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Information systems leadership and information system function performance in universities in Kenya: A qualitative approach

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Abstract

Information systems are enablers, and organizations struggle to implement and manage them. Many organizations experience insufficient coordination of work, knowledge sharing, and use due to a business-information technology gap. As the top echelons responsible for information systems decisions, university information systems executives and the top management team form the strategic information systems leadership. The study aims to interpret perceptions of strategic information system leadership towards information system function performance in universities in Kenya. The data were collected from 42 out of 76 public and private universities. A qualitative survey approach was used to collect the data. A thematic approach was used to analyze and interpret the data. Microsoft Excel was used to organize the data, coding, and analysis. From the findings, strategic information systems leadership is perceived to positively affect information system function performance. The study also found that Kenyan universities lack adequate information system resources and operate with minimal budgets. Sharing of information systems knowledge was found to be limited, negatively affecting information systems culture and performance. Management practices that promote shared leadership were inadequate. The study recommends continuous training for university strategic leaders, making information systems executives part of the top management team, enhancing shared understanding between strategic team members, and adopting practices that build social interactions and promote knowledge sharing and integration. This research will help universities to examine their information system function policies, culture, and available capabilities.

Keywords: Strategic IS leadership, IS executive, top management team, shared IS knowledge, information systems, IS function performance.

Introduction

Management in organizations is responsible for making strategic decisions, making information systems (IS) an integral component that helps to boost performance and decision-making. IS are enablers that help organizations to become competitive and to effectively develop and implement business strategies (Ta-Kai & Min-Ren, 2019). In today's volatile, uncertain, complex, and

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ambiguous business world, managing and institutionalizing IS for university business operations is not easy (Ngereja & Hussein, 2021). However, as university education becomes more competitive, fierce competition has forced university executives to strive for better strategic leadership and utilization of IS (Muraguri, 2022). According to Mbirithi (2013), most universities' top leaders embark on strategic leadership work in information technology (IT) with minimal training and experience in strategic leadership, making many top management teams (TMT) in universities lack adequate IS knowledge and understanding (Gichinga, 2016). This limitation creates a technology-business gap.

This phenomenon has continued to make it difficult for university top leadership to share a common vision with their fellow IS executives' counterparts, limiting their understanding to use IS strategically to effectively drive effectiveness and performance of the IS function (Yang et al., 2020). Consequently, this makes the capability of the university's strategic leadership to guide and utilize IS for strategic competitiveness constrained in the context of increasing technological developments in the educational business environment (Nguyen, 2023). The paper aims to interpret the perceptions of the university's IS strategic leadership towards IS function performance in universities in Kenya.

African universities struggle financially and technologically to achieve international status, and as the internationalization of higher education continues to bring rapid changes, competition is rated a high-priority factor on the agenda of most universities' top leaders. This calls for universities' TMT to have good IS knowledge and understanding to lead and manage IS resources. Drew (2010) found that some of the main challenges facing institutions of higher learning include "strategic leadership, flexibility, creativity, and change-capability; responding to competing tensions and remaining relevant; maintaining academic quality; as well as managing fiscal and people resources" (p. 61) Further, Fang et al. (2014) noted that the strategic focus of many executives in institutions of higher learning is to align IS and business strategies to close the technology gap and achieve set goals.

Given the strategic direction and substantial changes taking place in the education sector in general, there is increasing concern about the significance of understanding and the kind of leadership needed to guide institutions of higher learning successfully (Atoum et al., 2024), noting that traditional approaches are ineffectual (Holcombe & Kezar, 2017). The fast-evolving digital technologies continue to make it difficult for IS leaders and organizations' top managers to describe what role and value IS brings and what it ought to be (Paré et al., 2020). Performance assessment is carried out to evaluate the extent to which the IS function increases effectiveness and efficiency in achieving organizational objectives and what steps can be taken to improve or bring innovations to maximize IS investments (Liulliyah & Apol, 2020). The achievement of IS giving value to organizations is difficult to separate from the success of the IS functions in doing their tasks and requires frequent evaluation (Jerry & William, 2005). Even though IS contributes to business strategy (Watson, 2015), its investments and asset capabilities barely result in enhanced organizational performance (Piccoli & Ives, 2005).

Empirical studies argue that organizational performance results when IT assets are collectively marshaled with other complementary aspects such as skills, culture, and relationship building (Atoum et al., 2024). An appraisal of strategic IS work discloses that the kind of working

relationship between IS executives, and the TMT is essential in aiding strategic alignment (Adomako et al., 2025). Consequently, the inclusion of IS executive officers in the university's TMT boardrooms is important as it is envisioned to expand their purpose and knowledge mixture, promoting the function and role of IS towards deliberate strategic business decisions (Qing Hu, 2014). Therefore, IS executives are accountable for technology-based decisions, while the TMT deals with decisions that touch on business strategies. The two groups represent the upper-echelon leadership in universities that jointly decide on strategic IS decisions, management, and which IS investment projects to implement.

While employing exploration and exploitation viewpoints, Chung-Jen et al. (2024) noted that an organization's management plays two roles. In the first role, the supply-side leadership role that enables the exploitation of existing IS resources to cater to ongoing business needs. In the second role, the demand-side leadership role that enables the adoption and utilization of various information technologies to enhance IS quality and to foster strategic advancements, exploring IS innovations, tapping strategic opportunities, and deriving strategic value (Chung-Jen et al., 2024). These two roles call for skills, knowledge, and a shared understanding between IS executives and the TMT in universities. Several researchers acknowledge that the absence of a shared vision between TMT and IS executives usually creates hindrances to strategic leadership, management, and business-IS alignment (e.g., Adomako et al., 2025; Ateş et al., 2020).

Therefore, while using a qualitative approach, the main objective of this paper is to find out "how strategic leadership perceptions, knowledge, and understanding affect IS function performance in universities in Kenya? The study provides valuable insights and contributes to the existing literature by interpreting how strategic leadership IS capabilities, shared IS knowledge and understanding, IS resources, IS culture, and management affect IS function performance. Further, the study contributes not only to the strategic application of IS but also informs policies and practices that intervene for universities to enhance IS knowledge, information sharing, and understanding in a university context.

Literature Review

Management is a major element in any organization, where the processes such as planning, organizing, staffing, directing, controlling, and coordinating are carried out. On the other hand, leadership is the process of influencing others (followers) to achieve set goals (Nadrifar et al., 2016). Information systems require both management and leadership. To address the objectives of the study, two theories that underpin the study were identified. The Upper Echelon Theory (UET) by Hambrick and Mason (1984) and the Dynamic Capabilities Theory (DCT) by Teece et al. (1997). UET suggests that organizations reflect their top leadership. The theory advances that individual characteristics and cognitions developed through experience, education, and personal values form cognitions that influence the way top-level managers analyze and respond to situations and the strategies they choose (Adomako et al., 2025). Hence, the theory advances the concept of strategic IS leadership through the roles performed by the IS executives and the TMT.

DCT argues that organizations need to have the ability to integrate, build, and reconfigure their internal and external resources or competencies to address fast-changing business environments

(Samsudin & Ismail, 2019). It focuses on resources/competencies that cannot be bought but must be built. The theory posits that the university's competitive advantage is centered on its ability to demolish existing IS resources and build a fresh remix of new operational capabilities to attain high performance in volatile business environments (Nabil, 2014). Therefore, the study places prominence on building up management capabilities, and not easy to duplicate blends of organizational resources such as culture, functional, and technological skills, among others (Helfat & Peteraf, 2014).

Universities can thus, apply their dynamic capabilities through mechanisms and structures that support collaborations and partnerships between information systems executives (ISE) and the TMT to know how to exploit existing IS resources and also understand how they can explore, exploit or rebuild their IS resources and skills, as well as reengineering their IS processes for future competitive IS performance output.

Strategic Information System Leadership

Strategic information system leadership is the top leadership in organizations with decision-making responsibilities and makes strategic choices that affect organizational performance (Karahanna & Watson, 2006). As the highest-ranking IS officer in the university, the IS executive makes IS technical decisions, while the university's TMT members are responsible for making business-oriented strategic decisions (Karahanna & Preston, 2013). The study envisions that when IS executives become part of the university's TMT, partnerships and relationships are built that bring positive assimilation of IT/IS and strategic alignment into the university's business strategies for better IS function performance. This leadership sets direction, commits and marshals institutional resources, expedites action, and familiarizes the IS function to suit varying business settings (Atoum et al., 2024).

Considering the importance of decision-making in organizations, Karahanna (2006) noted that both the IS executives and the TMT require political, social, business, and IS skills. The study urges that strategic leadership in complex and large organizations like universities is a shared activity. This requires skills, competencies, collective insights, capabilities, and relationships to allow members to enter strategic actions (Helfat & Peteraf, 2015). Therefore, there is a need for high levels of collective understanding and an interactive culture for universities' top IS leadership to develop a shared understanding and knowledge integration (Adomako et al., 2025). Therefore, universities need IS strategic leadership with requisite IS capabilities, adopting a shared leadership approach, where interactions are cultivated to enhance IS understanding for competitive IS function performance.

Information Systems Executive's Capabilities

"Keeping the lights on" and bringing results to the organization is a difficult task for ISE. Skills, competencies, and capabilities are required to get results. IS executives' capabilities are defined here as the skills, competencies, and knowledge they possess to guide the application of IS technologies in organizations' business functions to enhance competitiveness (Aydiner et al., 2019). Similarly, IS capabilities are defined as the organization's talents to deploy and marshal IT resources blended with or together with other resources and capabilities that ISE uses to leverage and create value for the organization (Michael & John, 2004). According to Anandhi & Bharadwaj

(2000), IS capability is not about complex technological functionalities but an enterprise-wide ability of combined efforts of the strategic teams to leverage technology to differentiate itself from the competition. Therefore, ISE's personal characteristics, business, technology, interpersonal, and political capabilities were taken to measure IS executives' capabilities (Aydiner et al., 2019). Organizations having IS executives with the required business IS capabilities, political and interpersonal skills create a balanced ISE with the social talents necessary to wield support from other TMT counterparts (Wang et al., 2015).

Top Management Team Information Systems Capabilities

Information systems TMT capabilities are recognized by their knowledge and understanding to support IS-based initiatives and participation in IS projects (Mojca et al., 2011). Such capabilities reflect their opinions about the use, importance, and capabilities of IS activities in improving operational efficiency and enabling business strategies. TMT in organizations consists of senior executives who head various functional units and report to the CEO. In the University, this is the group that reports directly to the Vice Chancellor and is expected to possess IS technical as well as business skills to make strategic decisions and answer strategic questions (Gallen, 2010). Besides individual knowledge and backgrounds, the diversity of the team is necessary as it increases information-processing capacity (Nielsen, 2010).

Diversity enhances teams' understanding of IS, giving them different viewpoints and interpretations of the situations they face, eventually reducing individual bias and increasing the quality of decisions they make (Nielsen, 2010). However, the literature points out that one area of concern with minimal study is the synergy of technical, business, and managerial knowledge in the strategic IS leadership. The combined hard and soft skills of the TMT and IS leaders can lead to improved IS capabilities, impacting business performance and increasing competitive advantage.

Information System Function Performance

The IS function is defined as all individuals, groups, or departments in an organization with daily responsibility for IS-related activities (Jerry & William, 2005). Performance is the result of all the organization's work processes and activities, and how well the goals or capabilities are achieved to meet stakeholders' needs and continued survival (Ouso & Beatrice, 2024). The performance or success of IS can have several interpretations because of the different perceptions it generates, leading to disagreements about what can be considered a successful IS project (Ngereja & Hussein, 2021). The performance of IS has been of interest to executives, and various IS "issue" studies and popular publications such as ComputerWorld Premier 100, InformationWeek 500, CIO magazine, among others, have shown these interests (Jerry & William, 2005). Additionally, there have been only limited attempts to develop formal information systems function performance (ISFP) measures.

Today, modern methods that are more comprehensive have been introduced among them, the Capability Maturity Model Integration (CMMI), a process improvement framework that aims to help organizations improve their processes, reduce risks, and enhance overall performance, the Balanced Scorecard (BSC), the COBIT methodology which are some of the most comprehensive ways used to measure organizations performance (Banker & Kemerer, 2017). Researchers have

argued that there exist ways and instruments to measure definite information aspects, such as data center, efficiency, and data quality. These measures cannot be used explicitly as a basis for determining the sources of the IS function's overall performance. Initial performance evaluation models were aimed at achieving efficiency and addressing organizational operational problems based on quantitative measures. These measures failed to evaluate the 'soft' benefits such as service performance, system performance, and improved decision-making, among others (Jerry & William, 2005).

Due to its criticality in organizations and lack of pragmatic measures, multiple and diverse perspectives from stakeholders are presented, making performance assessment difficult (Ngereja & Hussein, 2021). This, according to researchers, has prompted the development and use of pragmatic models to address the gaps. Models such as Pitt et al. (1995) used to measure IS service quality, Seddon (1997) model for measuring IS Success, and Heo and Han, (2003), that measure IS in evolving environments, the balance score card used to measure four perspectives: financial, customer, internal processes, and learning and growth among others have been proposed. Though the constructs used in these models are significant, they fail to represent the overall performance of the IS function (Jerry & William, 2005). Based on a theoretical input-output model of the IS function's role in supporting business process effectiveness and organizational performance, guidelines developed by Cameron and Whetton (1983) to evaluate IS function performance based on users' perceptions were used. Therefore, understanding how to measure IS function performance is important, and organizations should incorporate pragmatic measures.

Strategic IS Leadership and IS Function Performance

The upper echelon team has the overall responsibility of the organization through their decisions, how they allocate resources, and commitments made (Mehdi et al., 2022). UET shows that the diversity of TMT and their behavioral integration can help leaders manage contradictions and gain a better understanding of how to handle functions that involve heterogeneous competencies (Hambrick, 2007). Researchers have shown the significance of strategic IS leadership in organizations, amid scant empirical work that has studied its effects on organizational benefits grounded on distinctive characteristics of strategic IS leadership and the role of ISE (Fang et al., 2014). A study conducted on 92 TMTs of Spanish public hospitals to determine the relationship between sophisticated IS and strategic performance showed a direct effect of IS on strategic performance (Naranjo-Gil, 2009). Findings by Adilson and Alberto (2018) indicated that effective application of strategic IS contributes to capacity building, allowing reconfiguration of current functional skills to better react to environmental changes. Hambrick (2007) reported that personal attributes such as age, tenure in office, education, experience, and capabilities are determinants of organizational performance. According to McKenna (2002), the right competencies and capabilities permit an individual to yield good performance. Similarly, Ying and Ramamurthy's (2011) findings noted that IS capabilities have a direct effect on dexterity, showing that organizations must constantly develop superior IS capabilities to effectively manage and exploit IS resources to enhance performance. Consequently, Karahanna (2006) found that executives need political and social skills to educate and persuade their counterparts to build strong partnerships. Therefore, organizations need to embrace approaches that enhance strategic IS leadership for better utilization and reconfiguration of functional skills to exploit IS resources and react to environmental changes.

Methodology

Study Design

To address the research question, the study employed a qualitative research approach to get insights from university strategic IS leadership. Qualitative research uses a naturalistic approach that seeks to understand the phenomena in context-specific settings and gives the researcher a comprehensive understanding of the social phenomena in their natural environment (Patton, 2003). Using a qualitative research method, the researcher can ask open-ended questions. The approach allows the researcher to examine issues of interest in detail and depth, with no restrictions to specific questions, but the researcher can guide or redirect the questions for clarity, giving a better and comprehensive understanding of the phenomenon under investigation (Mingers, 2003). The theories that anchored the study helped to understand users' perceptions and understanding of IS and how their IS capabilities enable them to innovatively utilize IS technology-based resources in universities.

Research Questions

1. To investigate strategic IS leadership perceptions towards IS function performance in universities in Kenya
2. To investigate the relationship between strategic IS leadership, shared IS knowledge, and IS function performance
3. To investigate how the IS culture affects the IS function performance in the university.
4. To establish the influence of IS resources on the performance of the IS function in the university
5. To find out the respondents' views on the performance of the IS function in universities

Participants and Procedures

The study population consisted of all public and private universities chartered to operate in Kenya. The target group included the university's strategic IS leadership, which comprised the TMT and the IS executive from each university. These included the IS executives, i.e., IT directors, managers, CIOs, and the TMT members, i.e., Vice Chancellors, Deputy Vice Chancellors, Principals, or any other person who reports directly to the Vice Chancellor. These respondents were considered the key informants and were given adequate time to answer the questions. Due to the small population size of chartered universities in Kenya, a census was conducted where all chartered universities were targeted. The group was considered the vision bearers of IS in universities and hence made strategic decisions. In the survey questionnaire, a consent note was attached for the team to give their consent before participating in the study.

Data Collection

The study employed a qualitative approach to collect the data. The survey was carried out for three months between August and November 2022. The questionnaires were administered to 76 universities. The data was collected using an online survey Google form with open-ended questions. The questions addressed: information system executive IS capabilities, top management team IS capabilities, information systems culture, shared IS knowledge, information system resources, and IS function performance. An extra question was added to further probe the

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respondents on ways to improve the performance of the IS function in the university. A total of 42 universities returned 79 usable questionnaires, representing a 55.3% response rate. This included 27 public and 15 private universities, respectively, where 63 participants were male and 16 were female.

Data Analysis

Several methods are used to analyze qualitative data, such as content analysis, thematic analysis, grounded theory, and narrative analysis (Driscoll et al., 2007). The study adopted the thematic analysis method based on Braun and Clarke's (2006) steps. Through this approach, the study adopted the following steps. The first author familiarized himself with the data. This involved reading and re-reading the transcripts to understand the entire body of the data. This enabled the author to make notes in a book to summarize and understand the data. Second, the author generated the initial codes by organizing the data into meaningful and systematic groups to capture the relevant data from each segment of the text data that was deemed interesting to address the research objectives. Keywords were identified and reviewed for consistency and to remove any duplications. The coding process involved organizing the data to reflect the themes that formed the research constructs and finding any relationships between them. The codes were further reviewed to find any new codes. Third, the search for any new emerging codes was done to identify patterns to capture something significant or interesting about the data, and/or that which tended to say something about the research question. Fourth, the first author reviewed the identified codes to ensure they make sense. Fifth, the codes were further refined to ensure they inform and address the themes as per Braun and Clarke's (2006) steps. This helped to clarify what each theme was saying and how they interact and relate with each other, and finally, a write-up of the study was done. Several software programs are available that help in analyzing qualitative data, such as NVivo, ALTLAS.ti, MAXQDA, among others. However, for simplicity, the coded data was exported to a spreadsheet software (Microsoft Excel) for easier display, consistency, scrutiny, and refining of the codes. To simplify the coding process, each question response was analyzed separately. Finally, the number of mentions (quantitative) per question was counted and refined for greater accuracy and consistency.

Coding Process

The following steps were undertaken during the coding process based on Braun and Clarke's (2006) approach. Figure 1 shows the coding process.

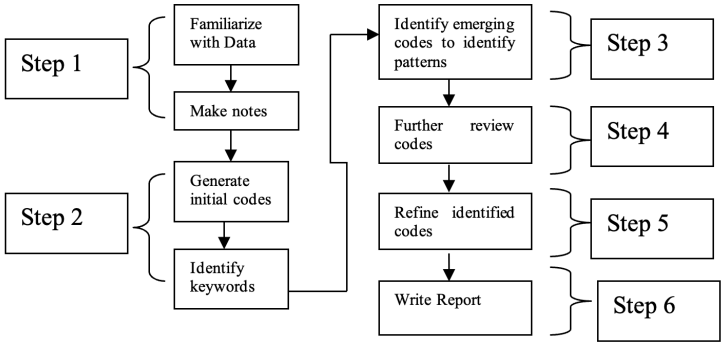

Figure 1. The coding process

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Several approaches are used to validate qualitative data at each step. To ensure the reliability of the results, the first author validated the data through an inter-coder approach, where two expert coders were involved to code and compare their codes for agreement and consistency. The authors also peer-reviewed the codes to ensure they address the identified themes. The use of existing literature was also used to validate the data. To address the interpretation bias of the responses, the author provided a belief explanation of each question to help the user understand the question before moving forward to the next question. This strategy helped to understand a responder's point of view and ensured objectivity when interpreting the data. Further, the author was conscious of his perspectives and potential biases as data was analyzed and conclusions drawn. In particular, personal opinions, beliefs, and experiences that may influence the interpretation of the information were considered. The results of the analysis are discussed in the sections that follow.

Findings

The demographic characteristics of the research respondents are summarized in Table 1 below. The demographic data helps to ensure the research findings are representative of the target population and how different groups are affected by the research. In addition, it helps to contextualize the interpretation of the results.

Table 1. Respondents Demographic Characteristics

Role	**Frequency**	**Percent (%)**
Information System Executive (ISE)	42	53.16%
Top Management Team (TMT)	37	46.84%
Gender	Frequency	Percent (%)
Male	63	79.7
Female	16	20.3
Age	Frequency	Percent (%)
Between 20-30 years	0	0
Between 31-40 years	31	39.2
Between 41-50 years	32	40.5
Between 51-60 years	13	16.5
Over 61 years	3	3.8
Years Worked	Frequency	Percent (%)
Less than 3 years	14	17.7
Between 4-6 years	14	17.7
Between 7-9 years	20	25.3
Between 10-13 years	10	12.7
Over 14 years	21	26.6
Total	**79**	**100**

Theme One: Information System Executive IS Capabilities

The general objective of the study was to investigate strategic IS leadership perceptions towards IS function performance in universities in Kenya. The literature highlights that capabilities are significant requirements needed by IS strategic leaders. In the context of IS, the head of the IS function and the TMT are the strategic leaders and vision carriers of the IS function in an organization. The role played by the team formed the strategic IS leadership construct. The

respondents were asked to give their views by responding to the research question, *"What is your view about the IS capabilities of the IS executive officer in your university?"* The respondents gave the following responses:

> *"He is capable, competent, knowledgeable, influential, proactive, understanding. He is good, skilled, excellent, requires training and upgrading of skills, needs soft skills, and has limited IS budget".*

From the respondent's views, a qualitative analysis was undertaken to identify the emerging codes. Ten codes were identified (Table 2). The study showed that most university IS executives have the needed IS capabilities. They were described as: *Capable, Competent, Knowledgeable*, and having the skills needed to do their job. Some of the respondents noted that some IS executives are "*influential and proactive*" when it comes to IS-related projects, which means they have good political connections with the TMT or have good relational or interpersonal skills. This means they can reach out to their TMT counterparts to lobby and convince them about IS projects and are able to secure support and funding for the projects. These findings are consistent with other empirical findings and recommendations (Karahanna, 2006). However, noting the dynamic nature of information technology, some respondents felt that IS executives "*require training to upgrade skills and also soft skills*". The study also revealed that most IS executives in universities operate under very limited IS budgets that compromise the performance of the IS function. These findings are also consistent with other study findings (Kashorda & Waema, 2013). Tables 2 to 8 present a summary of the findings, where percentages are based on specific number of mentions in each question (n).

Table 2. IS Executive IS Capabilities

Question. What is your view about the capabilities of the Information Systems Executive Officer in your University?											
Codes	**Competent**	**Capable**	**Knowledge**	**Influence**	**Skills**	**Proactive**	**Supportive**	**Understanding**	**Training Required**	**Expert Advice**	**Total**
Number of Mentions (n=50)	10	15	5	2	5	2	6	1	3	1	50
% of Mentions	20%	29%	10%	4%	10%	4%	12%	2%	6%	2%	100%

Theme Two: Top Management Team IS Capabilities

The TMT IS capabilities are recognized by their understanding of supporting initiatives and participation in IS-related projects (Mojca et al., 2011). This is reflected by their opinions about the use, importance, and capabilities of IS in improving operational efficiency and enabling business strategies. The respondents were asked to respond to the following question: "*What is your assessment of the knowledge and understanding of the university's top management team about information systems?"* The respondents gave the following responses:

> *"Well-informed, knowledgeable, have a good understanding of IS, require retooling, have a fair understanding, need training, neutral, limited skills, limited*

understanding, IS is rarely an agenda, have technophobia, appreciate the role of IS, what matters to them is if "WIFI is working".

From the responses, eight codes were identified (Table 3). The results of the analysis showed that the respondents gave mixed reactions about the university's TMT IS capabilities. Some of the respondents felt that the university TMT is "*well-informed*, *knowledgeable*, and *has a good understanding*" and "*appreciates the role of IS"*. However, a large proportion of the respondents felt that the university TMT has "*limited IS knowledge and understanding*". The respondents noted that TMT "*requires retooling/training*" to orient and equip them with the requisite IS skills to gain a better understanding and upscale their IS knowledge and skills. The findings also revealed that the university TMT members face many challenges that affect their IS capabilities. They are reported to "*have a technology phobia, lack of, or fail to have open engagement*". One respondent stated, "*What matters to them is if the WIFI is working*", and *"IS is rarely an agenda*". These sentiments point to and confirm that some university TMT members do not recognize the value of IS. The views support Kashorda's (2011) findings that many universities' TMT rarely make IS an agenda in their meetings. Likewise, similar opinions were shared by Mbirithi (2013), who noted that most universities' top leaders embark on strategic leadership work with minimal training and experience in the field of strategic leadership. Further, the findings support (Gichinga, 2016) findings that reported that TMT in universities lacks adequate knowledge and understanding of IS capabilities. The findings of the study also revealed that many TMT need retooling. IS executives could take the IS trainer role internally to improve IS understanding, change IS culture, increase trust, as well as build relationships across the teams. External training, seminars, workshops, and discussion forums where experts are called to facilitate training can also be adopted. Table 3 presents the findings of the university's TMT IS capabilities.

Table 3. TMT IS Capabilities

Question: What is your assessment of the knowledge and understanding of the university's top management team about information systems									
Codes	**Knowledgeable**	**Appreciation**	**Limited IS Understanding**	**Information Sharing**	**Dispute Resolution**	**Open Engagement**	**Training Required**	**Committed**	**Total**
No. of Mentions (n=54)	17	2	23	2	2	1	6	1	54
% of Mentions	31%	4%	43%	4%	4%	2%	11%	2%	100%

Theme Three: Shared IS knowledge and IS understanding

The study also sought to find out the relationship between the university strategic teams' IS knowledge and their IS understanding. The study sought to get respondents' views about how they perceive the university strategic team IS knowledge and how they share their IS understanding. IS shared knowledge is the awareness and understanding of a set of information and the ways it can be used to support specific tasks or reach strategic decisions (Reynolds & Stair, 2006, p. 6). The literature identifies structures such as involvement in TMT meetings, forums of interactions

between teams, and the structural distance between the CEO and IS executive as key factors in facilitating knowledge sharing (Feeny et al., 1992). The respondents were asked to give their views on the question: *"What is your view about information systems Knowledge, and shared understanding between the Top Management Team and Information Systems Executive about information systems in the university?"*. From qualitative study findings, the following views were presented by the respondents:

> " *Good sharing exist between the TMT and ISE officer, sharing done through formal meetings since the IT director is a member of university management board (UMB), forums exists to facilitate communication and sharing of information, there are gaps in their understanding, a shared understanding is usually difficult to achieve with the IT team, they share information frequently and interact freely, shared understanding is limited since little time is given to share information between top management and Information systems team, It is good for impacting positive and collective system culture, the University CEO need to engage more with IT executive, I think the IS Executive is willing to share information but is rarely granted such opportunity by top management unless it is through committees that he belongs to, frequent meetings are held to share information and knowledge on strategic issues on ICT, Low level of understanding, need for training to improve on shared understanding between the two teams to bring synergy between institutional management and business processes.*

From the responses, seven codes were identified (Table 4). The study showed that forty-nine 49% of the respondents felt that university TMT and IS executives share IS Knowledge, with 4% noting that good working relations between the two teams exist and that formal meetings facilitate IS Knowledge sharing with respondents stating "*Good sharing exist between the TMT and ISE officer, sharing done through formal meetings since the IT director is a member of university management board (UMB)" and "forums exists to facilitate communication and sharing of information"*. However, the findings revealed that 35% of the respondents felt that "*shared understanding is limited since little time is given to share information between top management and Information systems team", "It is difficult to difficult to achieve a shared understanding with the IT team"*. Four percent (4%) of the respondents felt that communication is an important element in strategic leadership and but exists minimally in universities. One percent (1%) of the respondents noted that a negative attitude towards IS exists in the university, negatively affecting knowledge sharing and understanding. Table 4 summarizes the results.

Table 4. IS Knowledge and Shared Understanding

Question: What is your view about IS Knowledge and shared understanding between the TMT and IS Executive (i.e., IT Director/Manager) about IS in the university?								
Codes	**IS Knowledge sharing**	**Limited IS Understanding**	**Interactions**	**Working Relationships**	**Communication**	**Training**	**IS attitude**	**Total**
No. of Mentions (n=54)	25	18	3	2	2	3	1	54
% of Mentions	49%	35%	6%	4%	4%	6%	2%	100%

Theme Four: Information System Culture

The study also wanted to find out the perspectives between IS culture and IS function performance in the university. The respondents were asked to give their opinions about the IS culture in the university. Researchers have defined and presented different perspectives on culture. According to Ababneh et al. (2014), culture is the way of life of a community. It is the beliefs, values, attitudes, and behaviors that a society values (Riepe et al., 2021), while Hofstede (2011) defined culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (p. 3). Most cultural definitions are grounded in values that jointly members prefer to view the world. According to Alan (2001), organizational culture is a communal phenomenon that has important implications for an individual's behavior and organizational performance. The respondents were therefore asked to answer the following question: *"What is your view about information systems culture in the university?".* The respondents gave the following responses:

> *"There is a positive culture, open to ideas, user-centered focus, user involvement, supportive culture, resistance when introducing new systems, slow adoption, need for continuous training, cooperative culture, coercion is used sometimes, suspicion between TMT and IS executives, not very receptive to new technologies, good acceptance after COVID-19".*

Six codes were identified under theme four. The findings of the study presented mixed feelings about IS culture in universities among the respondents. The majority of the respondents 64% felt that a positive IS culture exists toward the use and adoption of IS in universities. Respondents indicated "*there is a positive culture, open to ideas, user-centered focus, user involvement, supportive culture"*. Seventeen percent (17%) felt that a negative IS culture is experienced, with some noting "there is *resistance when introducing new systems"*, confirming the presence of IS resistance in the universities, and sometimes "*coercion is used sometimes"*. Five percent (5%) of the respondents felt that there is a slow adoption rate of IS affecting IS function performance. The findings further showed low user involvement, and "*suspicion between TMT and IS executives," and the management is not very receptive to new technologies* being implemented. However, 5% of the respondents felt that there need for universities to adopt a training culture where IS strategic issues or emerging new IS technologies can be sensitized. Table 5 presents the results.

Table 5. Information System Culture

Question: What is your view about the information systems culture in the university in relation to use and adoption							
Codes	**Positive IS Culture**	**Negative IS Culture (Resistance)**	**Slow Adoption**	**User Involvement**	**Training**	**Support & Cooperative Culture**	**Total**
No. of Mentions (n=58)	37	10	3	2	3	3	58
% of Mentions	64%	17%	5%	3%	5%	5%	100%

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The respondents were further asked a follow-up question: "*What is your view about the existing rewards and recognition systems in your university?"*. Researchers, such as Akpa et al. (2021), have avowed that successful use of IS is attributed to building a good organizational culture, of which universities are not an exception. From the study findings, (42%) of the respondents felt that a rewards and recognition culture does not exist in the university. This may demoralize staff as they might feel their efforts, views, or contributions are not considered. However, (33%) felt that a reward and recognition culture exists. A small percentage (13%) of the respondents felt that a rewards culture exists in their university, but at a very basic level, calling for improvements and enactment of policies that support a rewards and recognition culture, with 6% noting that the programs are not credible. Universities need to have a deep understanding of their IS culture and develop policies that fit their context in terms of how IS activities are carried out to attract user confidence and enhance IS performance. Table 6 presents the seven codes that were identified under the rewards and recognition sub-theme of IS culture in the universities.

Table 6. Rewards and Recognition Systems

Question: What is your view about the existing reward and recognition systems in your university?								
Codes	**Existence of Rewards / Recognition**	**Non-Existence of Rewards / Recognition**	**Credibility**	**Need for Policies**	**Discontinued**	**Need Improvement**	**Adequacy**	**Total**
No. of Mentions (n=48)	16	20	3	2	1	6	3	48
% of Mentions	33%	42%	6%	4%	2%	13%	6%	100%

Theme Five: Information Systems Resources

The study further sought to establish the influence of IS resources on the performance of the IS function in the university. Organizations use their existing IS resources and capabilities to compete and enhance their IS performance (Mikalef & Pateli, 2017). Further, Utami (2023) noted that IS resources can be categorized in terms of human, technological, and relationship resources. In this view, resources are seen as the existing stocks that are possessed or controlled by the university and include physical and intangible assets like knowledge, experience, and culture, rooted in universities (Anggrani, 2014). From this perspective, the respondents were asked to answer the following question: *"What is your view about Information System Resources in the university?"*. The respondents presented the following views:

> *"We have inadequate/insufficient IS resources, our IS resources need to be improved, we have slow and old resources, resources are adequate to support university IS function however the infrastructure requires upgrade as a number of key infrastructures are at their end of life and require upgrade, we need for training to make it easy to use IS resources, the resources are available but not put to maximum use due to lack of adequate communication between the TMT and the IS team, financial constraints affect availability of IS resources, "IS resources are adequate for now but technology is dynamic and new*

needs and ideas emerge constantly presenting needs for provision of more resources", need to integrate and investment in infrastructure and equipment for reliability and efficiency".

Seven codes were identified (see Table 7). The findings of the study showed that 23% of the respondents felt that the university has adequate IS resources, as some noted "*resources are adequate to support university IS function however the infrastructure requires upgrade as a number of key infrastructures are at their end of life and require upgrade" However, the respondents noted "IS resources are adequate for now but technology is dynamic and new needs and ideas emerge constantly presenting needs for provision of more resources", and "there is need to integrate and investment in infrastructure and equipment for reliability and efficiency".* Twenty-seven percent (27%) noted "*resources are old and require upgrading*". Thirty-eight percent (38%) felt that IS resources are inadequate in most public universities compared to private universities. Four percent (4%) felt that there is a need to integrate existing IT/IS resources for better utilization and performance. This could signify that some of the universities have stand-alone systems that require integration to provide a better working environment and increase IS performance and productivity of staff. In addition, 4% of the respondents felt that in their university, IS systems are developed or acquired through collaborations, signifying some element of user involvement. This approach could make it easier to deploy and accept IS. As a social resource, some respondents (2%) noted that "*the resources are available but not put to maximum use due to lack of adequate communication between the TMT and the IS team." Some of the respondents felt that "financial constraints affect availability of IS resources" in universities*. Table 7 presents the results of the analysis.

Table 7. IS Resources

Question: What is your view about Information System Resources in the university?								
Codes	**Adequate IS Resources**	**Inadequate IS Resources**	**Resources Upgrade**	**Resources Integration**	**Need Training**	**Communication**	**Collaboration**	**Total**
No. of Mentions (n=48)	11	18	13	2	1	1	2	48
% of Mentions	23%	38%	27%	4%	2%	2%	4%	100%

Theme Six: Information System Function Performance

Universities across the globe are today propelled by the application of various ubiquitous IS applications for their competitiveness. The performance of the IS function may determine the competitiveness of the university. The study also sought to determine the respondents' views on the question *"What is your overall view about the performance of the IS function in the university?"*. The literature defines IS function as all individuals, groups, or departments in an organization with daily responsibility for IS-related activities (Jerry & William, 2005). Three attributes guided the question: effectiveness of information, service performance, and system performance. The respondents presented the following responses:

> *"There is improved service delivery, increased efficiency, improved productivity and performance, improved quality, reliable, require improvement, automation is required, good performance, users and top management need the training to maximize the use of information systems in decision making, vendor based systems are quite a challenge to adopt and takes a lot of effort for effectiveness to be realized, IS function needs revamping and upgrading, has enabled the university to perform better, Our IT staff is still struggling as we rely on our mentor university for systems support".*

Ten codes were identified under theme six. The study showed that 53% of the respondents felt that the overall performance of the IS function in the university is average, meaning there is still room for improvement, while only 3% felt that the performance is excellent. However, 2% rated the performance as poor. Three percent (3%) of the respondents noted that the IS function performance has brought increased efficiency, nine percent (9%) improved service delivery, five percent (5%) reliable service performance, and two percent (2%) improved quality and increased productivity, respectively. Seventeen percent (17%) of the respondents felt that the IS function in the university needs improvement, with three percent (3%) feeling that training for the TMT is needed to effectively use IS systems for decision-making. Table 8 presents the summary results.

Table 8. Overall IS Function Performance

Question: What is your overall view about the performance of the Information Systems Function in your University?											
Codes	**Average Performance**	**Increased Efficiency**	**Need Improvement**	**Reliable Performance**	**Improved Service Delivery**	**Excellent Performance**	**Improved Quality**	**Improved Productivity**	**Poor**	**Training Needed**	**Total**
No. of Mentions (n=58)	31	2	10	3	5	2	1	1	1	2	58
% of Mentions	53%	3%	17%	5%	9%	3%	2%	2%	2%	3%	100%

A follow-up question was further asked to probe respondents to *"give two ways to improve the performance of the IS function performance in the university*". From the study results, the respondents' views resonate well and support existing IS literature findings. They felt that, for universities to improve the performance of the IS function, they need to:

1. Regularly upgrade existing information systems and infrastructure
2. Involve users in IS-related projects to take ownership
3. Undertake user training on existing and emerging technologies
4. Top management team support towards IS project initiatives
5. Recruit skilled technical staff
6. Hold regular meetings with users to get feedback
7. Increase the IS budget allocation
8. Embrace a teamwork culture
9. Acquire an entrepreneurial mindset
10. Develop and implement IS-related policies
11. Establish credible rewards and recognition programs

Discussion

A dominant theme in management is determining how strategic decisions enable one organization to outdo the other. Literature has placed significant emphasis and attention on the role IS executives and the TMT play in organizations. The study findings reveal that IS executives and the TMT perceive that their IS capabilities can have a positive influence on information system function performance (ISFP). The findings support the UET proponents that organizations are reflections of their top leadership. The findings support Karahanna's (2006) and Jerry et al.'s (1999) empirical findings, noting that information system executives (ISEs) require different sets of skills. Additionally, technical skills are additional characteristics that relate positively to the success of IS functions (Debbie et al., 2009). The findings emphasize the importance of strategic leaders having the capabilities and understanding to manage and utilize organizational IS resources to make effective strategic decisions. Using a qualitative approach provides a platform where university IS users can freely give their views and understanding about IS strategic leadership, level of IS understanding, existing IS culture, IS resources, rewards and recognition, and how IS function performance can be improved, and how to address gaps.

The IS strategic team in the university acts as the vision carrier and needs to have a shared vision and understanding to achieve competitiveness and improved IS function performance. Having knowledgeable strategic IS leadership is a key determinant for universities to reap the benefits from their IS functions. Consequently, IS competitiveness in universities will be realized when adequate IS resources and funding are availed for exploitation and utilization. Building relationships that promote practices such as collaboration, intra-departmental sharing of resources, and partnerships needs to be encouraged.

Theoretical Contributions

The study was anchored on two main theories, the UET and the DCT. However, the findings reinforce arguments contributed by other theories, such as the Resource-Based View (RBV) and the Social Capital Theory (SCT). The study discusses and contributes to the present and contemporary theoretical arguments on strategic IS leadership and IS function performance. It is our view that strategic continuous capacity building is to enhancing African universities' competitiveness. As African universities struggle to achieve global competitiveness, it is critical for them to enhance their IS knowledge and understanding, provide adequate IS resources, and embrace IS cultural change that may inhibit their capabilities to exploit the advantages proclaimed by the theories and emerging new technologies.

Theoretical Implications

The study noted that universities' strategic teams possessing business and technology capabilities greatly affect the performance of the IS function. Gaining knowledge and understanding gives strategic teams the needed IS capabilities to enter into strategic behaviors that help them to bring understanding and build relationships where knowledge can be shared. The findings support the upper-echelon theory that organizations are reflections of their top leadership, who play a significant role in influencing and driving the strategic direction of the organization (Hambrick, 1984), and gaining an understanding of IS and IT helps them to strategically and innovatively

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utilize IS resources. Therefore, for universities to enhance their IS function performance, there is a need for proper IS planning to budget and provide for IS resources. Strategic IS leadership needs to embrace a social approach to reap the benefits of social interactions, trust, information sharing, and knowledge. Further, introducing schemes that recognize and reward staff efforts is important.

Empirical Comparisons

Culture is the mode of life of a society and consists of beliefs, values, attitudes, or behaviors valued by a community (Ababneh et al., 2014). Therefore, cultural values may bring different perceptions and methods used to develop, use, or acquire IS. Further, Thatcher et al. (2003) found that uncertainty cultures affect decisions, especially when introducing new technologies. The current study found that universities experience resistance when introducing new systems, slow adoption, and coercion is used, suspicion between TMT and IS executives, not very receptive to new technologies, confirming prior research findings. Additionally, Aaron (2000) found that power distance affects the design and use of IS. As power distance increases, the rate of uptake rises, confirming the need to involve users of IS systems. Trust between co-workers, communication, reward systems, and organizational structures of power positively relate to knowledge sharing (Alaa, 2007). Therefore, the cultural values that exist in universities determine how users will embrace information systems.

Practical Implications

The study underscores various practical implications.

- Universities need to engage in practices that encourage social interactions between the users to strengthen research, resource sharing, establish relationships to build trust with each other, collaborations, and teamwork.
- Creating a positive IS culture can lead to successful use of IS, foster innovations, increase satisfaction, and also reduce resistance.
- The study advocates the need to use formal and informal meetings to build IS capacity and understanding. Universities should continuously conduct training, workshops, and seminars as forums to build strategic IS leadership capacity. This is envisioned to expand knowledge-sharing and understanding that may help universities reap the benefits from their IS function.
- Universities also need to make deliberate efforts to plan and provision for adequate IS budgets to provide adequate IS resources.
- Further, university managements can benefit from the study findings for policies that can foster good working relationships, recognition, and rewards to efficiently utilize IS resources and increase IS function performance.

Limitations and future research

The study used thematic analysis, which may experience subjectivity in interpretation, oversimplification, and difficulty in comparing results across several studies. Culture is a key determinant of the success or failure of an organization. It affects individual values, morals, behaviors, and practices followed in an organization. A lack of voluntary sharing of information was experienced. There is a need to use advanced software tools tailored for qualitative data

analysis. Also, since the research was carried out in the education sector, future research adopting longitudinal or mixed-methods designs should be carried out to compare the findings with other sectors.

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