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INFORMATION SYSTEMS INTEGRATION AND THE ORGANIZATIONAL PERFORMANCE OF BANKS IN KENYA

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ABSTRACT

Great effort has been made by researchers attempting to examine and explain how IS deployment in organizations relate to firm performance. The findings have been inconsistent, with some studies recording significant positive relationships, others null and still others reporting negative effects. Scholars face difficulties in articulating universally accepted understanding of information systems in organizations. Contributing to the search for clarity on the link between IS integration and organizational performance, this study conceptualized a relationship between IS integration and the overall outcome of the organization. The overriding objective aimed at verifying whether there exists a significant direct relationship between IS integration and performance. The current study employed a mix method design of descriptive, exploratory and cross section to investigate the relationships of the constructs in the study. The current research employed the more robust structural equation modeling specifically PLS-SEM to analyze the relationships between the conceptualized constructs. From the analysis and in conformity with earlier studies, the direct linkage between IS integration and firm performance was found to be statistically insignificant. The insignificant linkage between IS and performance is a proof that IS impacts firm performance indirectly. Therefore, ROI of automation should be focused on IS enabled proxies that have a direct link with firm performance like organizational ambidexterity and not directly on information systems investments.

1. INTRODUCTION

1.1. Background

The last 15 years has witnessed information and communication technology (ICT) revolution that has driven global development in an extraordinary way. Technological progress, infrastructure deployment, and falling prices of ICT artifacts as predicted in Moss' laws a century ago have brought unprecedented growth in ICT access and connectivity to billions of people around the world. For instance, between 2000 and 2015, the number of mobile cellular subscriptions worldwide increased seven-fold worldwide from less than 1 billion to more than 7 billion (The International Telecommunication Union, [ITU], 2015). Globally 3.2 billion people are using the Internet with the developing countries contributing 2 billion to this number (ITU, 2015). This unprecedented growth of ICTs has affected the general populace lifestyles. For business organizations, it is a race of constantly trying to keep pace by adopted these technologies to increase effectiveness and efficiencies of operations.

Information systems (IS) have become inseparably intertwined with business activities and operations. Organizations are essentially reliant on their information and communication technologies (ICTs) to run most of the processes and operations. The subject of the value of IS-driven business success has a long history within the information systems literature and as Schwarz, Kalika, Keffi and Schwarz (2010) correctly point out. Throughout the history of the IS discipline, various researchers have struggled to understand how information systems contributes to the strategic and operational success of organizations using assorted lenses and competing theoretical models. This perspective is also corroborated by Bostrom, Gupta and Thomas (2009). Earlier empirical studies such as Bharadwaj (2000); Dehning and Stratopoulos (2003) and Radhika and Hartono (2003) have shown that investment in information systems does translate into improved firm performance. However, other studies such as Chae, Koh, and Prybutok (2014); Sandberg, Mathiassen and Napier (2014) confirm that the mechanics of how IS contributes to firm performance is still a source of debate. Corporations allocate and commit huge resources to acquire information systems related products with a presumption that these investments will provide economic returns in form of improved organization performance. Research studies to prove this premise have however generated mixed results, leading to a perceived productivity paradox of IS in organizations (Santhanam & Hartono, 2003).

There has been a great advance in technology and aggressive infusion of information technology in all aspects of life universally. In Kenya, the national access and use rate is over 80%, ICTs have been acknowledged as an enabler of the vision 2030, the Kenya's economic blueprint (Communication Authority of Kenya, [CAK], 2016; CAK & Kenya National Bureau Statistics [KNBS], 2011). This progress is a result of ICT infrastructural developments with multiple undersea fiber cables linking Kenya with the rest of the World, increased fiber interconnections of different parts of the country. The decreasing cost of connectivity and ICT artifacts and a vibrant ICT savvy populace has accelerated the diffusion of ICTs especially mobile-based in Kenya.

Increased use of technology by the consumers has caused business organizations to aggressively leverage on this penetration to reach new markets that traditionally would be costly to reach. The banking sector is among the leaders in leveraging on the robust ICT opportunities in Kenya (Central Bank of Kenya [CBK], 2014). This has brought a paradigm shift in banking operations as confirmed by Aduda and Kingoo (2012). Sharma (2011) asserts that, for banks, technology has emerged as a strategic resource for achieving higher efficiency, control of operations, productivity and profitability. For customers, it is the realization of anywhere, anytime, an-

yway banking dream. Leveraging on robust IT platforms has enabled quality banking services that are efficient and on a wider scope in Kenya as confirmed by the CBK supervisory reports (CBK, 2015; 2014). Banking institutions in Kenya continued to embrace technology to enhance efficiency internally and provide convenience to customers (CBK, 2014; Kamau, 2009; Nyangosi & Arora, 2009).

1.1.1 Information Technology and the Banking Industry

Information and communication technology revolution is affecting competition in three vital ways as Porter and Millar (1985) posit; 1) ICT is changing industry structure thus altering the basis of competition; 2) ICT creates competitive advantage by according business organizations innovative ways of outperforming competion, and 3) ICT also broods new businesses opportunities and markets . This often sprung from within a company's existing operations like the mobile financial services (MPESA) and data services through internet service provision portfolio of Safaricom which was initially a GSM company for mobile telephony only and the Equitel services that combines mobile financial services and GSM provisioning through virtual mobile network operator services by the Equity Bank of Kenya (Equitel, 2016; Safaricom, 2015). Information and communication technology is affecting the competition landscape of many sectors and reshaping the way products and services address consumer requirements. These effects among others are the reasons why information systems have attained strategic significance and are different from many other technologies used by business organizations in the past (Porter & Millar, 1985).

As Aduda and Kingoo (2012) appropriately assert,the banking industry has been in a process of significant transformation, the potency behind this transformation globally is innovation in information technologies. The developments and evolution of technologies are leading to increasing competition in different financial institutions around the world (Sharma, 2011). In prior years, banks faced significant uncertainty regarding investments in advanced technologies, but currently, they are investing heavily in technology to maintain a competitive edge as Sharma (2011) indicates in an evaluation study of IS application in the banking sector in India. Sharma's study found out that ICT offers enormous potential and emancipated various opportunities to the banking industry. This is confirmed locally by the various annual CBK banking industry supervisory and monitoring reports (CBK, 2015; 2013, 2014).

Information and communication technologies are enabling the building of new markets as well as expanding the existing market scope and reach. Information systems, facilitate access to information and also reduction in operational costs as CBK supervisory reports reveal consistent improvement in bank employee productivity over the years as a result of automation (CBK, 2014). The benefits of ICT integration in the banks are felt in the long run, large investment and associated skills development often results in a short-term reduction in profitability. Appropriate application of IS in the banking sector can standardize customer experiences globally especially in online banking as the Jordan and UK comparative study by Yazan (2008) revealed.

Integration of IS in the banking sector has brought a number of benefits to both banks and customers. However, the application of information systems has exacerbated the traditional banking risks and introduced many new threats that the regulating authorities need to address (Sharma, 2011). Despite these risks associated with IS adoption in the banking sector, appropriate IS deployment coupled with requisite IT capability will ensure the overall benefits far outweigh the associated risks.

1.2 Research Objective

The objective of this study was to examine the correlation of information systems integration and the overall organizational outcome of banking instsitutions in Kenya.

1.3 Methodology

1.3.1 Research Design

The study used mixed methods of descriptive, exploratory and cross-sectional designs. The Study envisioned to establish the effect of IS integration and the firm performance of the banking sector in Kenya. These three research designs enabled the achievement of the study objective. Cooper and Schindler (2008) contended that a cross-survey design collects data from a select sample of a population to explain a prevailing phenomenon by enquiring form individuals about their views, behaviors attitudes, or ideals. This, therefore, made descriptive, explorative and cross-sectional survey designs suitable for the current study because the proposition was to collect data and views to determine the performance effects of IS integration of banking institutions in Kenya.

1.3.2 Study Population

The target population was the 56 banking institutions in Kenya comprised of the CBK, 42 commercial banks (3 public, 27 private, 1 private mortgage finance company and 13 foreign-owned banks), 12 microfinance banks and PostBank. The 12 microfinance banks are privately owned and the Post Bank is owned by the Government. The 8 Eight representatives' offices of foreign banks in Kenya are not permitted to operate in Kenya and therefore were omitted from the study population. This study employed a census approach, according to sampling tables by Bartlett, Kotrlik and Higgins (2001) calculated based on Krejcie& Morgan's 1970 table and Cochran's 1977 sample size formula, the minimum suitable population for sampling is 100 elements and therefore study used the census.

1.3.3 Data Collection

Both primary and secondary sources were used to get data for the study. Primary data was the responses on all the study variables based on the questionnaire. A structured questions questionnaire was the principal tool for collecting primary data. A 5 point Likert-scale extending from 5-representing to 'a greater extent' and 1-denoting to 'not at all' was used. As Mahmood and Mann (2005) correctly argue, the benefits accruing from any automation initiative in organizations usually takes time to realize and therefore a four-year period secondary data on financial performance taken from 2012 to 2015 was considered. The secondary data was sourced from banks' annual reports and CBK's annual supervisory reports. The secondary data on banks' performance was based on CBK performance measures and other non-financial measures based on the balanced scorecard (BSC) as utilized in evaluating performance in Libyan banks (El-shukri, 2007).

The respondents were the heads of information technology units. Being in senior management positions in the institutions they are presumed to be knowledgeable enough to respond to the questionnaire competently. However, in some instances where the head of IT was not available the questionnaire was filled by senior staff in IT or in business management.

1.3.4 Data Analysis

The analysis including estimation of measurement and structural models, mediation, hypotheses testing and the overall model test and model predictive relevance was carried out using structural equation modeling (SEM). Partial least squares SEM (PLS-SEM) as implemented in SmartPLS version 3.2.1 software tool was employed to analyses the primary data. SEM technique simultaneously tests and estimates causal relationships among multiple latent variables (Gefen, Straub & Boudreau, 2000; Hair, Ringle & Sarstedt, 2013; Hair, Sarstedt, Hopkins & Kuppelwieser, 2014). In congruence with the current study's philosophical paradigm, research that applies SEM usually follows a positivist epistemological belief (Urbach & Ahlemann, 2010).

2. LITERATURE REVIEW

2.1. Information Systems Integration

The extent to which organizational information and application systems are shared, accessed and utilized by all organizational actors to facilitate effective and efficient facilitation of achievement of the organizational goals and objectives defines the firm's IS integration (Bhatt, 2000). Conceptually information systems integration can be regarded as an information architecture, the telecommunication interconnections, and support organization that facilitate the generation, flow and use of organizational information internally and externally in the process of fulfilling organizational mission. The main purpose of information systems integration in business operations is the provision of timely and reliable information support organizational-wide to facilitate response to the ever-changing operating environment.

Information system constitutes all information both internal and external to the organization that affects the organization in some way. There are three elementary organizational activities associated with IS, data entry, data conversion to information, and the outputting of the processed information needed by the organization to function in the attainment of the mission. Organization's stakeholders including the customers, suppliers, distributors, shareholders, and regulatory authorities are in constant interaction with the business organization and its information systems continuously through the life of the organization. According to Hasselbring (2000) each organizational unit can be structured vertically in three distinct architectural layers; 1) The business architecture layer defining the organogram and the organizational business workflows as articulated on the established rules and processes; 2) The articulation of business concepts in form of enterprise applications is defined in the application architecture and finally, 3) The definition of the information and communication infrastructure is at the technology architecture layer.

The vertical inter-linkages of the layers within the unit and the horizontal linkages and interrelatedness of the various organizational

units are enabled by information systems as the glue. This IS enabled seamless interconnections and flow of information constitute IS integration within an organization. The coordination enabled by information systems integration in business operations facilitates more views to be shared across the organization, enabling the employees' awareness about the organizational operations to be broadened (Bhatt, 2000).

2.2. Organizational Performance

Consistent with Richard et al., (2009) assertion, the overall organizational performance incorporates three explicit aspects of the overall organizational outcomes; financial performance, product market performance and shareholders' returns. This therefore implies that a firm performance can be measured in various ways such as sales growth, market share, productivity and profitability among other qualitative measures like organizational reputation. How a firm measures on a number of these indicators in comparison with other players in the industry over a specified period of time is an indicator of its overall performance for that period. As stated by Hoque and James (2000), in the recent years concerns has been raised with traditional performance measures that focused solely on financial metrics. Hoque and James pointed to Kaplan and Norton 1992 balanced scorecard together with intellectual property concepts as emerging ways of integrating financial and non-financial performance measures. These measures are more inclusive and broad in nature to capture a number of critical non-financial firm performance dimensions.

According to Porter and Millar (1985), organizational competitiveness is enshrined on an organization either by being a cost leader or product differentiator. Based on Porter and Miller classical view, the two are the main approaches to attainment of firm's competitiveness and therefore improved performance. However, rooted in extant strategic management literature, is the resource-based theory (RBT) that attempt to explain firm competitive based on resource endownment. RBT posits that business organizations competition is based on unique, valuable and rare resource endowment. Resources that are hard to emulate, and non substitutable (Barney, 2001). Dynamic capabilities theory extends resource-based view by advancing the notion that competitiveness of the firm is not solely based on the stock of these resources, but on their strategic and dynamic application to match the mutating operating environment. Information technologies with its pervasiveness as one of these organizational resources is ubiquitously present in every aspect of the organization and is expected to influence the dynamic reconfigurations of the other firm resources. Various studies such as Mithas, Tafti, Indranil and Goh (2012); Piccoli and Ives (2005) among others have shown that IS if appropriately deployed and utilized can lead to long-term firm performance. Recent report by Harvard Business Review survey report (HBR, 2014), corroborates this findings by alluding the agility accorded to the business organization through IS adoption.

2.3. Information Systems Integration and Firm Performance

Information systems scholars have made substantial progress in relating information systems and IT-enabled capabilities to organizational outcome. This is revealed by an evaluation by Kohli and Grover (2008) and a recent one by Sandberg et al. (2014). However, as Chae et al. (2014) and Mithas et al. , Tafti, Bardhan and Goh (2012) indicate, some critical gaps still remain. According to Mithas et al. (2012) prior empirical studies reveal either a positive, negative or zero effect of general IS investments on firm profitability. The negative and null findings however, contradict submission from other studies that show organizations actually benefit from information systems and IS-enabled capabilities. These contradictory findings of different studies of the same phenomenon prompted

Dedrick, Gurbaxani and Kraemer (2003) to term the association between IS and firm performance the profitability paradox of IT. Schwarz et al. (2010) correctly claim that the issue of deriving value from IS investment has been the focus of an abundant body of research including articles, editorials, conferences, seminars, and books. With increased automation in organizational operations, the interest on this issue is on the increase (Bostrom et al., 2009). This continued interest coupled with the incoherent results have led to an important debate on the purported IT productivity paradox. Among this body of research is a host of research perspectives that have been employed utilizing a variety of diverse theoretical basis, methodologies, varying scope of analysis (economy level, industry level, firm level), different variable conceptualizations, spanning different durations, and examined varying contexts (Bostrom et al., 2009; Melville & Kraemer, 2004). While many of the prior studies have contributed to confirming the IT paradox specifically at the macroeconomic level and the industry level a majority of recent studies have fixated on the organizational level (Mahmood & Mann, 2000).

Empirical evidence by Mithas et al. (2012) resulting from using archival data from 1998 to 2003 for more than 400 global organizations revealed that IS has an enabling impact on organizational profitability. However, Chae et al. (2014) reexamining the association between information systems capability and firm performance with data from the 2000s surprisingly showed no significant relationship between IS capability and firm performance. Ghobakhloo, Tang and Sabouri (2014) in an empirical study of IS-enabled supply chain process integration revealed that integration processes provide an important linkage between IS and business performance. Schwarz et al. (2010) based on their study contend that investment is enacted within the information systems resources and associated with the targeted business processes and reflected in the IS-business alignment. Schwarz et al. (2010) concluded that the resolution of the IT productivity contradiction lies not in high-level understanding of the relationship between IS investment and outcome but on how the IS investment is enacted and reflected in organizations.

Peppard and Ward (2004) theoretical analysis based on resource based theory concluded that it entails understanding how IS influences the business, identifying new strategic prospects, evaluating technological novelties, developing new technology-enabled business models, ranking investment opportunities based on envisioned business impact, managing information systems enabled change, deploying the appropriate technology, proper management of IS projects and stakeholders, effective and efficient technology investments, guaranteeing proper IS resource usage, personnel embracing the appropriate behaviors and values in using the information, and that the value from the IS adoption is captured and documented by the firm and ensuring IS investment does not become a source of competitive hindrance. Unfortunately, a number IS researcher do not take this broad spectrum that addresses both the social and the technical subsystems of the organization (Bostrom et al., 2009).

In a similar theoretical investigation of information systems and competitive advantage, empirically reinforced by Dehning and Stratopoulos (2003), Mata et al. (1995) determined that only IS management skills are probable to be the basis of competitive advantage. Dehning and Stratopoulos (2003) described these skills as the aptitude of IS managers to comprehend and acknowledge business requirements; the ability of the IS managers to work with functional and business process owners' managers; skill to coordinate IS activities in ways that facilitates other functional heads; and the aptitude to proactively prospect future organizational requirements. The two IS researchers suggested that in the pursuit for IS-sourced competitive advantage, firms must concentrate less on technology artifacts and more on the ways of establishing and managing IS and technology in the firm. This proposition is also supported by Sandberg et al. (2014). Therefore, what differentiates organizations with effective performing information systems is

not technical variance or wizardry, rather, it is the way IS activities are managed in relation to other organizational processes.

The recent developments in information technology industry have been greeted with great interest by scholars and practitioners in the banking community globally (Aduda & Kingoo, 2012; Sharma, 2011). This is as a result of the discovery of internal and external benefits that ICTs accords banks' innovativeness. A study by Magutu et al. (2011) on economic benefits and innovativeness in commercial banks in Kenya found out that ICTs offer enormous potential and limitless opportunities to the banking sector. Lang and Colgate (2003) also concur to this assertion when viewing the new ways of customer relationship compared to the traditional face-to-face interactions. Information systems provide cost-effective, rapid and systematic provisioning of services to the customers, extends market outreach and creates new markets with minimal costs (CBK, 2015; Sharma, 2011).

The above discussion of the various empirical studies and theoretical analyses indicates the need to explore more on the association between IS and organizational performance. This is in pursuit for clarity of the relationship between IS and organizational performance as identified by Mithas et al. (2012). Based on Bostrom, Gupta, Thomas et al. (2009) conclusion, information systems scholars have difficultiesin producing comprehensible generalizable results of IS and organizational outcome. To determine the nature of the outcome of IS effect on the organization, it is important to establish if there is any linkage between IS and organizational outcome. To contribute to the extant knowledge, the current study proposition is that; There is a direct positive correlation between IS integration and organizational performance.

3. FINDINGS

3.1. Measurement Model Evaluation

3.1.1. Measurement Model's Internal Consistency Reliability

In SEM analysis, acceptable internal consistency reliability for a measurement model is achieved once the composite reliability (CR) of every construct surpasses the cutoff value of 0.7 (Garson, 2016). The CR for the two constructs on the current study recorded values of between 0.872 and 0.903. These values are beyond the recommended cutoff value of 0.7. Therefore, based on these values, the indicators (observed variables) used to reflect the constructs in this study have very high internal consistency reliability. Table 3.1 shows the CR values for the two constructs.

Construct	Composite Reliability(CR)	Indicators	Loading	t Statistics	AVE
t e g r	.872	Value chain primary activities (VC_Pri)	.926	37.510	.696

		Value chain support activities(VC_Sup)	.781	7.685	
		Industry value chain (VS_Ind)	.786	9.910	
Organization Performance	.903	Financial Performance PF_Fin	.845	13.608	.699
		Performance related to Customers aspects PF_Cus	.892	23.03	
		Internal Process Performance PF_Pro	.815	10.395	
		Learning &Grwoth PF_Leg	.788	9.108	

Table 3.1 Composite Reliability and Indicator Loadings

3.1.2. Measurement Model's Indicator Reliability

The measurement model's indicator reliability is judged through the valuation of the items loadings. For reflective CFA model, construct loading estimates the direct effects of constructs on indicators and are interpreted as regression coefficients. Measurement model's tolerable indicator reliability is attained if all the items loading record a value of 0.7 or higher and statistically significant at p-value of less than 0.05. The study's item loading recorded values of between 0.781 and 0.926 at significant level of p=0.001. The study's items (indicators) loaded satisfactorily above the requisite level and therefore demonstrated satisfactory indicator reliability. The recording for construct and the associated indicator item's loadings statistics are shown on Table 3.1 above.

3.1.3. Measurement Model's Convergent Validity

The measurement model's average variance extracted (AVE) value isemployed to gauge the model's convergent validity. AVE is the average amount of explained variation on the manifest variable (indicator) by the latent variable (construct) relative to the cumulative variance of the indicator. The difference is usually absorbed by the error term associated with each indicator. Tolerable convergent validity is attained when all latent variables have an AVE value of 0.5 and above. All the study's latent variables registered AVE values of between 0.696 and 0.699. These values are beyond the recommended threshold of 0.5 The study's measurement model established the requisite convergent validity. Table 3.1 above shows the respective latent variables' respective average variance extracted values.

3.1.4. Measurement Model's Discriminant Validity

The objective of discriminant validity assessment is to guarantee that a reflective construct has the strongest relationships with its own indicators contrasting from the rest of the indicators reflecting the other constructs in the SEM model (Hair et al., 2014). Discriminant validity is now among the common evaluation requirements for assessing constructs' manifest variables uniqueness in variance-based SEM modeling like PLS. Fornell and Larcker (1981) criterion measure and the inspection of cross-loadings are the most commonly used techniques for determining discriminant validity. Nevertheless, Henseler, Ringle and Sarstedt (2015) through simulation study demonstrated these techniques are unreliable in detecting the discriminant validity deficiency on Manifest variable

of in ordinary research circumstances. Therefore Henseler, Ringle and Sarstedt (2015) suggest an alternate method founded on the multitrait-multimethod matrix. They recommend heterotrait-monotrait ratio of correlations (HTMT) as a more accurate measure of discriminant validity. For discriminant validity to be established between two reflectively modeled constructs, the HTMT value must be lower than 0.90. The two constructs of the study had HTMT value of 0.632 and therefore proving the discriminant validity according to Henseler, Ringle, and Sarstedt (2015).

The third approach of discriminant validity is to scrutinize the manifest variables' (indicators') loadings on their associated latent variables (constructs) correlations. The result of the manifest variables loadings on the respective latent variables is shown on Table 3.2 below. All manifest variables recorded high loading on the associated latent variable in comparison to the other latent variables on the SEM model. The loadings clearly separate each construct as theorized in the SEM model. Therefore, the cross-loading outcome upholds the HTMT discriminant validity tests. Consequently, it was confidently concluded that the study's measurement model attained discriminant validity satisfactorily.

Constructs **Indicators**	**Information Systems Integration**	**Organizational Performance**
PF_Cus	0.417	**0.892**
PF_Fin	0.405	**0.845**
PF_Leg	0.475	**0.788**
PF_Pro	0.472	**0.815**
VC_Pri	**0.926**	0.522
VC_Su	**0.781**	0.472
VS_Ind	**0.786**	0.277

Table 3.2 Indicators Cross Loading on Constructs

The study's measurement model recorded strong and satisfactory results on all reliability and validity diagnostic examinations. This therefore was an affirmation that the measurement model was valid and fit to be applied for the estimation of the structural model parameters.

3.2. Structural Model Evaluation

SEM's inner model representing the hypothetical constructs association is referred as the structural model. It is the schematic depiction of the underlying conceptualization of constructs' relationships schematically represented by the path model. Structural model estimation results permits the researcher to establish the degree to which the empirical data vindicates the extant theoretical exposition as presented by the researcher's literature exposition. Consequently, on the basis on the structural model evaluation results, it is possible to interrogate and authenticate or invalidate the empirically the researcher's conceptualization.

PLS-SEM models' main objective is prediction and theory development rather than theory validation, therefore, Stone-Gleisser Q2

value as a measure of the model's predictive relevancy is also analyzed. The validity of structural model analysis depends on the quality of the associated measurement model.

3.2.1. Goodness of Fit for the Structural Model

Structural equation modeling analysis is executed in two phases. The first carried out in section 3.1 above is the evaluation and scrutiny of the measurement (outer) model. The quality of the measurement model impacts greatly on the outcome of the structural (inner) model and subsequently on the overall rigor of the study. After successful qualification of the measurement model, the next stage in SEM analysis is the evaluation and estimation of the structural model. Hadi, Abdullah, and Ilham, (2016) in corroboration with other scholars submit that for evaluation of the measurement and structural models, researchers must look at reliability, construct validity (convergent and discriminant), collinearity, the associations coefficients, R^2 value Q^2 value as measure of predictive capability of the model.The structural model's fit criteria considered for this study are multicollinearity based on variance inflation factor (VIF) and predictive relevance (predictive accuracy) based on Stone-Gleisser Q^2 value. The examination of the relations amongst the constructs as theoretically hypothesized on the conceptual model was achieved through the evaluation of the structural model's significance of the relationship coefficients and the coefficient of determination R^2.

Equivalent to linear regression, if multicollinearity is present, the structural path coefficients cannot be used to consistently evaluate the comparative standing of independent variables. This is true with exogenous variables in SEM structural model analysis. Structural multicollinearity is of concern for reflectively and formatively modeled construct for similar reasons as it is in ordinally least square regression models (Garson, 2016). The variance inflation factor value is used to measure multicollinearity in PLS-SEM. In an aptly fitting model, the VIF coefficients value should be 4.0 or less (Garson, 2016; Hair et al., 2013). The VIF for IS Integration and Organizational Performance constructs was 2.367, therefore the study's VIF coefficients for the structural model was within the acceptable limit.

In PLS-SEM analysis, blindfolding employs a cross-validation approach and displays cross-validated communality and cross-validated redundancy as output of both the latent and manifest variables. The cross-validated communality and cross-validated redundancy provides the measures for predictive accuracy criteria of the model (Garson, 2016; Hair et al., 2014). The goal is to compute the four cross-validated appraisal of the model's predictive accuracy or its dependability, these are; 1) The latent variables' cross-validated redundancy; 2) The latent variables' cross-validated communality; 3) The manifest variables' cross-validated redundancy and 4) The manifest variables'cross-validated communality.

The Stone-Gleisser Q^2 value is the measure used to gauge cross-validated redundancy of endogenous latent variable in a model with reflective manifest variables. The current study has one reflectively modeled endogenous latent variable. A Stone-Gleisser Q2 value of higher than 0 is an indication that model with its associated exogeneous variable(s) can provide prediction of the specified endogenous variable of under investigation, correspondingly a Q^2 with a value of 0 or negative value is an implication the model's inappropriateness for prediction of the variable.

3.2.2. Models' Coefficient of Determination R2 and Predictive Relevance Q2

The current study SEM model had one endogenous latent variable, Organizational Performance. The following are the coefficient of determination, R2 value at t> 1.676 and p < 0.05 significant level; Organizational Performance recorded R2=0.274, β= 0.538 t=2.037, p=0.042. This indicates that the model accounts 27.4% variance in Organizational Performance of banks in Kenya. The explained variance for the endogenous latent variable is statistically significant at p < 0.05 level. Consistent with Hair et al. (2013) and Pallant (2001) recommendations, R2 value higher than 0.67 is regarded substantial, while a value of 0.33 being regarded as being moderate and 0.19 considered as weak. Based on this description, the coefficient of determination IS integration has conderably weak effect on organizational performance.

The predictive relevancy of PLS-SEM models gauges the degree to which the model's endogenous latent variables can be projected by the associated model's exogenous latent variable. Based on Hair et al. (2014), guideline, Stone-Gleisser Q^2 value of 0.02 signifies minimal effect size, while Q^2 value of 0.15 signifies a average effect size with Stone-Gleisser value of 0.35 implying a high effect size. The current study's model registers a relatively weak predictive relevance with regard to the organizational performance with Q2 value of 0.135.

4. DISCUSSIONS

4.1. Information Systems Integration and Firm's Performance

In recent years, there has been an increased investment in information systems by organizations. The need for automation of most of organizational processes and operations has been unprecedented as organization pursues digitalization. The banking sector in Kenya has been one of the leading sectors to increasingly automate back office and front office operations as ICT sector increasingly churn out various IS innovation in an unprecedented pace. These accelerated investments in information systems have provoked a debate among researchers. The interest is trying to unearth the organizational performance benefits associated with huge IS investments (Bostrom et al., 2009; Mahmood & Mann, 2005). The huge spending in IS in recent years notwithstanding, demonstrating the corresponding firm performance benefits has proved difficult (Adam, Mann, & Zwass, 2000). With findings from different studies showing mixed results (Mithaset al., 2012), the current study intended to establishing the scenario in the Kenyan banking sector. The banking has been one of the sectors that have heavily invested in IS innovations across all operational areas.

The test result of hypothesized correlations between IS integration and perormance revealed statistically significant positive direct linkage between IS integration and bank performance with the following statistics at a p-value of 0.05; β = 0.538, p = 0.042, t = 2.037. However the Q^2 and R^2 values reveal very weak association. Indicating that the degree of IS integration is weakly associated with improvement in organizational performance. Based on Q2 values, the level of IS integration can not be used to predict organizationa performance.This resonates with other studies evaluating this relationship as indicated by Kohli and Grover, (2008); Sandberg et al., (2014). The results from these studies indicated mixed finding ranging from positive, to null and to a negative asso-

ciation. The current findings to some extent confirm empirical studies by Ghobakhloo et al. (2014) and Mithas et al. (2012) that alludes to an indirect IT contribution to firm profitability. Though Magutu et al. (2011) through an empirical study on commercial banks in Kenya revealed that IT offers potential and limitless opportunities through cost-effectiveness and rapid systematic service provision.

Various studies like Mithaset al. (2012) as pointed above seem to dissipate this direct effect of IS and performance, however, the studies are in agreement that IT does influence firm performance through other revenue growth channel rather than directly. For example, Lang and Colgate (2003) found that improved customer relationship marketing through the enablement of multiple channels have a direct impact on bank profitability. However, such improvement is pegged on bedrock IS innovations in this case online-banking, the benefits easily associated to accrue from marketing efforts rather from information systems' perverseness in enabling such marketing channels.

Bostrom, Gupta and Thomas, (2009) pointed out that one of the major sources of mixed findings is the lack of an integrated approach of both social and technical subsystems of the organization when investigating how IS leads to firm outcomes. According to sociotechnical systems theories an organization is made up of the two subsystems that perpetually interact with and influence each other in the life of the organization. Sociotechnical systems theories accords researchers the ability to mitigate the asymmetry between the elements of the two organizational subsystems when examining the effect of IS use in the organization. Focusing on the technology while depriving attention to the social fundamentals of information systems or inadequate attention to the technological artifact of IS will yields inconsistent results. Adoption of sociotechnical systems theories especially the adaptive structuration theory (AST) accords the researcher the ability to link the social and the technical domains thereby comprehending how technology structures trigger organizational change. This eventually will mitigate the skewed analysis which subsequently addresses the incoherency of findings when examining the effect of IS usage in organizations (Bostrom et al., 2009; Furumo & Melcher, 2006).

5. SUMMARY & CONCLUSION

5.1. Conclusions of the Study

The weak of significant positive link of IS integration and organizational performance of the study's objective resonates with some few studies that report some form significant relationship between the two constructs (Piccoli & Ives, 2005; Sandberg et al., 2014). However, Chae et al. (2014); Mithas, Tafti, Bardhan, et al.(2012) revealed statistically insignificant correlation of IS and the overall organizational outcome.. These contradictory findings vindicates Bostrom et al. (2009) assertion of varying findings. This inconsistent of the various studies is what Dedrick et al. (2003) referred as the profitability paradox of IT.

Although there is contention of direct IS effect on firm performance, It has been empirically proved that firms with higher IS and IT capability outperform others on a number of performance parameters. However, this influence is through other IS enabled capabilities and not direct (Lang & Colgate, 2003). Organizational performance benefits accruing from IS integration should be traced through other proxy performance enablers enhanced through automation and not directly from IS integration. Information systems should be viewed as enablers and facilitators of other business processes and activities that directly affect organizational perfor-

mance.

5.2. The Implication of study

The validation of weak direct effect of IS on firm performance has a number of implications to IS manager and business management. When considering IS investment for improving organizational performance, the focus should not be on the direct between IS investments and firm performance, but at other direct performance enablers enhanced by IS innovations (Lang & Colgate, 2003). Organizational value chain capabilities or industry value activities with a direct facilitative influence on the overall organizational performance should be the focus of information systems related innovations geared towards enhancing performance. IS managers should work with business managers in identifying areas within the organizations' operations that can leverage on IS to create the greatest impact on organizational performance. Employing Porter's value chain model, organizational value chain processes can be prudently selected as candidates for automation for maximum performance impact. The focus should be the identification of organizational capabilities that can act as proxies to improve organizational performance as a result of automation.

When assessing the ROI or the overall IS contribution to the organizational performance, it should be noted that IS has an insignificant direct effect on performance. Therefore, the focus should be on IS enabling effect on the proxy processes or activities that consequently influence organizational performance directly. To have an authentic evaluation, the proxy process and or activities need to be evaluated before and after automation and comparison made with prior automation measures acting as the baseline for the evaluation. From the findings of this study, IS managers need to work collaboratively with business process owners to identify the appropriate candidates for automation that will have the greatest impact on organizational performance.

5.3. Limitations of the Study

The study used PLS-SEM and even though this variant of SEM works with small sample size, generally when using SEM having large sample sizes is advisable as it increases the precision of the estimated parameters. However, therewere only 56 banking institutions in Kenya at the time of the study making census a better option rather than sampling.

The study had a limited scope addressing itself to only Central Bank of Kenya regulated financial institutions and specifically the commercial and microfinance banks with the inclusion of Postbank. This, therefore, limits the generalization of the findings. Although the finding can be generalized to the financial sector in Kenya caution need to be taken since the regulated and the unregulated financial institutions might reveal different results. The inclusion of all financial institutions while addressing the sample limitations would embolden the generalization within the entire financial sector in the Kenya.

Due to the sensitivity and tight regulations in the financial sector, respondents are usually apprehensive about sharing information and sometimes might provide incorrect information. The time of data collection of the study coincided with a turbulent period in the banking sector in Kenya with about three banks being closed and later placed under receivership within a period of three months. As a result of this data collection was difficult, but more significant was the concern of the frankness of the respondents. This, however, was mitigated by not asking absolute financial performance data. Despite the above concerned, the fact that the finding corroborat-

ed with earlier studies is a clear validation of the study's finding.

5.4. Suggestions for Further Research

The current study addressed itself to commercial and microfinance banks in Kenya as regulated by the Central Bank of Kenya. Though it is possible to generalize the findings within the financial sector, a research covering both regulated and unregulated financial institutions in Kenya would provide a more inclusive generalization within the financial sector.

The research though validating other findings on IS and firm performance, cannot be generalized to firms in other sectors of the economy. A multi-sectoral study would address the limited scope and offer robust findings that can be generalizable across all the sectors of the economy. Such findings would be beneficial to all sectors of the economy and be a basis for practice and policy direction on automation within business organizations in the country.

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