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Effects of Culture on Strategic Information System Leadership and Information System Function Performance in Universities in Kenya

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Abstract.
Cultural issues in information system literature continue to emerge as critical factors that bring success or failure of information systems. Culture is posit to influence the behavioral motivations necessary to meet an individual's needs and impact the development, use, and actions of the user towards information systems. Therefore, university leaders must focus on information systems culture formation, maintenance, and change. This paper aims to explore the impact of culture, as manifested in shared assumptions, values, behavioral norms, and practices, on the performance of the information system function in universities in Kenya.
Culture is becoming important as the adoption of groupware and internet-based applications supporting cross-collaboration requires greater user participation at all levels. Functionalist and anthropological approaches are two schools of thought that are proposed to connect leadership and organizational information system culture. The main challenge in business environments facing main decision makers is whether organizations can survive the increasingly fierce competition. The leaders require the ability, expertise, strategy, and skills to control and lead the organization to move in the right direction. Several models have been used to help organizations understand culture e.g. Hofstede (1980), Deal & Kennedy (1982), Johnson (1988), and Denison (1984; 1990). This study adopted Smit et al. (2008) model. Further, several studies have shown that culture impacts the actions of developers and users signifying the importance of culture at all levels and exerts a delicate yet powerful influence on people's and organizations' information flows, and the use of technologies is often closely intertwined with culture. Notwithstanding the contributions of various studies, our knowledge of how culture influences IS to bring positive change is limited.
The study used a mixed methods research methodology and cross-sectional approach, with data collected from 76 public and private universities in Kenya offering higher education. The findings of the study revealed that information system culture has no significant impact on information system function performance. Negative management approaches adopted by universities or user behavioral cultures may have contributed to these findings, which are consistent with some prior study findings. The study suggests the need for further research to identify other factors that could combine with IS culture to have a positive impact on information function performance. The results also provide new insights into the existing literature and suggest future research to address identified gaps.

Keywords: *Strategic IS Leadership, IS function Performance, IS Executive, Top Management Team, IS Culture*

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I. Introduction

As the number of studies continues to grow that address cultural issues in IS literature, culture continues to be cited as a critical factor in the success or failure of information systems (IS) adoption in organizations. IS are viewed as essential components for organizational growth and survival (Kamariotou & Kitsios, 2019). Culture is recognized as a critical element that impacts the development, implementation, and use of IS in organizations. Organizational culture encompasses an organization's values, philosophy, expectations, and experiences that guide member behavior and are reflected in their self-image, internal operations, interactions with the external environment, and prospects (Sihite, 2020). As users become more accustomed to IS, they tend to become more satisfied with their IS usage, and their IS requirements become more sophisticated (Yang, 2020). However, cultural values influence the behavioral motivations necessary to meet an individual's needs and impact the development, use, and actions of the user towards IS (Walsham 2002). Therefore, university top leadership must focus on IS culture formation, maintenance, and change. This paper aims to explore the impact of IS culture, as manifested in shared assumptions, values, behavioral norms, and practices, on the performance of the IS function in universities in Kenya.

Culture is becoming increasingly important given the adoption of groupware applications, enterprise resource planning systems, and other internet-based systems by organizations, which support cross-collaboration and require greater user participation at all levels. Two schools of thought have been proposed to connect leadership and organizational IS culture. The functionalist approach suggests that leaders are the main proxies in the process of culture management (Xenikou & Athena, 2022). Similarly, the anthropological path theorizes culture as something the organization is rather than what the organization owns, taking culture as a symbol and not as an essential variable. In business environments, the main challenge is whether organizations can survive the increasingly fierce competition (Asbari, 2020). As the main decision-makers strategic leaders are required to have the ability, expertise, strategy, and skills to control and lead the organization to move in the right direction.

Organizational performance will only result where good and conducive organizational culture and continuous motivation of each individual prevail. Strategic leadership is about a leader's ability to change people through vision and values, culture and work climate, and structures and systems put in place (Asbari, 2020). Given these, dimensions, leaders can adopt various mechanisms to manage IS culture, such as communication, how to allocate resources and rewards, and having formal statements about the organization's thinking. From the literature, most empirical research takes a functionalist route implying that culture has a strong influence on strategic outcomes (Cooper, & Santora, 2008). The adoption and introduction of new cutting-edge technologies have presented new challenges to strategic leadership, culture, nature, and activities associated with the IS function in organizations (Beynon-Davies, 2020). This is evident as executives try to understand and measure the performance of the IS function (Delone and Mclean 2013). Organizational culture is said to be shared thoughts or beliefs that differentiate members of one group from another. It is a strong determinant of people's beliefs, attitudes, and behavior, and their influence can be measured through how people are motivated to respond to their cultural environment (Asbari, 2020).

Empirical studies argue that organizational performance is likely to result when Information Technology (IT) assets are collectively marshaled with other complementaries such as skills, culture, and relationship building (Hitt et al. 2003). An appraisal of strategic IS work reveals the existence of a weak working relationship between the Information System Executive (ISE) and the Top Management Team (TMT) in organizations (Chan, 2002; Karahanna and Preston, 2009). Albeit its significance, this relationship has often remained unstable and has seemingly been perceived to contribute to the unimpressive use of IS and reduced IS performance (Chan, 2002; Preston and Karahanna, 2009). Reich & Benbasat (2000) noted that intellectual and social characteristics are two approaches necessary for business-IS alignment. Intellectual alignment comes when business and IS plans exist, while social alignment is achieved when IS and business executives understand each other's mission, opinions, objectives, and plans. Several studies have focused on the intellectual dimension but only a few have focused on the social dimension (Tan & Gallupe, 2006). The social dimension emphasizes the relationships and shared understanding between businesses and IS executives who form part of the TMT. Shared understanding is proposed as one of the significant factors needed for establishing the social dimension (Reich & Benbasat, 2000). While the existing literature has shown the significance of good relationships between ISE and TMT as key drivers for organizational performance, ample research has been subjective (Tan & Gallupe, 2006; Benbasat, 2000). The social mechanisms and how they nurture the relationships have received little attention (Tan & Gallupe, 2006). Therefore, this paper seeks to examine the relationship between IS culture and IS function performance using a PLS-SEM approach.

II. Literature Review

Theories Supporting the Study

The theoretical foundation reinforcing the study includes the Upper Echelon Theory (UET) and the Social Capital Theory (SCT). The UET asserts that organizations are reflections of their senior executives and affect organizational performance while the SCT claims that cultural dimensions can help in understanding organizational performance (Wildan, 2020). Additionally, SCT theory posits that the achievements of IS rest on the culture and interactions that occur among the members of the organization, enabling an open and free exchange of ideas (Karahanna, 2006). Therefore, culture is a critical resource for organizations to reap the desired benefits (Wildan, 2020). In essence, leveraging on culture, intangibles, complementaries, knowledge sharing, and relationship building is important to enhance IS performance, but how technology assets, business, and other capabilities intermingle to affect IS function performance to bring strategic value is limited (Preston & Karahanna, 2014).

Strategic Information Systems Leadership

Strategic IS leadership, is leadership at the top with decision-making responsibilities. Information systems executives (ISEs) and the Top Management Team (TMT) form part of this leadership. Accordingly, TMT lacks adequate knowledge and understanding of IS capabilities while ISE lacks business skills (Gichinga, 2016, Wanyendi, 2007). This phenomenon creates a technology-business lacuna, knowledge sharing, technical language barrier, and understanding of how the leadership can exploit IS culture to strategically drive IS function performance in universities. From the lenses of the strategic team, these gaps have consequently, become an issue of concern to both academicians and practitioners alike.

Information System Executive IS Capabilities

The heads of IT function in organizations and are often confronted with constant challenges. Their success is anchored on the ability to utilize personal characteristics, skills, experience as well as other capabilities. They are often excluded from strategic IS decisions and not considered as equals with other seasoned executives like the Chief Finance Officer (CFO) who view them as responsible for support functions further complicating their strategic role (Chatterjee, 2001). Relationship building is important to persuade their TMT counterparts to support IS-related projects Enns et al. (2007). Therefore ISEs need different sets of skills ranging from change management, leadership, communications, negotiations, budgeting, and business analysis (Chun and Mooney 2009; Luftman et al. 2015). Nevertheless, (Carter et al. 2011) argue that the nonexistence of past technical career know-how or education hardly makes an ISE less of a business technology strategist and can use different behaviors to influence other members of the TMT to back up IS-associated initiatives. Therefore, the dynamic environment in which universities operate calls for the adoption of mechanisms that can promote interactions, communication, and knowledge sharing to create an environment where a positive IS culture can thrive.

TMT Information System Capabilities

Several researchers acknowledge that the absence of a common vision and understanding between TMT and ISE about IS creates a hindrance to strategic leadership and alignment (Tan & Gallupe, 2006). The capabilities of TMT are recognized by their understanding of support and participation in IS projects (Mojca, 2011). The capabilities are reflected by their opinions about IS use, role, and how it improves operational efficiency to enable business strategies. TMT is the group of senior managers who head various functional units and report directly to the institution's Chief Executive Officer (CEO). They make strategic decisions and answer strategic questions (Gallen, 2009). Besides their individual knowledge and educational backgrounds, their diversity helps to increase information-processing capacity enhancing their understanding and creating different IS viewpoints and interpretations of the strategic situations they face eventually reducing individual bias and increasing the quality of decisions made (Nielsen, 2010). Collaborations, partnerships, reporting structure, and frequency of interactions are proposed as some of the approaches universities can utilize to bring IS understanding and reduce IS-business gaps. Considering such approaches, one area of concern with minimal study is how the synergy of technical, business, and managerial knowledge impacts business performance (Mojca, 2011). Therefore, how a common understanding of business and technology roles within the universities' top leadership can be created to facilitate knowledge integration, access to information, pass meaning, and opinions is necessary but lacking to bring improved IS function performance (Maharaj and Brown, 2015).

Information Systems Culture

Culture is recognized as a key factor that impacts the development, implementation, and use of IS in organizations. Culture encompasses an organization's values, philosophy, expectations, and experiences that guide member behavior and are reflected in their self-image, internal operations, interactions with the external environment, and prospects (Sihite, 2020). However, cultural values influence the behavioral motivations

necessary to meet an individual's needs and impact the development, use, and actions of the user towards IS (Walsham 2002). Several models have been used to help organizations understand culture e.g. Hofstede (1980), Deal & Kennedy (1982), Johnson (1988), and Denison (1984; 1990). Research has found that culture is influential in several ways across the developmental and usage processes of IS. Several studies have shown that culture impacts the actions of developers and users (Nicholson and Sahay 2001; Walsham 2002); the use of IS (Martinsons and Westwood 1997), and the use of ISs can influence the culture of users to adopt (Cabrera et al. 2001). Hofstede (1983), noted that culture has implications on an individual's behavior and organizational performance especially when it is focused on dimensions like; power distance, individualism-collectivism, uncertainty avoidance, masculinity-femininity, and long and short-term direction. Culture is also blamed when a failure occurs Kohn et al. (2000). Additionally, Tomlin (1991) concluded that organizations using IS strategically develop strong internal information cultures. This study adopted the Smit et al. (2008) model that contends the culture of an organization can be defined in terms of five core elements, leadership, strategy, adaptability, coordination, and relationships. These examples signify the importance of culture at all levels and exert a delicate yet powerful influence on people's and organizations' information flows, and the use of technologies is often closely intertwined with culture. Notwithstanding the contributions of various studies, our knowledge of how culture influences IS to bring positive change is limited.

Strategic IS Leadership, IS Culture and IS Function Performance

The concept of leadership has been studied and discussed by practitioners and academicians from many fronts (Yukl, 1981). These perspectives present a part of the leadership picture but, emerging views continue to bring and clarify the complexity of traits, behaviors, and situational variables needed to describe leadership (Matthews, 2017). Leaders impact organizations through their decisions, how they allocate resources, and make commitments (Mehdi, 2016). The diversity of TMT and their behavioral integration can help manage contradictions and a better understanding of how to handle functions that involve heterogeneous competencies Hambrick et al., (2007). Researchers have shown the significance of strategic leadership but scanty empirical works have studied its effects on organizational benefits grounded on distinctive characteristics of strategic IS leadership (Ding et al., 2014). A study conducted on 92 TMTs of Spanish public hospitals to determine the relationship between sophisticated IS and strategic performance revealed a direct effect of IS on strategic performance (Naranjo-Gil, 2009). Further, Hambrick (2007) posits that personal attributes such as age, tenure in office, education, experience, and capabilities are determinants of organizational performance. Therefore, TMTs in organizations with IS knowledge multiplicity are seen to possess greater performance when matched to those without (Qing & Yu, 2014).

Culture is the mode of life of a society and as a communal phenomenon has implications for an individual's behavior and organizational performance. Cultural values may bring different perceptions and methods used to develop, use, or acquire IS (Weber & Dagwell, 1983). Thatcher et al., (2003) found that uncertainty cultures affect decisions especially when introducing new information technologies. According to Marcus & Gould (2000), power distance affects the design and use of ISs. As power distance increases, the uptake rate rises, as junior staff are unlikely to question their bosses. However, (Hasan & Ditsa,1999) argued that, where the power distance is low, IS executives may have an easy time advising their superiors leading to increased support of IS projects. Al-Alawi et al., (2007) noted that cultural elements such as confidence between workers, communication, recognition, and organizational structures positively affect knowledge sharing. Al-Alawi et al. (2007) noted that trust between co-workers, communication, reward systems, and organizational structures positively relate to knowledge sharing. Therefore, the IS culture that exists in an organization contributes to the performance of IS function.

H01: There is no relationship between IS culture and IS function performance.

III. Methodology

Research Design and Population

This study adopted a descriptive, exploratory, and cross-sectional research design. The motivation for using this design includes the ability to help researchers overcome shortcomings associated with a single strategy and allows one to combine the strengths associated with qualitative and quantitative approaches (Mingers, 2003). Further as (Johnson & Onwuegbuzie, 2007) notes mixed-method approach helps one to address a wide range of research questions and helps to boost the generalizability of the study findings (Venkatesh & Bala, 2013). Triangulation of the quantitative and qualitative data is also possible (Agerfalk, 2013). The population for this study were public and private universities operating in Kenya totaling 76 as of December 2021.

Data Collection and Analysis

The study used a structured online questionnaire with a five-point Likert scale with items ranging from

1= "Strongly Disagree" to 5= "Strongly Agree". Data was collected from IS executives and the members of the university TMT i.e. (Vice Chancellors, Deputy Vice Chancellors, Principals) or any other TMT members who report directly to the Vice Chancellor. The team was considered to be the key informants with information on study objectives.

Data Analysis

The Partial Least Squares Structural Equation Modeling (PLS-SEM) technique was adopted to assess the research model. The technique is deemed to be more flexible in handling data requirements, and its ability to specify relationships, as well as handling complex models (Sarstedt, 2019). Researchers acknowledge that the technique is being applied more frequently as many have become aware of the method (Hair et al., 2019a; Hair et al., 2022a; Ringle et al., 2015; Sarstedt et al., 2020). Measurement models need to be assessed for reliability and validity including convergent and discriminant validity as proposed by Hair et al. (2017). To assess the structural model the main criteria used involved the size, sign, and significance of the path coefficient, the R^2 values, and the effect size f^2 (Hair et al., 2017, Ali et al., 2018). The bootstrapping technique with 10,000 subsamples with replacement was used to assess the significance of the path coefficients as recommended by Hair et al., (2017). SmartPLS software version 4.0.8.9 was used to analyze quantitative data. Data characteristics and statistical relationships between the measurement items of each construct and among the constructs were assessed as recommended by (Ringle et al. 2015).

Sample Characteristics

The study achieved a response rate of 55.27%. About 78.6% of universities had less than 1000 employees, 52.4% had less than 10000 student enrolment and only 4.8% of the universities had over 40000 student enrolment. 76.2% of the universities had an IS strategic plan and 71.4% had ICT steering committee to manage IS initiatives. 35.7% and 64.3% of the respondents indicated they play the role of IS executive and TMT respectively. In terms of gender, 79.7% were male while 20.3% were female, 79.7% of the universities IS strategic team was in the 30-49 age bracket, while only 3.8% were above 61 age years bracket, with a majority of them (84.8%) having masters and above degrees in their education. 26.6% have worked for over 14 years, 87.3% of the IS strategic team in universities have computer-related specializations, 44.3% have IT Director as their job title and only 2.5% have CIO or IT head job titles. Most respondents were formal members of their university IS strategic team while only 40.5% were informal members.

IV. Findings

Measurement Model Assessment

To evaluate the relationships between the constructs and their respective measurement items Cronbach's alpha and composite reliability (CR) values, convergent and Average Variance Extracted (AVE) were used and further checked for reliability and validity of the model constructs. Indicator items that loaded lowly (less than 0.30) were deleted as recommended by Hair et al., 2017. Nine indicators had factor loadings lower than the recommended threshold of 0.70 but were retained to address content validity. Researchers have suggested different threshold levels of the factor loadings, where some recommend values of 0.3 or higher as acceptable while others point out that values greater than 0.4 are acceptable. According to Hair et al., (2017), CR gives a more reliable measure for internal consistency reliability compared to the common traditional Cronbach's alpha coefficients score. Alpha values for the constructs ranged from 0.726 to 0.933, with AVE values for IS executive IS capabilities being less than 0.50, however, Fornell and Larcker (1981) assert that if AVE is less than 0.50 but its CR is higher than 0.60, then convergent validity of the construct is deemed established. Composite reliability ranged from 0.826 to 0.957 way above the acceptable recommended threshold of 0.70. Table 1 shows the constructs achieved a high degree of internal consistency.

Table 1: Results of the Reflective Measurement Model

Constructs and Items	Loadings	Alpha	CR	AVE
IS EXECUTIVE IS CAPABILITIES		**0.850**	**0.836**	**0.355**
Business skills	0.797			
Interpersonal skills	0.836			
Political Skills	0.765			
Technology Skills	0.815			
TMT-IS-CAPABILITIES		**0.820**	**0.879**	**0.646**
CEO-ISE-Interactions	0.701			
Trust	0.771			
TMT-IS-Capabilities	0.643			

TMT-ISE-Interactions	0.825			
IS CULTURE		**0.933**	**0.957**	**0.882**
Use of Collectivism Culture	0.694			
User focus approach culture	0.638			
IS projects carried out in Teamwork	0.899			
TMT Provides support for IS initiatives	0.725			
TMT provides resources & Budget	0.580			
Mechanisms put in place to support staff to improve skills	0.438			
TMT recommends training	0.424			
TMT are trained on various IS systems	0.540			
Rewards and Recognition mechanisms in place	0.379			
Staff feel satisfied with the rewards given	0.426			
IS FUNCTION PERFORMANCE		**0.726**	**0.826**	**0.545**
Effectiveness of Information	0.937			
Service Performance	0.942			
System Performance	0.939			

Convergent Validity

Convergent validity was assessed by the use of AVE indicator loadings and the significance of the factor loadings. The results of the analysis showed that indicator loadings ranged from 0.379 to 0.942 indicating acceptable levels against the minimum acceptable threshold value of 0.50. This shows that 50% of the construct's variance is a result of its measurement items. Table 1 above shows the indicator's loadings values, composite reliability, Cronbach's alpha score, and the AVE values. The significance of the indicator loadings was established through the bootstrapping resampling procedure with 10,000 subsamples to obtain t-statistic values and p-values. All the indicator loadings were significant at the 5% level.

Discriminant Validity

The Fornell-Larcker criterion was used to assess discriminant validity. The test checked if the AVE value of each construct was higher than the squared correlation coefficients between constructs. From Table 2 below, the diagonal values present AVE square root values, and the other values represent correlations between constructs.

Table 2: Discriminant Validity of Measurement Model

Constructs	IS Culture	ISE IS Capabilities	IS Function Performance	TMT-IS Capabilities
IS Culture	0.596			
ISE IS Capabilities	0.177	0.804		
IS Function Performance	0.271	0.580	0.939	
TMT-IS Capabilities	0.190	0.469	0.576	0.738

The second criterion that was used checked for Heterotrait-Monotrait (HTMT) values that allow calculation of the discriminant validity between indicators of the same construct and between indicators of different constructs. The results are shown in Table 3. To conform to discriminant validity, researchers have recommended that HTMT ratio values should be lower than 0.85 (Henseler et al., 2015), while others suggest values be lower than 0.90. The results of HTMT analysis showed that HTMT values obtained were lower than 0.85 confirming reliability and validity. Table 3 shows the results.

Table 3: Discriminant Validity (Heterotrait-Monotrait- HTMT) Ratios

Constructs	IS Culture	ISE IS Capabilities	IS Function Performance	TMT-IS Capabilities
IS Culture				
ISE IS Capabilities	0.175			
IS Function Performance	0.164	0.637		
TMT-IS Capabilities	0.197	0.597	0.657	

Cross Loadings

Further, cross-loadings were assessed for each measurement item. Hair, et al., (2017) recommend that each loadings value should load higher with its associated construct. The results confirmed that the cross-loading of each measurement item loaded higher on its construct than on other constructs. The results confirmed that discriminant validity was established. Therefore the results established that the study constructs showed significant evidence of reliability, convergent, and discriminant validity. The sections that follow examine the structural model.

Structural Model

Structural model assessment in PLS-SEM involves evaluating the significance and relevance of path coefficients, followed by the model's explanatory and predictive power Hair et al. (2017). After assessing the measurement model for reliability and validity, the predicted structural model was assessed. Issues of collinearity were checked in the structural model between the exogenous constructs (Hair, et al., 2017). This was done using the Variance Inflation Factor (VIF) which measures the strength of the correlation between the independent variables in the regression model. All the VIF values obtained were less than 5 for each of the exogenous constructs confirming the validity of the model. To evaluate the relevance and significance of the path coefficients bootstrapping technique with 10,000 subsamples with replacements from the original dataset were used. Figure 1 shows the results of the analysis.

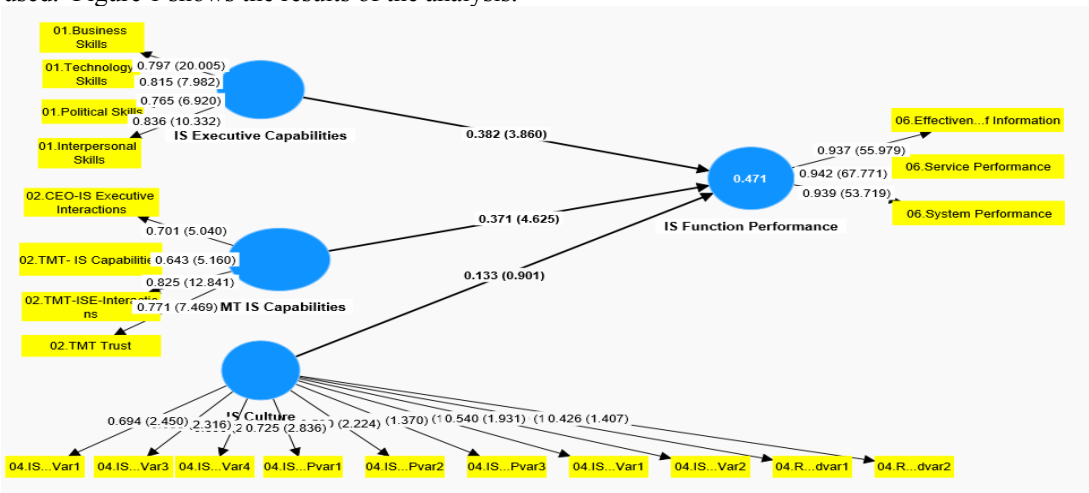

Figure 2. Indicators' loadings, Path coefficients, T-values, and R^2 value

Table 4 shows the results of the path coefficients, t-values, and significance of each path of the model. Direct effects, the percentile bootstrap, and the bias-corrected (BC) bootstrap confidence intervals (CI) were then examined. The results reveal a strong and positive effect of ISEISCAP on ISFP (β = 0.382, t=3.860 and p=0.000), confirming a strong and positive effect on ISFP. The results also indicate that TMTISCAP has a positive and significant effect on ISFP (β = 0.371, t=4.625 and p=0.000). However, the results showed ISCUL to have no significant effect on ISFP (β = 0.133, t=0.901 and p=0.184). Hence we failed to reject the Null hypothesis (H01). This could be attributed to the kind of culture that exists in the universities. Negative cultures could lead to improper use and utilization of IS leading to poor IS performance. The direct effects are

statistically significant at the 5% level and the value zero was not included in the 95% confidence interval. These findings are consistent with some previous studies that have questioned if culture contributes to performance. However, previous findings obtained (Joseph & Kibera, 2019) have reported positive results between culture and performance. Table 4 presents the results of the findings.

Hypothesis/Path	Path Coefficient	t-statistics	P-Value	5% Percentile	95% BC Percentile	Remarks
ISEISCAP→ISFP	β = 0.382	t=3.860	P=0.000	0.204-0.525	0.220-0.536	Rejected
TMTISCAP→ ISFP	β = 0.371	t=4.625	p=0.000	0.240-0.501	0.228-0.492	Rejected
H01:ISCUL→ISFP	β = 0.133	t=0.901	p=0.184	-0.212-0.311	-0.340-0.237	Failed to Reject

The predictive accuracy of the model was evaluated by use of coefficient of determination (R^2) based on its capacity to predict endogenous (independent) constructs. Varying acceptable ranges for R^2 have been given by Researchers e.g. Falk &Miller, 1992 acclaimed the value to be equal to 0.19 or greater, while Hair et al. (2017), put acceptable ranges for R^2 to be higher than 0.25. The proposed model in the study has an R^2 value of 0.474 indicating a moderate ability to predict IS function performance. Therefore the researched constructs are within the acceptable ranges, hence the model holds an acceptable predictive power quality.

Subsequently, the predictive quality of the structural model and the size of the effects (f^2) were analyzed. The size of the effect (f^2) evaluates the usefulness of each construct to the model adjustment. The f^2 is calculated by observing the change in R^2 when a specific construct is removed from the model. The f^2 effect size values of 0.02, 0.15, and 0.35 are considered small, medium, and large and effect size values of less than 0.02 indicate that there is no effect (Hair et al., 2017). IS executive capabilities show a large effect size ($f^2 = 0.213$) on IS function performance, TMT-IS Capabilities show a large effect size (f2= 0.200) on IS function performance while IS Culture shows a medium effect size ($f^2 = 0.032$) on IS function performance. From the results of the analysis, there is a small effect size (0.032) between IS Culture and IS function performance.

V. Discussion of Findings

The findings of the study revealed that strategic IS leadership (ISE and TMT) has a positive and significant effect on IS function performance. However, the study found no significant relationship between IS culture and IS function performance. The findings contradict other research findings that have reported positive results. Several researchers have posted findings that demonstrate correlations between culture and performance outcomes are split as either significant or non-significant e.g. Scott et al 2003; Taras et al 2010; Brand et al 2012; Hartnell et al 2011; Hunt et al 2012; Hartnell et al 2019). Therefore the findings of this study are consistent with earlier research findings that have reported negative findings.

Cultural values are said to determine the motivating behaviours necessary to satisfy an individual's needs and influence in several ways; the development, use, and actions of the user towards IS (Walsham 2002). In this view, negative culture may negatively affect the performance of IS in universities. Researchers have also reported that good systems can be resisted if they are seen to interfere with existing culture or introduce change. From qualitative analysis, the research found that resistance is common in universities where new IS are usually resisted and management has to coerce staff to use information systems, especially in public universities. Systems ownership is key to ensuring IS success. Minimal user involvement when acquiring or developing new IS systems, lack of information-sharing mechanisms, and limited or non-existent rewards and recognition culture were also reported. These findings reveal a non-supportive culture that negatively affects the development, use, and acceptance of IS in universities which could lead to poor IS function performance. Thatcher et al., (2003) found that students and staff from institutions with uncertain cultures tend to be reluctant to try new information technologies (El-Masri, 2015) a phenomenon confirmed in this study. Strategic leadership in Kenyan, universities must therefore embrace supportive IS cultures that reduce risk aversion actions and promote cultures that facilitate collectiveness, information sharing, and creativity, instilling a sense of system ownership by users as some of the good catalysts to enhance IS function performance.

VI. Conclusion And Contributions Of The Study

In this study, cultural aspects appropriate to the performance of IS and their impact on the IS function performance in universities were investigated based on the model proposed by Li and Lin (2006). One of the important traits of effective strategic IS leadership is the ability to sway the shared cognitions and behavioral norms of the members and therefore university leaders must put efforts into developing and promote IS cultures that support user IS initiatives.

Several conclusions are made based on the findings. IS capabilities possessed by leaders are key determinants to IS function performance and universities must therefore strive to train their leaders to continually enhance their IS capabilities. Second, non-supportive IS culture negatively affects IS function

performance, supporting the functionalist approach that culture has a strong influence on strategic outcomes (Cooper, & Santora, 2008). Additionally, according to Hofstede (1983), culture has important implications on an individual's behavior and organizational performance especially when it is focused on dimensions like; power distance, individualism-collectivism, uncertainty avoidance, masculinity-femininity, as well as long and short-term directions. Therefore, from the findings universities' upper echelons must entrench practices that develop supportive and participative IS culture such as user involvement, teamwork, training, communication, rewards, and recognition schemes among other IS cultural management practices that embrace collectivism and certainty to change and reduce user resistance.

The results obtained could be useful for the university management, IS managers, and practitioners to guide in IS policy development, user involvement, interactions, and rewards and recognition mechanisms. The findings will also help managers to better understand what factors contribute to positive IS culture in organizations and what cultures to avoid. Finally, this work contributes to the literature on the measurement of the IS function in the context of institutions of higher learning, and in particular, in identifying specific attributes that can be used to measure IS effectiveness and performance in universities.

This study had limitations. First, the validity of a model cannot be truly established based on a single study, longitudinal study could be more appropriate. Secondly, the contextual setting, of the study may not be used to generalize the results. Therefore, there is a need for more research to address gaps identified in the study.