage among IT networking SMEs in Kenya. The coefficient of determination ($R^2 = 0.342$) indicates that conceptual skills explained 34.2% of the variation in sustained competitive advantage, highlighting their importance while also confirming that competitive advantage is influenced by other organizational and environmental factors such as market conditions, regulatory requirements, and resource availability (Christian et al., 2024). However, these findings contrast with Nair et al. (2023), who found that managerial skills have limited influence on organizational performance in resource-constrained environments. The stronger relationship observed in this study may reflect the technology-intensive nature of IT networking SMEs, where conceptual skills play a greater role in strategic adaptation and competitiveness. The findings also extend Katz's (1955) Managerial Skills Theory by demonstrating that conceptual skills are critical not only for managers in large organizations but also for SME managers operating in dynamic digital environments.

Conclusion

The study concluded that conceptual skills have a positive and statistically significant influence on sustained competitive advantage among IT networking SMEs in Kenya. Improvement in managers' strategic thinking, ICT systems thinking, and innovative thinking capabilities lead to enhanced sustained competitive advantage. Conceptual skills are an important predictor of firm competitiveness and contribute significantly to organizational performance.

The findings have important implications for SME policy and practice in Kenya. Policymakers, industry regulators, and SME support institutions should strengthen initiatives that enhance managers' conceptual skills through strategic leadership development, digital innovation programmes, and continuous professional training. Such interventions would improve the capacity of IT networking SMEs to respond to technological change, foster innovation, and sustain long-term competitiveness in Kenya's evolving digital economy.

Nevertheless, the descriptive correlational research design established associations between variables but did not permit causal inferences. Second, the use of self-reported questionnaire

data may have introduced social desirability and common method bias. Third, the study focused exclusively on licensed IT networking SMEs, thereby excluding informal ICT enterprises and limiting the generalizability of the findings. Finally, sustained competitive advantage was measured using managers' perceptions rather than objective performance indicators, which may not fully capture firms' actual competitive position.

Recommendations and Areas for Further Research

Based on these findings, it is recommended that IT networking SMEs should strengthen managers' conceptual skills by enhancing market-sensing capabilities alongside existing strengths in strategic thinking and technological foresight. Firms should establish structured market intelligence processes to monitor industry trends, anticipate customer needs, and identify emerging market opportunities more proactively. SME managers should institutionalize quarterly strategic review meetings, develop formal environmental scanning frameworks, and establish innovation champion programmes to facilitate the organization-wide adoption of new technologies and strategic initiatives. Organizations should also allocate dedicated resources for piloting innovative ICT solutions and continuously evaluate their strategic effectiveness.

In addition, organizations should strengthen mechanisms that facilitate the organization-wide implementation of innovative ideas by promoting cross-functional collaboration, innovation adoption frameworks, and continuous strategic review processes. Since conceptual skills significantly influence sustained competitive advantage, SMEs should institutionalize strategic planning, market intelligence, and innovation management practices to improve decision-making, enhance organizational adaptability, and sustain long-term competitiveness.

Policymakers, including the ICT Authority and other relevant government agencies, should collaborate with industry stakeholders to design and implement managerial capacity-building programmes focusing on strategic thinking, systems thinking, and innovation management for IT networking SMEs. Such initiatives would strengthen the managerial capabilities required to support Kenya's digital transformation agenda.

Training institutions and professional development providers should integrate conceptual skills, including strategic thinking, systems thinking, digital innovation, and technology foresight, into entrepreneurship and SME management curricula. Similarly, industry associations should establish peer-learning and mentorship platforms that enable SME managers to exchange best practices, share strategic experiences, and strengthen collaborative learning within the ICT sector.

Future studies should also adopt longitudinal research designs to assess how conceptual skills and competitive advantage evolve, thereby overcoming the limitations of cross-sectional data and providing stronger evidence of causality. Future research may also employ mixed-methods approaches by integrating quantitative surveys with qualitative interviews or case studies to provide deeper insights into how conceptual skills influence sustained competitive advantage in different organizational contexts. Future studies may also address the following research questions: How do managers' conceptual skills influence sustained competitive advantage over time among IT networking SMEs in Kenya; how do organizational culture and innovation capability mediate or moderate the relationship between conceptual skills and sustained competitive advantage; how do conceptual skills contribute to sustained competitive advantage among formal and informal ICT enterprises across different regions of Kenya.

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