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DO OPERATIONAL PROCESSES MODERATE RELATIONSHIP OF ORGANIZATIONAL AGILITY AND PERFOMANCE OF CHARTERED UNIVERSITIES IN KENYA?

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Abstract

University education in Kenya faced weighty challenges in the 80s and 90s due to high demand with less capacity. These continued to the 90s and the solutions provided in the 20s created capacity that was left idle when measures taken to secure examinations at secondary school in 2016 saw a sudden reduction in number of students. The rapid changes were attributed to agility phenomenon and the study sought to investigate whether operational processes moderated the relationship between organizational agility and performance of chartered Universities in Kenya. Efficient operational processes are one of the ways that universities can gain competitive advantage. Specific objectives were to establish the relationship between organizational agility and performance of chartered universities in Kenya and whether operational processes moderated the relationship. Hypotheses were formulated for public and private universities because of difference in ownership and management; H_{11}: There is no significant relationship between organizational agility and performance of chartered universities in Kenya, H_{12}: There is no significant relationship between organizational agility and performance of chartered private universities in Kenya. H_{21} : Operational processes do not moderate the relationship between organizational agility and performance of chartered public universities. H_{22}: Operational processes do not moderate the relationship between organizational agility and performance of chartered private universities in Kenya. The study adopted positivism view and the unit of analysis was all the 30 chartered public and 18 private universities. Data was collected from all Deans (271) of schools/faculties by use of a structured questionnaire where 192 from 41(85.4%) universities were responded to and returned. Means and one sample t-test were used for descriptive analysis and linear regression for prediction of the relationships. Results indicated that government drivers of agility affected public universities and not private ones while market drivers affected all universities. Private universities had superior enablers and responded better

*to drivers of agility. Public and private universities established operational processes except that employees were more empowered do their jobs in private universities and they also had integrated much of the processes compared to public universities. On performance constructs private universities responded faster to staff and students issues, technology was staff and student centered and they trained the staff more frequently compared to public. Regarding relationship of the variables organization agility explained 30.6 percent of performance of public universities but did not have any significant influence on performance of private universities. The model for public universities was PUB = 28.115 + .255OA. A joint effect of organizational agility and operation processes accounted for 47.2 percent and on addition of interaction term, the model explained 57.3 percent of performance and the model was PUB = 172.429 + 4.458O*OP. Moderation test was not performed for private universities because the model for agility on performance was insignificant. It was concluded that organizational agility did not affect private universities significantly because they were well prepared while the increased number of students affected performance of public universities.*

Key Words: *Organizational agility, drivers, enablers, responses, Operational Processes.*

Background of the Study

The emergence of strategic thinking and the discovery of better means of doing business compelled firms to adopt strategic business orientations for competitiveness (Chase, Shankar, Jacobs, & Aquilano, 2013). However, in a 21st century organization, there has been obvious discrepancy between strategic thinking and performance which emanates from daunting, complex and unrelenting challenges of the operating environment (Wirtenberg, Lipsky, Abrams, Conway, & Slepian 2007). Consequently high competition in each industry and sector compels firms to devise strategies and actions that enable them to adapt to continuous change. The changes are caused by advanced computing capabilities, innovations, demographic patterns, social changes, new markets and use of information technology to reach distant markets. Observations by Dove (1992), Gunasekaran (1998) and subsequent literature on evolution of business philosophies proposed that focus on agility is one of the orientations that can help firms to bridge the gap between unpredictable challenges and performance.

Agility is a business orientation that originated in a conference in the USA, where practioners and scholars had gathered to find solutions to the poor performance of their manufacturing firms in the 70s, 80s through to the 90s (Goldman & Preiss, 1991). Since the inception of the term (Iacocca Institute, 1991), conceptualization and empirical studies on the phenomenon concentrated on its effects and implication on manufacturing firms without much attention to other industries (Seethamraju, 2006). However, the phenomenon which refers to turbulence and adaptation to unpredictable operating environment affects organizations across industries and their survival therefore, depends on the ability to be agile (Mattheou & Saiti, 2005; Mckinsey & Company, 2018).

Over that period, the phenomenon caused organizations to change their original missions as a result of turbulence in their operating and business environment. However, beyond the 90s universities that were relatively stable in operations and performance came under pressure to change their offering, processes and approaches. In the 20s, universities world over have experienced instability because of government regulation, increased demand of pedagogical learning, global competition, changing nature of work, evolving information technology and blurred boundary between industries (EYGM, 2018: Mukerjee, 2014).

In the Kenyan context, some industries invaded the traditional domain of universities by introducing learning institutions either as an additional line of business or to train manpower that supports specific knowledge, skills and competencies contingent to the industry. Such include hospitals, insurance companies and hospitality industries among others. Big private hospitals introduced nursing schools, insurance companies training colleges, hospitality industry catering colleges while central bank started monetary college and the situation is duplicated industrial wise. Examples of industry specific training

institutions include Cicely Macdonald School of Nursing: Nairobi hospital, The Aga Khan University Hospital: Nairobi, College of Insurance: Nairobi, Boma International Hospitality College: Nairobi, Kenya School of Monetary Studies: Nairobi, College of Insurance: Nairobi and many more.

Besides competition from unrelated industries, Kenyan universities experienced serious rapid changes that called for various approaches if they were to accomplish their missions and the vision of the founders. Among the perpetual challenges were high number of students in the 80s with less capacity (Wandiga, 1997), Internal difficult circumstances, political interference, frequent strikes by students and lecturers in the 90s (Oanda, Chege & Wesonga, 2008), decreased government funding, un-responsive and poorly aligned curricula to market needs and many more (Gudo, Olel & Oanda, 2011).

The challenges created opportunities which led to establishment of new universities, expansion of the older ones, massive infrastructure development via satellite campus as well as within the universities and introduction of self-sponsored programmes in public universities(Chacha, 2004: Oanda & Jowi, 2012).

In 2016 there was unprecedented reduction of new students for 2016-2017 academic year (Leftie, 2016) which underutilized the vast capacity and subsequent reduction of revenue in almost all the universities. This implied that universities needed to be strategic and innovative in attracting students who had greater choices of where they could undertake their degree programmes unlike when universities were few. The effects of the rapid changes on performance of universities in Kenya consolidated the evidence of the need to investigate agility phenomenon and therefore the proposition that: during the rapid and unpredictable changes universities can use operational processes to enhance their competitive advantage and consequently the performance. The motivation led to the question; do operational processes moderate the relationship between organizational agility and performance of chartered universities in Kenya? A related objective was formulated and a corresponding null hypothesis was stated as -; operational processes do not significantly moderate the relationship between organizational agility and performance of chartered universities in Kenya. Based on extensive literature review general systems theory and theory of constraints were found to anchor the explanation of the relationship of the three variables.

Organizational Agility

Wendler (2013) traced the origins of agility phenomenon to the 50s but it wasn't until 1991 during Iacocca conference that full conceptualization was realized (Goldman & Preiss, 1991). The term agility was conceived with an attempt to describe the nature of the American firms manufacturing system that needed to cope with unpredictable business environment of the time (Dove, 1992). The forum observed that manufacturing industries needed to

have flexible systems that can shift quickly from one product model to another or product lines with aim of taking advantage of the opportunities and also own processes that lessen the impact of threat from competitors and emerging technologies.

The themes that ran through Literature over time indicate varied conceptualization of the term agility which has led to emergence of various explanatory models. Sharifi and Zhang (1999) model was among the earliest to divide the concept into three explicit constructs namely drivers, enablers/capabilities and providers/responses. Drivers of agility were observed to be a major source of rapid changes that manufacturing firms needed to recognize and respond to appropriately because of the impact they have on performance. These agility forces were identified as market dynamics, competitor activities, customer requirements, technology and social-cultural changes. Enablers were defined as abilities that organizations required to respond to the changes in the external environment. Providers were identified as means by which organizations achieved their capabilities. Examples of such were-: organizational structure and integration, technology, people, innovations, relationships and information systems. The models of Dove (1992); Gunasekaran (1998); Chang, Hu, and Hong (2013); Lenerius, Brundin, Reinman and Dedering, (2014) among others supported this model without obvious classification of agility into dimensions.

Yusuf, Sarhadi, and Gunasekaran (1999) model was equally significant and it classified agile attributes along 10 decision domains which had 32 sub domains. The contribution of this model was the emphasis on pillars upon which strategies for responding to drivers of agility rested. Gligor, Holcomb, and Stank (2013) expanded the model by adding alertness, accessibility, decisiveness, swiftness and flexibility to the taxonomy. Equally, Sambamurthy, Baradwaj and Grover, (2003) identified customer agility, partnership agility and operational agility in relation to supply chain performance. Worley and Lawler III (2010) explained that in addition to systems agility, mind-set agility, adaptable organizational design and leadership were a necessity for an agile organization. Charbonier-Voirin (2011) summarized the views of various models and concluded that all earlier frameworks referred to organizational propensity to read the markets, utilize resources, improvise and innovate transformational processes, mobilize and align human resources to the strategic prospects. Therefore, organizational agility was found to play a critical role in achieving competiveness as opposed to the entire concept of agility.

Zitkiene and Deksnys(2018) consolidated various views expressed earlier in literature into enabler –capability frameworks, organizational agility practices and processes frameworks and sense-response framework of organizational agility. The authors synthesised the models into organizational agility conceptual framework and emphasized that all the models were interdependent in support for organizational

agility as a holistic approach to impact of agility on performance of organizations. This study adopted an all-inclusive view approach to agility and focused on the relationship between organizational agility and performance of chartered universities in Kenya. One of the commonality of the models was the prominence of the role that operations played in enabling the firms to gain competitive advantage during the period of rapid changes. The study therefore sought to answer the question: Do operational processes moderate the relationship between organizational agility and performance of chartered universities in Kenya?

Globally, effect of agility on universities tended to conform to the suggestions of Sharifi & Zhang (1999) model. For example, Twindle and Nichols (2013) identified global competition in research, expectations of higher standards by governments, increased comparative evaluation through national and global university rankings, changes in sources of funding (typical decline in government funding), limits to the possible growth of fees charged to students and the potential disruptions by emerging technologies as the drivers of agility in institutions of higher learning. Technological changes were noted to have arisen from growth of capacity in computer hardware, software and associated networking capabilities. Less well educated graduates was also cited as another driver of agility which made students to prefer certain universities that were thought to produce more qualified professionals.

Operational Processes

Definitions of a business (operational) process are varied but can be summarized as a sequence of logically related activities that must be performed along a value chain to deliver a product to a consumer and accomplish strategic goals of a firm (Barbra, Del Valle, Weber, & Jimenez, 2013). Diverse views converge on the idea that a business/operational process involves the manipulation of either physical or informational inputs to create value through a series of interacting activities that exchange or transform input into valuable output. In a modern organization, entire business/operational process consists of human component, physical structure and a linking information technology system (Anttila & Jussila, 2013).

Traditional organizations work as departments or silos that are dedicated to one specific aspect of an activity within a process. The narrow focus in specialization makes an organizational structure inefficient when flexibility and adaptation are required (Harmon, 2003; Chang, 2006). This is a characteristic of university structure that has distinct academic and managerial divisions that operate differently and yet they are required to converge at the point where overall goals are achieved (Lazega, 2005).

The main role of faculty is to develop and implement curricula related programmes, teach, assess, evaluate and conduct research. These functions depend on competences, skills and inner commitment by instructional providers who are guided by collegial consensus rather than by administrative controls (Baldrige, 1971). Management on

the other hand is in charge of supportive processes such as planning, organizing, coordinating and controlling of university functions. These are supposed to meet at a point that prepares learners in a given field that helps them to fit in a profession upon graduating. In a university set up, conflict arises from incongruence of collegium approach of the faculty and the management perspectives. This creates a challenge of the two divisions that jointly determine the university strategy and alignment of processes towards achieving the objectives and common goals.

Collegium ideology is based on thought patterns and distinguished scholarly accomplishments that may not necessarily be acknowledged and appreciated by those in university administration who consider different measures of performance (Kaplan and Norton, 1992). This may create inflexibility that is a hindrance to counter negative effects of agility (Geuna, 1996). Similar gap was observed by Dove and Willis (1996) who opined that an agile university needs to unify faculty and administrative processes in order to achieve the intended mission when agility occurs. Conditional funding and external stakeholders' interest demand that universities take an entrepreneurial, efficient and accountable approach to strategy and operations. Faculty and management of universities must find ways of streamlining their processes in order to meet the intended goals without eroding the academic standards and the noble mission on which universities were founded: to create knowledge for the sake of it in order to advance existence of humanity.

Organizational Performance

Performance can be viewed as the extent to which an entity accomplishes objectives of an organization in order to achieve the overall goal (Kaur & Kumar, 2014). It is widely used as dependent variable in business studies to measure the relative position of organization in the industry. Traditional firms used accounting measures of performance as indicators of how well the goals were being achieved. However, managers realized that financial component alone was not reliable as a single measure. More indicators were required to provide clear view of the performance. Financial measures did not also indicate the critical areas of a business that required a closer focus. Kaplan and Norton (1992) introduced the Balanced Score Card (BSC) that provided a wider view of organizational performance in terms of financial, customer, learning and growth as well as internal processes. Hubbard (2009) further expanded BSC to include corporate social responsibility and environmental concerns to theorize a sustainable balanced score card model. Literature review showed that operationalization of financial and non-financial measures of performance with specific indicators was contextual to objectives of the organizations.

Performance of universities can be reflected better by both financial and non-financial measures of performance. This is because universities have multiple, contradictory and complex missions that include teaching, research, service to communities and

revenue generation. In support of the varied goals of universities, Twidale & Nichols (2013) explained that a variety of measures had been used successfully in assessment of performance of universities in line with their objectives. Bogt & Scapens (2009) identified some of the measures as education mission that had indicators such as number of programmes, student enrolment, student-lecturer ratio, class size, number of graduates and academic pathways.

University of Toronto, (2014) outlined measures of university performance by use of certain categories of consideration. These were research excellence indicated by rankings, awards, honours, publications, funding and innovations (patents, spin-offs/products and license agreements); university faculty with staff, alumni and friends of the university measures captured by expression of satisfaction and support they give to their respective universities. The final category of measures included infrastructure found in a university and it was indicated by number of faculties/schools, teaching space, laboratories, library and facilities such as accommodation, catering, recreation and information technology.

The study adopted measures of non-financial performance namely-; customer perspective, growth and development and internal processes because universities have missions that are not necessarily profit oriented. Oanda et al. (2008) observed that in the Kenyan context, even private universities have to meet the public good before any other consideration. The main role of any university is to impart knowledge through teaching, research and provision of service to the community (Charkarbati, 2002). Therefore, the indicators of performance selected for the study were-; degree programmes offered, number of graduates, recruitment of staff, and support for staff progression, research funding, ranking, information technology facilities, research output, faculties and department establishments.

University as an Organization

The term university refers to an independent institution that develops knowledge for the sake of it, transmits, disseminates and uses it in social and technical innovation for the furtherance of societies (Lazega, 2005). Geuna (1996) traced the origin of universities to the 12th century in Europe, but the term university emerged in the 19th century as a derivative of the terms universitas literarum which means in totality or whole. The term university therefore describes autonomous institutions that developed as a result of conflict among papacy, emperor and local jurisdictions of the Roman Empire. Universities therefore become independent and alternatives for people who did not owe allegiance to church, state or local regimes. Church and state governance systems had strong opposing opinions that did not accommodate people who had contrary ideas. Consequently, they allowed universities to thrive as way of containing individuals who had high intellectual capacity, that were believed to have potential to wreck the church and state organizations. This made it easy for universities to progress as autonomous institutions with distinct rigid

collegium character of scholarship and academic freedom that generated and disseminated knowledge for the sake of it.

A chartered university in Kenya is an establishment of higher education that has been granted permission by the president to confer academic awards to qualified persons in accordance to provisions of universities Act 2012, (CUE, 2014). The first university to be established in Kenya was University of Nairobi in 1970. However, its existence dates back to when it was Royal College till 1961 when the name was changed to University College (Nyangau, 2014; Okioga, Onsongo, & Nyaboga, 2012). According to Chacha (2004), Mackay report led to the establishment of Moi University in 1984. In 1985 Kenyatta University College was elevated to university status having been a constituent college of University of Nairobi since 1972. In late 1988 an act of Parliament made Jomo Kenyatta College of Agriculture and Technology a constituent college of Kenyatta University which became a full-fledged university in 1994. Egerton University was previously an agricultural diploma college which was upgraded to university in 1987. Maseno University attained university status in 2000 having been previously a constituent college of Moi University. Maside Muliro University of Science and Technology, also a former constituent college of Moi University became a university in 2007.

According to Chacha, (2004) Commission for Higher Education (CHE) was established in 1995. It mainly accredited and regulated private universities among other objectives of monitoring university education. As a result, private universities that were established earlier attained legal chartered status before some of the oldest full-fledged public universities whose charter was assumed by virtue of their prestige. The CUE was established by Universities Act No. 42 of 2012 to replace CHE with wider mandate of regulating university education (CUE, 2014). As a result, 13 public universities were awarded chartered status in 2013, out of which six of the oldest universities were awarded chartered status as a formality and in compliance with the new law that placed them under the regulation of CUE.

Apart from the six public universities that were established before 2007, the ones that were chartered in 2013 were constituent colleges of the older universities. There were 30 chartered public and 18 private universities making a total of 48 in 2016 (CUE, 2016). Some of the oldest chartered private universities include United States International University-Africa (USIU-Africa) which was established in Kenya in 1969, Daystar University 1974 and University of East Africa Baraton 1978 while the rest were relatively young. Other non- chartered universities were operating on interim letter. The older universities experienced the effect of agility compared to the new ones which were established when the more severe rapid changes were happening.

Public and some of the faith based universities were mainly funded from public resources because of their unique role in increasing citizen's knowledge base, their ability to influence state policy and practices

which in turn contributes to the welfare of the nation. This practice is universal where a majority of the universities are owned by state and religious groups (Mattheou & Saiti, 2005). The role that universities play in societies, make it difficult to draw up clear indicators that are a true reflection of their actual performance.

Statement of the problem

University education in Kenya experienced agility drivers in 80s and 90s which accelerated changes in the 20s that created challenges in meeting the expectations. Some of the changes were double intakes of 1984-1985, 1987-1988, 1990-1991(Oanda, Chege and Wesonga, 2008) and later 2010-2011 academic years. University intake of 1987-1988 alone, increased student population by 75.2% (Wandiga, 1997) but later reduced drastically in 2016-2017 intake (Leftie, 2016). These variations caused expansion and decrease of students for universities which led to permanent closure of Inoorero University and temporary for Presbyterian University of East Africa as result of insolvency. In the same period, some universities that were not compliant with government policy on university education were warned by CUE for non-compliance (Wanzala, 2018). A myriad of other complex agility related factors caused challenges and created opportunities for higher education (Kitavi, 2017).

Empirical studies on agility issues such as quality, expansion and challenges that were affecting higher education in Kenya conducted by Malenje (2014); Gudo, Olel and Oanda (2011) and Tarus, Gichoya and Muumbo (2015) used a single variable approach as a predictor of performance and yet as explained by Dove (1992) and Sharifi & Zhang (1999), various underlying forces do not affect a firm in isolation. The research methodologies that were used had weaknesses which limited reliability in making conclusions about agile factors that affected the performance of Kenyan universities. All of the combined aforementioned issues formed a motivation for commencing further search on literature concerning agility and performance.

Firms exist because operational processes form a link between planning and operational functions that facilitate the input- output transformations. Studies by Pong (2013) and Harmon (2010) provided evidence that business/ operational processes as a strategic capability is not fully recognized by firms. The study found that business processes evolve on their own as organization systems mature and they only feature prominently when companies are automating their systems. Research by Kazemi, Hassan, and Ferredoon (2013) and Glaser (2014) found that human intelligence is required in mapping out a process before automation. The mapped out process should have clear inputs and out puts in order to contribute to positive performance. Accordingly, standardized business processes and automation of simple tasks provide data on systems monitoring which enable management to predict process performance in real time. Barbra, Del Valle, Weber, & Jimenez (2013) researching on automatic generation of optimized business process models from constraint specifications, found that an optimized

business process model had a number of processes that are executed within a given time frame. These studies showed that firms delegate identification of their processes to external persons for automation. In such cases, a possibility occurs, where wrong business processes are automated if the owners do not understand tasks and activities that constitute their processes.

A varied number of studies on organizational agility and business process (operational process) showed a single variable approach. For example, Seethamraju (2006) studied influence of enterprise systems on business process in manufacturing firms in Australia. Seethamraju & Seethamraju, (2009) investigated relationship between enterprise systems and business process agility in chemical manufacturing industries in Australia. Sommer, Hedegaard & Jensen(2015) researched on improved product development processes performance through agile/stage hybrids in manufacturing firms in Denmark while Durkin, Howcroft and Fairless (2016) examined product development processes in higher education marketing in UK universities. These studies were conducted in a different setup and addressed different themes that focused on a linear relationship between an independent and a dependent variable yet incentive to produce a product, method of producing it and operational processes must interact in some way to influence performance.

Literature Review

Ability to cope with effects of organizational agility and take advantage of opportunities encompasses the ability of a firm to logically synchronize the value adding processes that aim at achieving goals and competitive advantage in turbulent times. General systems theory and theory of constraints underpinned interaction of organizational agility and operational processes to influence performance of a firm.

Zwaan Der Van (2001) associated the Socio-technical systems theory with Trist (1960) and others such as Brown; Emery (1967) whose works were based on dynamic systems. The ideas concerning dynamic systems and subsystems were also explained by Kast and Rosenzweing, (1972). Theory of Constraints focuses on the systems improvement for optimal performance (Aryanezhad & Komijan, 2004). It is anchored on five essentials which form step by step cyclic procedure for optimizing an operations system (Trojanowska & Dostatni, 2017). Iterations are performed to remove any constrains that occur in the process of performing tasks and activities

These theories anchor the idea that an organization has the capability to attain equilibrium of technical and social systems that optimize its productivity. Both systems must be configured to suit the operational processes that are specific to the functions of the organization. The components of technical subsystems are assets, technology and information while social subsystem consists of human resource capabilities such as skills, competences and the interactions.

Literature on organizational agility and operational processes showed that the concepts are related but gaps on how they influence performance still exist. For example, automation and application of technology to operational processes has been a prevalent strategy that enhances speed and efficiency when performing tasks and activities. However, the strategy works on well mapped business processes only. As alluded to in the literature, organizations do not deliberately synchronize their activities to form processes but rather allow them to evolve on their own except when automating the systems. The danger in this is that inefficiencies develop or negative performance may happen as result of performing unnecessary or inappropriate activities within a process. Organizations that deliberately design their processes have higher levels of efficiency and subsequent performance (Anttila & Jussila, 2013).

In the manufacturing firms, business processes have been a challenge because different departments focus on a narrow function and yet realization of strategy requires a common approach. Seethamraju (2006) investigated on the influence of enterprise systems on business agility in manufacturing industries in Australia. Quality and cost were found to be the most important measures of process performance which also impacted on profitability while speed and flexibility were found to be important for a 21st century manufacturing firm. These were important in meeting the dynamic requirements of the markets, consumers and partners.

Seethamraju and Seethamraju (2009) also explored enterprise systems and business process agility using explorative case study of a chemical product manufacturing firm in Australia. The objectives were to analyse the influence of enterprise systems implementation on business process agility and determine the moderating effect of integration, standardization, best practice and process orientation to building agility in a process. An in-depth -semi structured interview was used to collect data. The findings were that the standardized repetitive processes made a manufacturing system efficient and contributed to appropriate response to drivers of agility. However, incorporation of inefficient non-standardized processes led to inflexibility and rigidity. The latter system become very inefficient and made the firm respond to agility inappropriately. Other significant conclusions included, the flow of information in horizontal integrated system simplified the process but reduced flexibility. Vertical integration improved decision making and communication in non-technical processes but inhibited the same in technical processes. The study also established that best practices embedded in a software application improved performance of a firm that had an existing suitable business processes. The gaps identified in the study were that, as an exploratory study, furthers studies were required to discover more knowledge on the variables and also as a case study, the findings cannot be generalized for the industry or other types of manufacturing firms.

Studies by Petkovics, Tumbas, Markova, and Zoltan (2014) and Cao, Thompson and

Triche (2013) equally showed that firms concentrated on automating systems without prior design of the processes. The study acknowledged that clear identification and mapping of a business process were critical before automation of operations. The objectives were to find out how supporting capability of cloud computing improve external collaborations in Serbian universities, an analysis of leading journals. A total of 1,005 journals were examined by searching the word 'cloud' or cloud computing. It was concluded that improved input-output data quality in collaborative processes enabled efficiency in external collaborations computing.

Cao et al. (2013) investigated the role of business process and knowledge management systems on performance: a Multcase approach. The objectives were to determine how business process knowledge management fit was affected by business process and knowledge management characteristics, how business process and knowledge management system fit could predict utilization of knowledge, effect of business process and knowledge management fit and utilization on individual and organizational performance. Explanatory research design was used on multiple case studies of companies in deferent sectors. Interview was used as a method of data collection. Business process systems fit was found to affect individual and organizational performance. The gaps in the study were; study methodology was complicated for replication while the case studies were drawn from distribution and communication technology industry. Therefore, findings could not be generalized for other business sectors.

A study by Tarus et al. (2012) on challenges of implementing electronic learning in Kenya, a case of three public universities concluded the following; inadequate infrastructure, costly and limited internet, shortage of technical skills on e-learning and e-content, low interest and commitment to use of e-learning by faculty members existed. The gaps identified were that, a single variable was studied yet challenges cannot influence implementation of e-learning in isolation. A purposeful sampling of three public universities and proportionate sample size of 125 lecturers, 14I ICT staff, six members of management and three directors of schools might have been biased. A guide of open ended -semi structured interview was used on directors while questionnaire was used on other participants. A difference in data collection tools might have reduced reliability of the data. Content analysis method did not seem appropriate for the kind of data that was collected.

Malenje (2014) studied Challenges facing business process automation in the public universities in Kenya with the aim of determining if ICT resources acquired by the university were deployed appropriately. Masinde Muliro University was used as a case study. The findings were that no deliberate or rational approach to allocation of ICT resources existed. Allocation of ICT facilities to individuals and department depended on respective needs and business processes were not prioritised. Operationalization of the variables in the study was not provided and use of

descriptive analysis alone was not adequate in determining the relationship of variables. Therefore the methodology did not support conclusions made. Synthesis of the gaps identified led to conceptualization of the relationship of the variables as indicated in conceptual framework in figure 2.1 below.

Figure 1 : Conceptual Framework

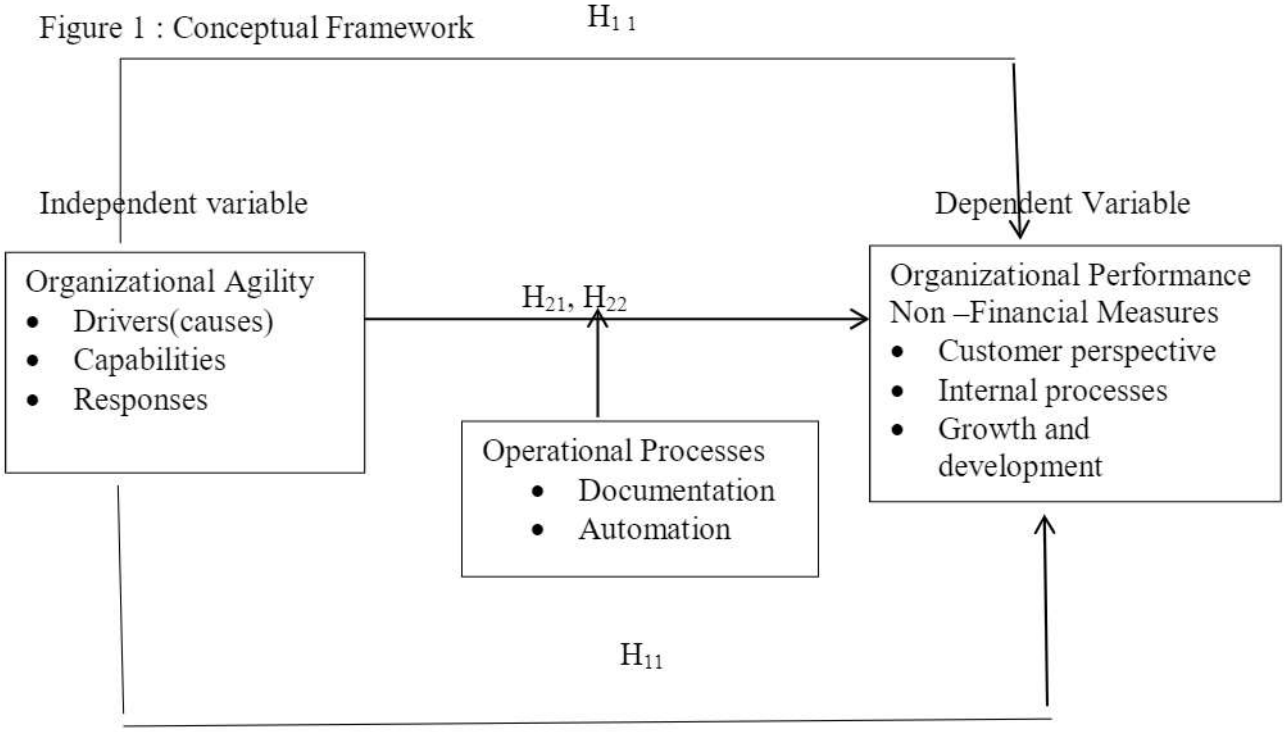


Figure 1 above shows independent variable, dependent variable, constructs of the variables and hypotheses.

H_{11} : There is no significant relationship between organizational agility and performance of public universities.

H_{12} : There is no significant relationship between organizational agility and performance of public universities.

H_{21} : Operational processes do not significantly moderate the relationship between organizational agility and performance of public universities.

H_{22} : Operational processes do not significantly moderate the relationship between organizational agility and performance of private universities.

Research Methodology

The study adopted positivism view with the aim of predicting the relationships as to whether operational processes moderated the relationship between organizational agility and performance of chartered universities in Kenya. Descriptive and cross sectional research designs were used where data was collected from all the chartered universities. This approach rests on the observations of Zikmud (2003) who emphasized the importance of describing the nature and dynamics affecting a business within a given period of time.

The unit of analysis consisted of 30 public and 18 private universities (CUE, 2016) and unit of observation of 271 Deans drawn from Schools or Faculties. The figure per university varied depending on the number of operational Schools/Faculties and the total was 268. Three universities had not indicated in their websites as to whether there were schools or faculties. An assumption was made to the effect that the three universities had few degree programmes and a small student population that functioned under a single head of academics. This was confirmed at the time of data collection for one of the universities and the unit of observation was adjusted. Deans were chosen as respondents because they possessed the information sought in the study (Henk & Lovel, 2015 : Halupa, 2016). Private universities had 66 Deans and public 205: total 271 (University Websites, 2017). No sampling was done because of diversity in characteristics of the Schools or Faculties across and within universities.

A structured questionnaire that had items on a Likert scale was used to collect data and the scale provided means of rationalizing qualitative data to quantitative data. Mean scores, frequency and one sample t-test were applied to determine basic and general characteristics of the data while second order tests of linearity, collinearity and homoscedasticity were applied to assess suitability of data for predictive analysis. Linearity was confirmed by correlation analysis, homoscedasticity by scatter plot of standardized residuals against the fitted values as well as Levine test. Variance Inflation Factor (VIF), tolerance factor and Condition Index Number (CIN) were used to identify existence or non-existence of multicolinearity (Field, 2009). Predictive test included use of simple linear regression to test the relationship between organizational agility and performance of chartered universities in Kenya with the model; $PUB = \beta_0 + \beta_1 OA + \varepsilon$ and $PIV = \beta_0 + \beta_1 OA + \varepsilon$ Where, PUB was performance of public university; PIV performance of private university; OA organizational agility; β_0 the intercept; β_1, β_2, and β_3, population parameters; and ε error term. To address moderating effect of operational process (OP) on relationship between organizational agility and performance of chartered universities, the following multiple linear regression model was performed $PUB = \beta_0 + \beta_1 OA + \beta_2 OP + \beta_3 (OA*OP) + \varepsilon$ and $PIV = \beta_0 + \beta_1 OA + \beta_2 OP + \beta_3 (OA*OP) + \varepsilon$; where OP was operational process.

Data Analysis, Findings and Discussion

The broad objective of the study was to establish whether operational processes moderated the relationship between organizational agility and performance of chartered universities in Kenya. This chapter presents data analysis, findings and discussions.

Response Rate

A total of 271 questionnaires were sent out and 192 returned as indicated in Table 1

Table 2: Response Rate by the Target Population

Deans	Dispatched	Returned	Not Returned	Percent Returned
Public	205	148	57	72.7
Private	66	44	22	65.15
Total	271	192	79	70.8

Source: Field data 2019

From Table 1, 205 questionnaires were dispatched to public and 66 to private universities. A total of 148 were responded to from public universities and 44 from private. The response rate per university was recorded as shown on Table 2 below.

Table 3: Response Rate per University

Chartered Universities	Targeted Frequency	Returned	Not Returned	Percent
Public	30	28	2	93.3
Private	18	13	5	72.2
Total	48	41	7	85.4

Source: Field data 2019

Table 2 indicates that 28 questionnaires were completed by public universities and 13 by private, translating to a response rate of 93.3 in public universities, 72.2 in private and overall 85.4 percent respectively. Therefore the response rate was adequate for data analysis and conclusions.

Description of Organizational Agility, Operational Processes and Performance

University education in Kenya has experienced challenges over the years but the 90s and part of the 20s had more rapid changes with far reaching consequences than the previous decades. The rapid changes motivated the study which sought to establish the moderating effect of operational processes on organizational agility and their performance

The statements that measured the variables were constructed on a Likert scale and the aim was to establish the status of each in the universities. The opinions expressed in the statements were quantified by values ranging between 1.0=strongly disagree to 5.0= strongly agree (Joshi, Kale, Chandel & Pal, 2015). Means and one sample t-test statistics were determined, where 3.00 was set as the mean average and all the results below 3.00 were interpreted to mean a disagreement while those above 3.00, agreement.

Organizational Agility

Organizational agility was conceptualized as consisting of the following dimensions government drivers of agility; market drivers of agility and enablers or capabilities of agility. The dimensions were identified along Sharifi and Zang (1999) model which is supported by earlier and later literature. As already defined, drivers are causes of unanticipated changes and capabilities are aspects that facilitate actions and responses to different drivers of agility.

Government drivers of agility were measured by the following statements whether decreased government funding caused any change in operations of the faculty; whether differential programme funding by the government has caused changes in operations of the faculty; whether introduction of module 11 programmes (parallel programmes) in public universities caused changes in faculty operations; frequent changes of guidelines by CUE has caused restructuring of academic programmes; phasing out of pre-university decreased enrolment; decreased unit exemptions for diploma holders have decreased enrolment and there has been increase in government sponsored students since introduction of the fee subsidy at secondary school level. The responses were recorded as shown on Table 4.3 and interpreted by use of the mean averages and the p-values. If p-value was less than 0.05 significance level, it implied that the response had a statistical significance and otherwise there was none.

The findings were that government drivers of agility that affected public universities were decreased and differential funding of programmes; introduction of module II programmes; placement of government sponsored students to public and private universities; and increase in fee subsidy at secondary schools. Frequent changes in CUE guidelines affected operations of all the universities, whereas phasing out of pre-university programmes and reduced unit exemptions did not affect enrolment for degrees. Decreased government funding to public university had the greatest effect in public universities.

Table 4: Descriptive Statistics for Government Drivers of Agility

Statements	Population		Mean				T-test			Sig. (2-tailed)		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
Whether decreased government funding has caused any change in operations in	28	13	41	4.22	1.23	3.47	12.56	-18.59	4.19	.000	.000	.000

faculty												
Whether differential degree funding by government has caused changes in operations of the faculty	28	13	41	3.25	1.69	2.86	1.89	-7.23	-.89	.060	.000	.377
Whether introduction of module 11 (parallel programmes) caused changes in faculty operations	28	13	41	3.50	1.65	3.04	4.09	-7.15	.81	.000	.000	.421
Change of CUE guidelines caused restructuring	28	13	41	3.12	3.27	3.16	.85	1.16	1.69	.395	.253	.092
Delinked admission to bed capacity caused congestion in learning facilities.	28	13	41	3.38	1.83	2.99	2.90	-6.02	.178	.004	.000	.859
Promotion based on CUE policy caused shortage of talent in administratio	28	13	41	2.26	2.23	2.25	-6.16	-4.03	-6.83	.000	.000	.000

n												
Placement of students in all universities decreased numbers	28	13	41	3.44	2.08	3.10	3.38	-4.60	1.16	.001	.000	.247
Closure of campuses decreased numbers	28	13	41	2.38	2.44	2.40	-4.91	-2.44	-5.27	.000	.018	.000
Frequent changes of guidelines by CUE has caused restructuring of academic programmes	28	13	41	3.31	3.33	3.32	2.35	1.48	3.19	.020	.146	.002
Phasing out pre-university decreased enrolment	28	13	41	2.10	2.69	2.24	-7.73	-1.29	-6.83	.000	.203	.000
Decreased unit exceptions for diploma holders has decreased enrolment	28	13	41	2.34	2.92	2.48	-5.37	-.36	-4.42	.000	.723	.000
There has been increase in government sponsored students	28	13	41	3.70	2.94	3.51	6.98	-.30	5.88	.000	.769	.000

since introduction of fee subsidy at secondary school level												

PUB is public universities; PIV is private universities; and COM is combined

Source: Field Data 2019

Analysis of results led to the conclusion that market drivers of agility that affected operations in public universities were demand for flexible modes of learning and need to introduce new degree programmes because of change in technology. Variable pricing of programmes by other universities did not affect operations and programmes were not phased out as a result of reduction of students. Nature of students made universities to be pro-active.

Market drivers of agility were also determined by the following statements flexible modes of learning increased enrolment; low degree costing in other universities caused lowering of fees; some degree programmes were phased out due lack of students; faculty introduced new programmes due to demand; change in technology led to introduction of new programmes and nature of students admitted made university to be proactive in operations. The responses were recorded on Table 3 below.

Table 5: Descriptive Statistics for Market Drivers of Agility

Statement	Population			Mean			T-test			Sig. (2-tailed)		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
Flexible modes of learning increased enrolment	28	13	41	3.41	3.44	3.42	1.53	1.55	3.75	.002	.057	.000
Low degree costing in other universities caused lowering of fees	28	13	41	1.91	2.48	2.05	1.35	1.41	-9.49	.000	.014	.000

Some degree programmes were phased out due lack of students	28	13	41	2.38	2.15	2.32	1.56	1.30	-6.34	.000	.000	.000
Faculty introduced new programmes due to demand	28	13	41	3.51	3.52	3.52	1.54	1.47	4.68	.000	.018	.000
Change in technology led to introduction of new programmes	28	13	41	3.47	3.65	3.52	1.51	1.42	4.80	.000	.003	.000
Nature of students admitted made university to be proactive in operations	28	13	41	3.91	3.96	3.92	1.21	1.27	10.47	.000	.000	.000

PUB is public universities; PIV is private universities; and COM is combined

Source: Field Data 2019

Enablers or capabilities of agility signify tangible abilities that universities possess to respond to different forms of drivers of agility. Capabilities range from physical infrastructure such as hostels, catering, recreational facilities, laboratories, libraries, competent and skilled staff, processes, collaborations and technology. These capabilities were measured by use of 12 items which addressed the state of aforementioned facilities. Similar procedures used to determine government and market drivers were used to determine the enablers.

Table 6: Descriptive Statistics for Enablers of Organizational Agility

Statement	Population			Mean			T-test			Sig. (2-tailed)		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
University has enough facilities	28	13	41	2.24	2.92	2.41	-8.21	-0.42	-6.74	.000	.678	.000
Administrative processes are supported by best technology	28	13	41	2.45	3.27	2.66	-6.01	1.39	-3.92	.000	.171	.000
University has enough competent faculty staff	28	13	41	2.75	2.67	2.73	-2.29	-1.81	-2.89	.023	.077	.005
University has supportive welfare departments	28	13	41	3.07	3.48	3.17	.69	2.40	1.88	.494	.020	.062
University is well stocked with learning resources	28	13	41	3.33	3.69	3.42	3.51	3.60	4.90	.001	.001	.000
Recreation facilities are adequate for staff and students	28	13	41	2.73	3.17	2.84	-2.71	0.85	-1.79	.008	.399	.076
There is a wide range of programmes that students can choose from the	28	13	41	3.63	3.15	3.51	6.10	.73	5.46	.000	.469	.000

faculty.												
University has adequate equipped laboratories	28	13	41	2.72	3.17	2.83	-3.04	.85	-1.96	.003	.399	.051
University has ultra-modern virtual campus	28	13	41	2.28	3.04	2.47	-7.16	.25	-5.94	.000	.803	.000
University has collaborated widely with industry	28	13	41	3.14	3.21	3.16	1.26	1.17	1.67	.209	.249	.042
Acceptance of exemptions and credit transfers contributed to high enrolment	28	13	41	2.58	3.42	2.79	-3.58	2.16	-2.03	.000	.036	.044
Flexible mode of learning contributed to high enrolment	28	13	41	3.14	3.85	3.32	1.137	4.65	3.04	.257	.000	.003

PUB is public universities; PIV is private universities; and COM is combined

Source: Field Data 2019

After analysis of results on table 5, it was concluded that private universities had the following superior enablers compared to public universities technology; supportive welfare programmes for the students; e-learning resources; virtual campuses; recreational facilities and flexible modes of learning. Public universities did not have

enough facilities while private had but not as adequate. Both types of universities collaborated well with the industry, but public universities had a wider range of programmes for students to choose from.

Responses to drivers of agility were also determined because they are actions that firms undertake to overcome effects of drivers of agility that contribute to negative performance. The statements that measured responses were university opened campuses when enrolment increased before 2017; university added modes of learning when enrolment increased before 2017; university expanded facilities when enrolment increased; university increased diploma and certificate courses from 2017; university laid off staff with decrease of module II students; programmes have been phased out after decrease in demand; there is heavy promotion of programmes by the university; university introduced new programmes; and university has diversified sources of income after decrease in student enrolment. One sample t- test was used to identify whether the responses were significantly different from the assigned average of 3.00 on the Likert scale. The mean responses and one sample t- test statistics results were recorded as indicated in Table 6 below.

Table 7: Descriptive Statistics for Responses to Drivers of Agility

Statement	Population			Mean			t-test			Sig. (2-tailed)		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
University opened campuses when enrolment increased before 2017	28	13	41	3.01	3.23	3.07	0.11	1.01	0.59	.916	.318	.554
University added modes of learning when enrolment increased before 2017	28	13	41	3.10	3.88	3.29	0.74	4.86	2.63	.460	.000	.009
University expanded facilities	28	13	41	3.44	3.71	3.51	3.69	3.40	4.90	.000	.001	.000

when enrolment increased												
University increased diploma and certificate causes from 2017	28	13	41	2.71	2.90	2.76	-2.39	-.471	-2.29	.018	.640	.023
University laid off staff with decrease of module 11 students	28	13	41	2.29	2.23	2.28	-6.24	-3.89	-7.37	.000	.000	.000
Programmes have been phased out after decrease in demand	28	13	41	2.46	3.35	2.68	-4.63	1.78	-3.04	.000	.081	.003
There is heavy promotion of programmes by the university	28	13	41	3.10	4.35	3.42	.974	10.05	4.38	.332	.000	.000
University introduced new programmes	28	13	41	3.69	3.88	3.73	6.44	4.61	7.90	.000	.000	.000
University has diversified	28	13	41	3.38	3.75	3.47	3.61	4.42	5.26	.000	.000	.000

sources of income after decrease in student enrolment												

PUB is public universities; PIV is private universities; and COM is combined.

Source: Field Data 2019

Results on Table 6 indicated that universities responded to drivers of agility in the following ways, private universities opened more campuses than public before 2017; added more certificate and diploma courses and carried out more promotion of the programmes. Both public and private universities did not lay off permanent employees after number of students in module II decreased.

Operational Processes

The statements that measured operational processes were constructed by use of Likert scale which aimed at establishing whether universities had operational processes that enabled them to be agile. The opinions that were expressed in the statements were quantified by values that ranged between 1.0=strongly disagree to 5.0= strongly agree. Means and one sample t-test statistics were determined, where 3.00 was set as the mean average and all the results below 3.00 were interpreted to mean a disagreement while those above 3.00, agreement. The mean scores, t-test results and p-values were presented as appearing in Table 7 below.

Table 8: Descriptive Statistics for Operational Processes

Statement	Population		Mean		t-test		Sig. (2-tailed)	
	PUB	PIV	PUB	PIV	PUB	PIV	PUB	PIV
There is a documented framework that defines work culture of the university	28	13	4.11	3.85	18.03	5.63	.000	.000
Each work process has a clearly defined input and output	28	13	3.92	4.15	14.44	10.29	.000	.000
Each work process begins with a goal and ends with a performance indicator	28	13	3.67	3.75	8.01	5.563	.000	.000
There is a work process	28	13	3.83	3.79	11.82	5.95	.000	.000

catalogue listing systematic way doing work in accordance to university framework								
There is a work manual that defines principles, responsibilities, structures and work practices	28	13	3.88	3.83	13.89	5.79	.000	.000
Work manuals distinguishes clearly operational and managerial processes	28	13	3.78	4.04	11.00	10.12	.000	.000
Work guidelines distinguishes clearly how managerial and faculty processes interact	28	13	3.88	3.98	13.73	6.79	.000	.000
Every work process is clearly described by tasks and activities in the work manuals	28	13	3.72	3.71	10.12	4.42	.000	.000
Every work process is parametised by performance indicators	28	13	3.44	3.65	5.399	3.64	.000	.001
New employees find work process in place	28	13	3.78	3.58	9.68	3.41	.000	.001
New employees have to figure out how to do the work assigned	28	13	2.18	3.06	-8.54	.30	.00	.769
Employees are empowered to improve work flow	28	13	3.06	3.63	.62	4.51	.532	.000
Work processes are fully automated	28	13	2.59	3.35	-4.99	2.12	.00	.039
All work processes are fully integrated by enterprise resource planning	28	13	3.10	3.48	1.10	3.22	.274	.002
Authorized staff can access all information required to execute their jobs	28	13	3.86	4.23	9.56	12.31	.000	.000
Work flows are student centred	28	13	3.48	4.31	5.15	12.64	.000	.000

Students can access all their information in secure portals	28	13	3.42	4.08	4.44	7.45	.000	.000
Students can be served efficiently through an integrated system	28	13	3.28	3.60	2.73	3.44	.007	.001

Source: Field data 2019

Results on Table 7 led to the conclusion that public universities had a documented framework that defined work culture that was interpreted in catalogues and manuals. The work processes were clearly defined by inputs, outputs, goals and performance indicators. Catalogues listed the order in which work was done and the work manuals defined principles, responsibilities, structures and work practices. They also provided work guidelines that distinguished operational processes from managerial processes. The processes were clearly described by tasks, activities and parametised by performance indicators.

The statements that referred to how staff was empowered to do their work led to the conclusion that authorized staff was able to access all information they required to execute their jobs but they were not empowered to improve the workflows. New employees found work in place and they did not have to figure out how it was performed. Regarding the workflows, public universities had not integrated all of their work processes however, the processes were student centred. Students were able to access all the information in secure portals and they were also served efficiently through an integrated electronic system.

The same procedures were followed in assessing the operational processes in private universities. Most of the operational processes were similar while others differed. Private universities had a documented framework that defined work culture and described it fully in catalogues and manuals. However, unlike the public universities, private universities had empowered their employees to improve the work processes. Since new employees did not find all the work processes in place, they had to figure out how it was to be executed or improved. Students were served by a superior fully integrated electronic system.

The differences between operational processes in public and private universities were explained by the need for private universities to be competitive in order to increase their performance which they did by serving students better through integrated electronic system. This required empowered employees who had the ability to alter work processes when rapid changes occurred in social, economic and political environments. Public universities like any other public institution focused more on controlled work flows where employees performed work by following already established procedures. This finding concurred with that of Chacha (2004) who explained that private universities attracted many students despite higher fees because of poor systems in public universities.

Performance in Chartered Universities

Performance was conceptualized as the dependent variable and it was operationalized by use of Kaplan and Norton (1992) model of performance. The three non-financial measures were, consumer perspective that referred to means of ensuring that customer expectations were met. Internal processes were interpreted to mean, the ways services were offered to staff and students. Growth and development perspective was taken as a measure of university progress. Likert scale was used to quantify the opinions and the measures on the scale ranged between one (strongly disagree) to five (strongly agree) and 3.00 was included as mean average for interpretation of one sample t-test scores. Results below three were interpreted to mean a disagreement while those above agreement. Analysis was presented in Tables 8, 9 and 10 below.

Table 9: Descriptive Statistics for Customer Perspective

Statement	Population			Mean			T-test			Sig. (2-tailed		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
Different modes of learning are offered as per request of students	28	13	41	2.24	2.85	3.30	-7.95	-0.71	-6.75	.000	.478	.000
Students and staff complains are responded to quickly	28	13	41	3.19	3.35	3.90	1.85	2.09	2.63	.076	.042	.019
There is continuous request for feedback from students and staff on services	28	13	41	2.92	3.67	2.36	-0.77	4.28	1.26	.444	.000	.211

Degree programme are offered as per the needs of the students	28	13	41	2.61	3.44	2.07	-3.66	2.10	-1.8	.000	.041	.065
Curriculum is reviewed periodically to incorporate emerging knowledge	28	13	41	3.87	4.31	2.43	9.54	9.16	12.53	.000	.000	.000

PUB is public universities; PIV is private universities; and COM is combined

Source: Field Data 2019

In summary Table 8 shows that private universities offered different modes of learning as per the needs of the students whereas public universities did not. Private universities requested for feedback from students and staff while public universities did not. Both public and private universities reviewed their curricula periodically.

The other perspective of performance that was measured was the extent to which universities aligned their internal processes in response to drivers of agility. The questionnaire contained the following statements information sharing with students and staff is rapid through technology; both staff and students have quick access to services required; all complains and requests are executed as they are reported; there is a one-stop customer service desk for receiving inquiries and disseminating information; and there is real time access to academic related information by students and processing of students examinations and results can be tracked accurately. Table 9 below shows results of means and one sample t-test for the items.

Table 10: Descriptive Statistics for Alignment of Internal Processes

Statement	Population			Mean			T-test			Sig.(2-tailed)		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
Information sharing with students and staff is rapid	28	13	41	3.67	4.19	3.80	7.51	9.77	10.64	0.000	0.000	0.000

through technology												
Both staff and students have quick access to services required	28	13	41	3.17	3.88	3.35	1.73	7.68	4.20	0.085	0.000	0.000
All complains and requests are executed as they are reported	28	13	41	2.87	3.31	2.98	-1.37	1.82	-0.24	0.172	0.075	0.806
There is a one-stop customer service desk for receiving inquiries and disseminating information	28	13	41	2.74	2.88	2.77	-2.46	-0.66	-2.45	0.015	0.513	0.015
There is real time access to academic related information by students	28	13	41	3.05	3.69	3.21	0.47	5.745	2.44	0.639	0.00	0.016
Processing of students exams and results can be tracked accurately	28	13	41	3.87	4.19	3.95	9.27	10.79	12.48	0.00	0.00	0.00

PUB is public universities; PIV is private universities; and COM is combined

Source: Field Data 2019

Conclusion drawn from Table 9 above was that private universities shared information faster than public universities, complains were received and executed faster and real time access for information through technology was also better. However, processing of examinations and results was well tracked in both public and private universities. Growth and development of universities was also assessed and results presented on table 10 below.

Table 11: Descriptive Statistics for Growth and Development

Statement	Population			Mean			T-test			Sig. (2-tailed)		
	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM	PUB	PIV	COM
There is extensive collaboration with various industries	28	13	41	3.39	3.58	3.44	4.134	4.10	5.53	0.000	0.000	0.000
There is extensive collaboration and linkages with other universities and academic related institutions	28	13	41	3.81	3.83	3.82	10.23	6.06	11.92	0.000	0.000	0.000
New degree programmes are developed to reflect the needs of the market	28	13	41	4.08	4.02	4.06	13.23	6.66	14.79	0.000	0.000	0.000
Curriculum is reviewed periodically to reflect emerging	28	13	41	3.90	4.13	3.95	9.10	8.12	11.67	0.000	0.000	0.000

knowledge												
There is continuous training of both administrative and academic staff	28	13	41	3.02	3.46	3.13	0.18	2.60	1.32	0.859	0.012	0.189
Technology that facilitates the processes is frequently updated to suit the requirements of the students and staff	28	13	41	3.53	3.90	3.62	5.74	6.11	7.87	0.000	0.000	0.000
Facilities are improved continuously to suit the requirements of the students and staff	28	13	41	2.79	3.88	3.06	-2.16	6.63	0.72	0.033	0.000	0.470

PUB is public universities; PIV is private universities; and COM is combined.

Source: Field data 2019

Table 10 indicates that the means for the following statements ranged from 3.58 to 4.13 in the two sectors of the universities with p-values of 0.00. There is extensive collaboration with various industries; there is extensive collaboration and linkages with other universities and academic related institutions; new degree programmes are developed to reflect the needs of the market; curriculum is reviewed periodically to reflect emerging knowledge and technology that facilitates the processes and technology is frequently updated to suit the requirements of the students and staff.

Therefore, public and private universities had extensive collaboration and linkages with various industries, universities and academic related institutions. Both public and private universities developed new degree programmes that reflected the needs of the market, curriculum was reviewed periodically to reflect the emerging knowledge and technology that facilitated the processes was updated frequently to suit the requirements of the students and staff.

On the statements that there is continuous training of both administrative and academic staff, the mean scores were 3.02 and 3.46 for public and private universities, respectively. The t-test scores were 0.18 for public universities and 2.60 for private universities, whereas the p-values were 0.859 and 0.012, respectively. The p-value for public universities was greater than 0.05, hence there was no statistical significance of the mean from the assigned mean. Therefore, training of both administrative and academic staff was average, which meant that some universities conducted the training continuously while others did not. The p-value for private universities was less than 0.05, hence there was a statistical significance and it was concluded that private universities conducted training continuously for both academic and administrative staff.

On the statement that facilities are improved continuously to suit the requirements of the students and staff, the means were 2.79 for public universities, 3.88 for private universities while the t-test results were -2.16 and 6.63, respectively. The p-values were 0.033 for public universities and 0.001 for private of which both values were statistically significant ($p < 0.05$). This implied that universities did not improve facilities continuously. However, the mean for private universities was above the assigned mean of 3.00 which was interpreted to mean that some facilities were improved continuously while others were not.

Diagnostic Tests

These are tests that are used to assess the suitability of data analysis before the application of parametric tests. For this study linearity, multicollinearity and homoscedasticity were determined. Normality was not conducted because data was collected from the whole population. Linearity was established by use of Pearson's correlation coefficient on a scale of -1 to +1 (Hair et al., 2014) and results for public universities were presented as shown in Table 11 below.

Table 12: Correlation of Organizational Agility and Operational Processes on the Performance of Public Universities

			Performance	Organizational Agility	Operational Processes
Public	Performance	Pearson Correlation	1		
		Sig. (2-tailed)			
		N	28		
	Organizational Agility	Pearson Correlation	.553**	1	
		Sig. (2-tailed)	.002		
		N	28	28	
	Operational Processes	Pearson Correlation	.575**	.347	1
		Sig. (2-tailed)	.001	.070	
		N	28	28	28

Source: Field Data 2019

Data on Table 11 shows that performance had a significant positive correlation of 0.553 with organizational agility and 0.575 with operational processes, implying that linearity assumption was not violated. Similar Correlation test was performed for private universities and results presented on Table 12 below.

Table 13: Correlation of Organizational Agility, Operational Processes and Performance of Private Universities

			Performance	Organizational Agility	Operational Processes
Private	Performance	Pearson Correlation	1		
		Sig. (2-tailed)			
		N	13	13	
	Organizational Agility	Pearson Correlation	-.484	1	
		Sig. (2-tailed)	.094		
		N	13	13	
	Operational Processes	Pearson Correlation	.754**	-.119	1

		Sig. (2-tailed)	.003	.697	
		N	13	13	13

Source: Field data 2019

The results on Table 12 indicate that performance had an insignificant negative correlation of 0.484 with organizational agility and a significant positive correlation of 0.754 with operational processes. Therefore Linearity assumption was violated with respect to organizational agility but observed for operational processes.

Collinearity refers to correlations or multiple relationships among independent variables that affect beta weights and cause errors in multiple regression analysis. Multicolinearity has been observed to produce a big variation on dependent variable in hierarchical linear regressions. Levels of multicolinearity in the study were assessed by use of tolerance, VIF and CIN values (Hair et al., 2014) and results presented on Tables 13 and 14 below. Table 13 presents tolerance and VIF for organizational agility and operational processes.

Table 14: Tolerance and Variance Inflation Factor for Organizational Agility and Operational Processes

Variables	Collinearity Statistics	
	Tolerance	Variance Inflation Factor
Organizational Agility	0.946	1.057
Operational Processes	0.949	1.054

Source: Field Data 2019

Data in Table 13 indicates tolerance value for organization agility as 0.946 and operation processes 0.949. The VIF values were 1.057 for organizational agility and 1.054 for operational processes. The CIN was also computed to further assess multicollinearity and the results presented on Table 14 below.

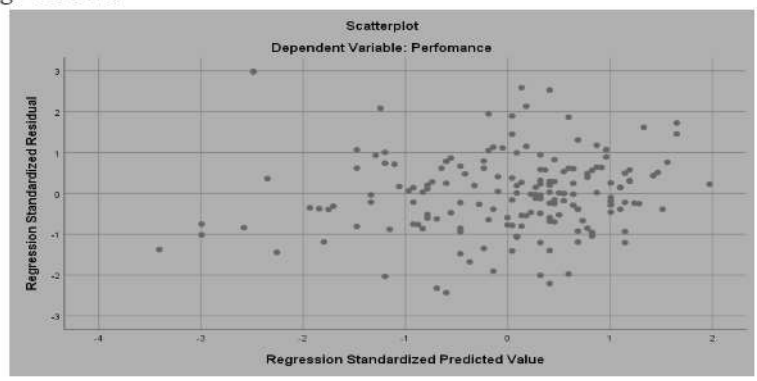
Table 15: Condition Index for Organizational Agility, Operational Processes and Performance

Collinearity Diagnostics a					
			Variance Proportions		
Model	Dimension	Condition Index Number	(Constant)	Organizational Agility	Operational Processes
1	1	1.000	.00	.00	.00
	2	12.595	.01	.91	.05
	3	14.534	.00	.02	.61
	4	22.162	.99	.07	.34
a. Dependent Variable: Performance					

Source: Field data 2019

CIN values for all the variables ranged between one and 22 and all the pairs of proportional variances were below 1.0. Field (2009) explained that if tolerance value is less than one and VIF is less than 10, multicolinearity cannot cause a problem in linear regression analysis. If CIN is greater than 15, multicolinearity poses a tolerable problem but if it is greater than 30 a remedial action is necessary before linear regression analysis can be carried out. In conclusion, tolerance for the variables was below one; VIF values were less than 10; and CIN was less than 30. In addition, the variance proportions were less than one and therefore, there was no multicollinearity among organizational agility and operational processes.

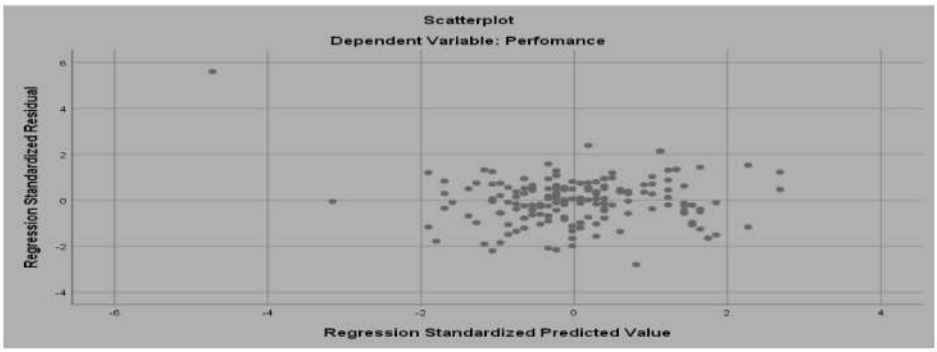
Homoscedasticity is another condition that that must be established so that the error term does not vary much as the value of independent variables change. The test for homoscedasticity accuracy is dependent on the nature of variability of the predictor and predicted variables at different levels. This variability is referred to as homogeneity when the change occurs by almost a similar factor (Field, 2009). Homoscedasticity can be tested by use of scatter plots which appear rectangular in shape and within three standard deviations when the assumption is met. In this study, scatter plots for the test were determined and plotted as shown on Figures 1 to 3 below.



Field data 2019

Figure 1: Scatter Plot of Organizational Agility and Performance

Scatter plots in Figures 1 and 2 above show a pattern less shape formed within -3 to + 3 deviations which indicated that homoscedasticity assumption was not violated. Similar test was performed for operational processes and performance and the resulting scatter plot was presented as shown on Figure 2 below. The graph shows a pattern less shape lying within two standard deviations hence homogeneity was confirmed.



Source: Field data 2019

Figure 2: Scatter Plot for Operational Process and Performance

Regression Analysis of Variables

Linear and multiple regression analysis were conducted to predict the nature of relationship between organizational agility and performance of chartered universities and moderation of operational processes to the relationship. Linear regression was used to establish relationship between organizational agility and performance of public universities and results presented in Table 15 below.

Table 16: Regression of Organizational Agility on Performance of Public Universities

Model	R	R Square	Adjusted R Square
1	.553[b]	.306	.279

ANOVA a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	810.985	1	810.985	11.464	.002[c]
Residual	1839.301	26	70.742		
Total	2650.286	27			

Coefficients a

Model	Unstandardized Coefficients	Standardized Coefficients	t-value	Sig.
(Constant)	28.115		3.189	.004
Organizational Agility	.255	.553	3.386	.002

a. Whether the university is public or private = public

b. Predictors: (Constant), Organizational Agility

Dependent Variable: Performance

Source: Field data 2019

Table 15 above shows R squared value of .306, which meant that organizational agility explained 30.6 percent of variation in performance. The overall model was significant (P-value< 0.05) and consequently, null hypothesis (H_{11}) which stated that there was no significant effect of organizational agility on performance of public universities was rejected and therefore, organizational agility influenced performance of chartered public universities. The predictive equation was PUB = 28.115 + .255OA (P-value<0.005) meaning that one unit increase in organizational agility led, on average to a change of .255 units in performance.

Description of organizational agility showed that student population in public universities increased because of government fee subsidy in secondary schools and Introduction of module II programmes. This might have increased revenue collection that enabled public universities to raise more funds to bridge the deficit from exchequer and open new campuses before 2017. Consequently positive relationship between organizational agility and performance was

attributed to greater number of students admissions.

Relationship between organizational agility and performance of private universities was determined through similar procedure and results presented on Table 16 below.

Table 17: Regression of Organizational Agility on Performance of Private Universities

Model	R	R Square	Adjusted R Square
1	.484b	.234	.164

ANOVA a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	336.702	1	336.702	3.361	.094c
Residual	1101.963	11	100.178		
Total	1438.665	12	100.178		

Coefficients a

Model	Unstandardized Coefficients	Standardized Coefficients	t-value	Sig.
(Constant)	98.953		5.568	.000
Organizational Agility	-.264	-.484	-1.833	.094

a. Whether the university is public or private = private

b. Predictors: (Constant), Organizational Agility

Dependent Variable: Performance

Source: Field data 2019

The output of regression analysis on Table 16 above show that R squared was .234 but explanatory power of organizational agility on performance was insignificant because the overall model was not fit (P=0.094, >0.05).Therefore the null hypothesis (H_{12}), that there was no significant effect of organizational agility on the performance of private universities was not be rejected meaning that organizational agility did not significantly affect the performance of private universities.

The insignificant effect of organization agility and performance of private universities was attributed to earlier findings that government drivers of agility did not affect private universities because they had complied with the policies. They also had better enablers and response to drivers of

organizational agility and when the opportunity to increase number of students arose, they responded by offering superior facilities and flexible modes of learning which attracted more students. These might have counteracted negative influence of organizational agility on performance and explained the insignificant outcome of organizational agility on the performance contrary to the expectation.

Hierarchical regression analyses were then done to determine whether operational processes moderated the relationship between organizational agility and performance of public universities. The interaction term was obtained as a product of standardised scores for organizational agility and operational processes. Table 4.17 below shows the results of operational processes regressed on performance. Operational processes accounted for 33.2 percent of performance where R squared was 0.332. Model 1 was significant (P-value < 0.05). The joint relationship pointed to an increase in contribution to variance explained by organizational agility from 14 percent to 33.2 percent. When the interaction term of organizational agility and operational process was introduced, the variance increased further to 40.6 percent where R squared was 0.406.

The overall model was significant (p-value, <0.05) and therefore, the null hypothesis (H_{21}), which stated that operational processes did not moderate the relationship between organizational agility and performance of public universities, was rejected with respect to operational processes. On individual significance organizational agility and operational processes were insignificant and the predictive equation was PUB = 172.429 + 4.458O*OP, meaning that if organizational agility, operational processes, and interaction term of organizational agility and operational processes were increased marginally, performance in public universities would, on average go up by 4.458 and therefore when combined organizational agility and operational processes influenced performance. Moderation effect of operational processes in private universities was not examined because the model that tested the relationship between organizational agility and performance was not significant.

Table 18: Regression of Operational Processes, Organizational Agility on Performance of Public Universities

Model	R	R Square	Adjusted R Square
1	.687b	.472	.430
2	.757b	.573	.520

ANOVA a					
Model	Sum of Squares	df	Mean Square	F	Sig.

Regression	1252.205	2	626.103	11.196	.000c
Residual	1398.081	25	55.923		
Total	2650.286	27			
Coefficients a					
Model 1	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
(Constant)	-1.669			-.127	.900
Organizational Agility	.186		.402	2.597	.016
Operational process	.611		.435	2.809	.010
ANOVA b					
Model 2	Sum of Squares	df	Mean Square	F	Sig.
Regression	1518.622	3	506.207	10.735	.000c
Residual	1131.664	24	47.153		
Total	2650.286	27			
Coefficients b					
Model 2	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig.
(Constant)	172.429				.029
Organizational Agility	-1.351		-2.927	-2.079	.048
Operational Processes	-2.213		-1.576	-1.837	.079
AO*OP	.025		4.458	2.377	.026
a. Whether the university is public or private = public					
b. Predictors: (Constant), AO*OP, Organizational Agility, Operational Processes					
Dependent Variable: Performance					

Source: Field data 2019

Summary of Findings

The broad objective of the study was to establish whether operational processes moderated the relationship between organizational agility and performance of universities in Kenya. Operational processes were hypothesised as having moderation relationship. From the results, conceptual framework was revised as presented in Figure 4.3 below.

The first objective and the corresponding null hypothesis (H_{11}, H_{12}) sought to determine whether organizational agility had any contribution to the performance of chartered public and private universities. Organizational agility contributed 30.6 percent to performance of public universities where a one unit increase led, on average to a change of 0.255 units of performance and the null hypothesis (H_{11}) was rejected. However, a negative insignificant contribution of 23.4 percent (R squared=. 234) observed for private universities led to failure to reject null hypothesis (H_{12}). Therefore organizational agility influenced performance of public universities and not for private universities.

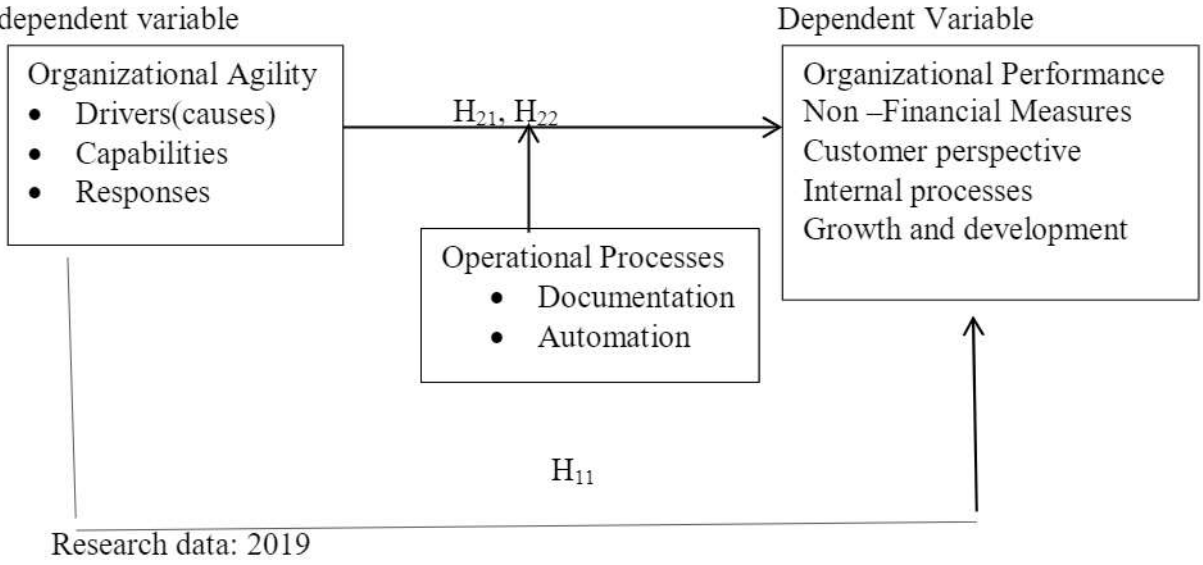


Figure 3: Revised conceptual Frame Work

The resultant mixed results concurred with empirical studies elsewhere in the world which explained that agility is a multifaceted concept that has diverse dimensions. Huang & Li (2008) studied on tracking of the evolution of research issues on agility with the aim of determining what was known and what needed to be discovered and Wendler (2013) on agility from different perspectives, arrived at similar conclusion. The outcomes were also supported earlier findings by Goldman et al. (1995), (Sharifi & Zhang, 1999) and others that followed such as (Sajdak, 2015) whose studies concluded that the impact of agility on various manufacturing firms depended on type of industry, environment, contextual circumstance, time interval and the triggering events.

Agility studies on challenges affecting university education in Kenya by Nganga, (2010), Nyangau, (2012) and Odhiambo

(2018) described the impact on universities as having an indirect association with high demand that did not match the corresponding investment in facilities, manpower and government funding. Data from Kenya National Bureau of Statistics (2015) showed that, student admissions to universities rose by 213 percent in the period between 2009/2010 and 2014/2015 academic years. The numbers were enormous in comparison to the resources that were needed to support them and it is possible that the sudden increase instigated the challenges and opportunities that led to establishment of satellites campuses whose quality standards did not meet the compliance criteria (CHE, 2014).

The contributions to the body of knowledge concerning objective one was that organizational agility created opportunities in university education in Kenya, contrary to the believe that it was the source of numerous problems witnessed in public universities. It also does not affect firms that are adaptable to rapid change and its influence on service industries is similar to manufacturing firms. The study also provided a quantitative approach that led to generalization of findings as opposed to the studies reviewed whose methodologies and designs were exploratory, qualitative and or case studies.

Summary, Conclusion and Recommendations

The objective of the study was to establish whether operational processes moderated the relationship between organizational agility and performance of chartered universities in Kenya. Four objectives with corresponding hypothesis were formulated with respect to public and private universities as follows to determine the relationship between organizational agility and performance of chartered public and private universities in Kenya, to establish whether operational processes moderated the relationship between organizational agility and chartered public and private universities in Kenya.

Summary

The unit of analysis was the 48 chartered universities in Kenya (CUE, 2016) and unit of observation was 271 deans who represented either a faculty or a school. A structured questionnaire that contained statements constructed on a likert scale were used to collect data, out of which 192 were completed and returned. Demographics indicated that all public universities were owned by government, 11 private universities had local ownership, two were owned by foreigners, three had both local and foreign ownership while a majority were owned by religious institutions.

Data was analysed by use of descriptive analysis and regression analysis. Results for objective one indicated that organizational agility explained 30.6 percent of variance in performance of public universities and one unit increase led, on average to a change of 0.255 units in performance and therefore the null hypothesis (H_{11}) was rejected. The

overall model for private universities was not significant and there was failure to reject null hypothesis (H_{12}). Therefore organizational agility affected performance of chartered public universities but there was no significant effect on private universities.

Moderation effect of operational processes indicated that the joint relationship led to an increase in contribution to variance explained by organizational agility from 30.6 percent to 47.2 percent. When the interaction term of organizational agility and operational processes was introduced, the variance increased further to 57.3 percent. The individual contribution of organizational agility and operational processes became insignificant while interaction term of organizational agility and operational process was significant. Therefore moderation effect had bigger contribution to performance of public universities than individual contribution of organizational agility and operational processes. Moderation effect of operational processes in private universities was not examined because the model for organizational agility on performance was insignificant. In conclusion operational processes moderated the relationship between organizational agility and performance of public universities. From descriptive analysis of private universities data, operational processes were automated and integrated to serve both staff and students more efficiently. The employees were also empowered to perform the processes better compared to public universities. Therefore there was another path that operational processes influenced performance of private universities apart from interaction with organizational agility.

Implications to Theory

The results confirmed the ideas expressed in theory of constrains and social technical theory. Constraints embedded in operational processes supports continuous improvement through discovery of obstacles, correcting them and searching for more until the system is optimized. Social technical theory explains how organizational agility and operational processes in context of internal and external operating environments influence performance of universities.

Implications to Policy

The key finding of the study is that organizational agility which is characterized by a rapid change does not affect performance of organizations negatively as widely believed. Public universities in Kenya had a positive performance when rapid changes occurred in the education sector and the same events had no significant effect on private universities. If organizations are adaptable and flexible, they can take advantage of opportunities created by agility to post a better performance. The negative effects impacts on organizations that are not well prepared in anticipating change.

Implications to Practice

Managers can develop frameworks that enable universities to gain competitive advantage through operational processes because they are contingent and it is not possible for any other member of the sector to duplicate in a way that achieves same efficiency. The unique processes can help

create a market niche that can contribute to the much needed sustainable source of revenue. Operational processes distinguished the public and private universities. Public universities should continuously improve their processes especially those that serve the leaners and staff through automation and information technology. Staff should be empowered to improve processes for the purpose of facilitating faster service delivery.

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