



**EFFECT OF BUSINESS PROCESS RE-ENGINEERING ON PERFORMANCE OF AGRO-PROCESSING FIRMS IN NAIROBI CITY COUNTY**

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**ABSTRACT**

*This study determined the effect of organizational restructuring, knowledge management, information technology capabilities and process monitoring on performance of agro-processing firms in Nairobi City County. The study used descriptive research design and the target population was all the 177 Agro-processing firms in Nairobi City County as registered with Kenya Association of Manufacturers. The study adopted a simple random sampling technique where 65 firms were selected. The study made use of both primary and secondary data where primary data was collected through questionnaires while secondary data was obtained from the financial statements of the firms. Before the actual data collection, a pilot study was conducted. Descriptive statistics was used to meaningfully describe the distribution of results as Pearson's coefficient of correlation was used to quantify the strength and direction of the relationship between the variables. Quantitative data was presented using instruments such as tables and graphs. Multiple regression analysis was used to analyze the relationship between the dependent variable and independent variables. The study findings indicated that jointly, organizational restructuring, knowledge management, information technology capabilities and process monitoring affect the performance of agro-processing firms. The findings indicated that 77% of change in performance of agro-processing firms can be explained by the four predictors, an implication that the remaining 23% of the variation in performance of agro-processing firms could be accounted for by other factors not considered in this study. The study recommended that agro processing firms should restructure their processes depending on their objectives. The findings that knowledge management improves an organization's efficiency and save knowledge within the company calls for agro processing firms to invest more on knowledge management. Further, agro processing organizations intending to carry out business process reengineering should invest in information technology tools and equipment and should adequately train their staff on how to exploit the ICT resources to bring down the cost of operations, enhance efficiency, increase the speed of operations and improve the quality of goods and services. Lastly, the study recommended for a periodic tracking of processes' progress by systematically gathering and analyzing data and information in agro processing firms.*

**KEYWORDS:** *Business Process Reengineering, Organizational Restructuring, Knowledge Management, Information Technology Capabilities and Process Monitoring*

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## INTRODUCTION

Agro processing firms are facing challenges from cross border competition, pest side restrictions, green movement, customers that are more discerning and increasing global competition (Jouanjean, 2019). To survive, agricultural organizations must continuously align operations to the said environment they operate in (Hofmann & Jaeger-Erben, 2020). Business Process Reengineering (BPR) is one important tool that agro-processing firms can use to improve their processes and ultimately improve their performance. Business Process Reengineering (BPR) is hailed as one of the current major drivers of change and performance in all types of organizations including Agro-processing firms. BPR enables such firms to survive in the more competitive, customer oriented commercial environment that characterize the contemporary organizations (Anderson, 2019). Haseeb, Ahmad, Malik and Anjum (2019) defines BPR as the radical redesign of a business processes to gain dramatic improvements in performance measures such as cost, quality, service and speed BPR by definition radically departs from other popular business practices like total quality management, lean production, downsizing or continuous improvement (Raman & Goyal, 2017). As a completely new approach that enabled companies to operate in the 1990s and beyond, BPR was first introduced by Hammer (1990) and Davenport and Short (1990). In their articles, the authors outlined a blueprint for BPR and claimed that BPR was producing radical improvements in organizational performance. Since then, BPR has become one of the most popular subjects in business management and information systems, and has aroused exceptional interest of thousands of business managers, information technology experts and researchers worldwide (Mendling, Decker, Hull, Reijers & Weber, 2018).

The concept of business process re-engineering has spread all over the globe. Business Process Reengineering (BPR), as defined by the United

States Government Accountability Office (GAO), is a systematic, disciplined improvement approach that critically examines, rethinks, and redesigns mission-delivery processes in order to achieve dramatic improvements in performance in areas important to customers and stakeholders (Humphress, 2018). According to Hicks (2020), BPR employs a logical methodology for assessing process weaknesses, identifying gaps and implementing opportunities to streamline and improve the processes in business operations.

In Kenya, most organization processes are simple and efficient when initially designed (Tama, Molyneux, Waweru, Tsofa, Chuma & Barasa, 2018). Nevertheless, with passage of time, addition of sub-processes to handle exceptions, changes in the business environment and increase in customer expectations and demands, the same processes become more complex and inefficient. Solution design to such complex, inefficient and costly business processes has brought about Business Process Re-engineering (BPR) into the subject of academic research (Bhaskar, 2018). BPR has been sold as the new silver bullet to address whatever ailed Kenyan business organizations since the early nineties and the years forward (Waweru & Maina, 2019). The need for BPR is arising with increasing power of customers, competitors and today's constantly changing business environment. This have forced many organizations to recognize the need to move away from focusing on individual tasks and functions to focusing on more communicated, integrated and co-coordinated ways of work by looking at operations in terms of business processes (Busch & Barkema, 2020).

According to Aziz (2019), while the promises from BPR implementation have been impressive, the encountered problems have also been numerous. Few organizations reaped the benefits they expected from BPR. Approximately one quarter of 300 BPR projects in Kenya failed and the authors speculated industry wide figure at closely 70 percent (Immaculate, 2017). Specifically, many managers said that the actual BPR project benefits

fell short of expectations along the dimensions of customer service, process timeliness, quality, cost reduction, competitiveness, improved technology and revenues. With more accumulated experience, however, there is growing realization that Information Technology is a critical BPR enabler, but implementing BPR involves complex socio-technical change in an organization (Immaculate, 2017). Reengineering is becoming an increasingly popular option for corporations seeking radical process change. Central to the success of reengineering is the coordination of information technology (IT) through the organization. Successful implementation of BPR methodologies leads an organization to improve on efficiency and effectiveness of its processes, reduction in operational costs, faster service delivery due to reduction in throughput time, higher flexibility in terms of alternatives and high quality service hence increasing customer value (Dutta, Choi, Somani & Butala, 2020).

### **Statement of the Problem**

Agriculture is the backbone of the Kenyan Economy generating about 25% of GDP and providing employment to about 70% of the total population in Kenya (Mwanyika & Koori, 2020). The agro-processing sector in Kenya constitutes about a third of the manufacturing sector. In 2019, the sector exported about 47% of total manufacturing sector export mainly from export of tea, coffee, horticulture, tobacco and fish products (Esaku, 2020). Consequently, agro-processing industries have emerged to benefit the farmers by value addition to their produce. Some of the industries that have developed in the course of time include the sugar industry, tea and coffee processing, alcohol and yeast processing. Kenya Vision 2030 identifies the manufacturing sector especially the agro-processing industry as one of the key drivers for realizing a sustained annual GDP growth of ten percent (Immaculate, 2017). To achieve this however, the sector needs to wake up to increasing changes in all sectors globally that is posing a competitiveness threat. For instance, Export of

agro-processing goods has declined sharply, with Kenya losing its African export market to China and India. In the last eight years to 2018, the country has watched helplessly as the market for some its key products in agro-processing industries declined leading to massive job losses. The rapidly growing markets, information and awareness in the world demand agro-processing organizations to change their operational processes to compete globally. Today customers demand low prices and better quality services due to which organizations are facing stiff challenges. Focus of the organizations should be not only to lessen the cost of the operations but also to provide better and unique services to attract the new and retain the existing customers. Rapid improvements in the technology have forced the organizations to change their strategy, policies and capacities. One survival strategy for agro-processing firms is business process re-engineering (Chege, Wang & Suntu, 2020). Through business process re-engineering, Kenyan Agro-processing firms will be able to catch up with others such as from China by offering cheaper prices to consumers.

Business Process Reengineering calls for a radical redesign of processes in order to gain significant improvements in cost, quality, and service (Ongeri, Magutu & Litondo, 2020). Firms have been reengineering various business functions for years, ranging from customer relationship management to order fulfillment, and from assembly lines to logistics (Hazen, Russo, Confente & Pellathy, 2020). Anecdotal evidence suggests that many organizations gained benefits from BPR projects. Despite the significance of BPR to organizations, the numbers of studies conducted on its impact on performance especially in Kenya are limited. Majority of existing studies suggest that there are substantial benefits for firms that successfully implement the structural changes associated with BPR projects (Immaculate, 2017; Ogada, 2017). Nevertheless, even the recent literature is rife with anecdotal evidence and short on empirical evidence of performance impacts of BPR projects

(Onjure, Wanyoike, & Mungatu, 2018; Ogada, 2017; Immaculate, 2017). Further, studies exist relating to business process reengineering in various sectors though very little has been done with regard to the agro processing industries in Nairobi City County. This study will seek to fill this gap in literature by carrying out a research on the effect of business process re-engineering on the performance of agro processing firms in Nairobi City County.

**Objectives of the study**

The general objective of this study was to determine the effect of business process re-engineering on the performance of agro-processing firms in Nairobi City County. Arising from this, the specific objectives were:

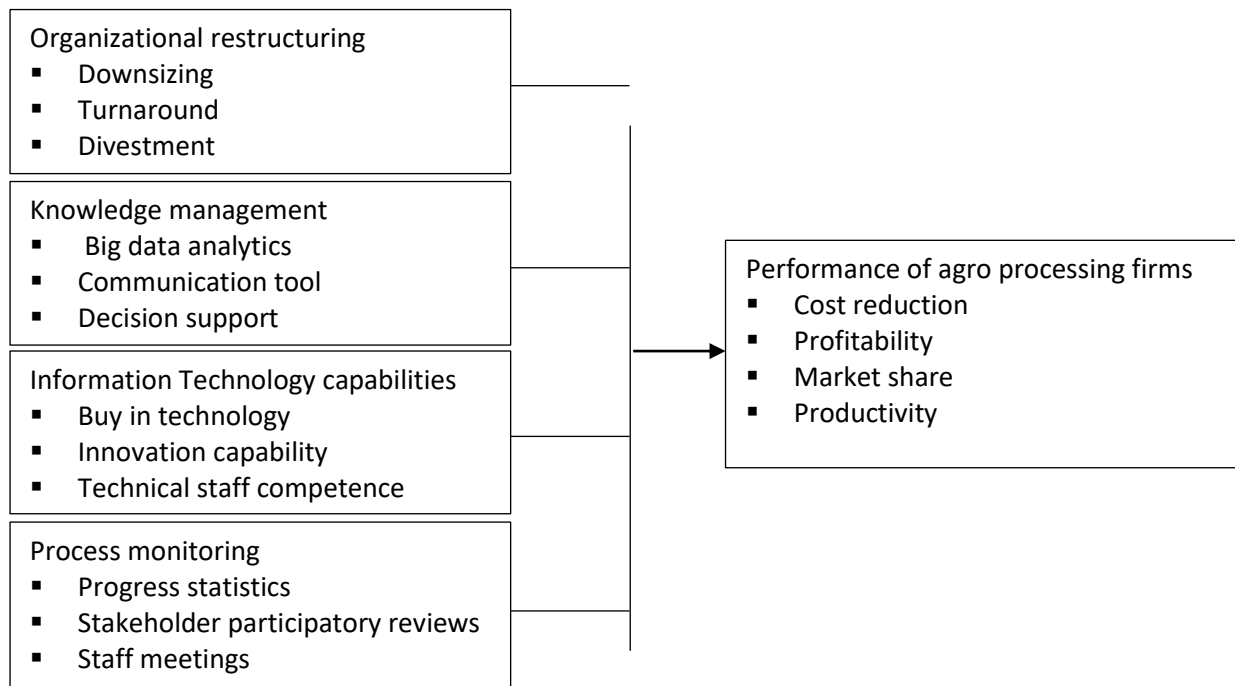
- To determine the effect of organizational restructuring on the performance of agro-processing firms in Nairobi City County.
- To establish the effect of knowledge management on the performance of agro-processing firms in Nairobi City County.
- To explore the effect of information technology capabilities on the performance of agro-processing firms in Nairobi City County.

- To assess the effect of process monitoring on the performance of agro-processing firms in Nairobi City County.

**LITERATURE REVIEW**

**Theoretical Framework**

Theories are formulated to explain, predict, and understand phenomena and, in many cases, to challenge and extend existing knowledge within the limits of critical bounding assumptions (Braidotti, 2019). The theoretical framework is the structure that can hold or support a theory of a research study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists (Braidotti, 2019). In this seeking to determine the effect of business process re-engineering on performance of agro-processing firms, the underpinning theories included; theory of constraints, dynamic capability theory, resource based view theory and stakeholder management theory.



**Independent Variables**

**Dependent Variables**

**Figure 1: Conceptual Framework**

Organization restructure entails planned changes in a firm's organizational structure that affect its use of people (Moşteanu, 2020). Many cases of restructuring involve downsizing. The business may dismiss employees, eliminate departments or close some of its retail locations. Businesses attempting to downsize may also outsource some of their operations to save money. In other cases, restructuring may involve the reassignment or alteration of duties within the organization to improve performance or incorporate new technologies. According to Parent, Naraine and Hoye (2018), restructuring involves changing the structural archetype around which resources and activities are grouped and coordinated. Companies commonly organize around function, business line, customer segment, technology platform, geography, or a matrixed combination of these. *Reconfiguration* involves adding, splitting, transferring, combining, or dissolving business units without modifying the company's underlying structure. The goals all types of restructuring tend to be the same: to boost innovation and, ultimately, financial performance.

Knowledge management (KM) is the process of creating, sharing, using and managing the knowledge and information of an organization (Intezari, Taskin & Pauleen, 2017). It refers to a multidisciplinary approach to achieving organizational objectives by making the best use of knowledge. Business process reengineering is complex and challenging. Many organizations are trying to switch over to knowledge management and develop a knowledge management strategy, often alongside ongoing BPR (Dalkir, 2017). Knowledge is the capability of choosing the rational action for a certain purpose and it is a major asset to a company if managed properly. Knowledge by itself is of little use. It can be manipulated to become valuable asset. Knowledge has to be capable of being identified, acquired, applied and stored for later use in order to be considered a competitive advantage. It is often sub-categorized into two forms, explicit knowledge and tacit

knowledge. Explicit knowledge can be easily articulated and transferred to others. Tacit knowledge is personal knowledge residing in individuals' heads or built into the working practices of the business over time. It is relatively difficult to articulate, codify and communicate.

IT Capability (information technology capability) refers to an organization's ability to identify IT meeting business needs, to deploy IT to improve business process in a cost-effective manner, and to provide long-term maintenance and support for IT-based systems (Alaneme, 2017). It is the abilities to leverage different IT resource for intangible benefits. Information Technology (IT) Capability is an organization's ability, by virtue of its IT assets and know-how, to create business value this capability can be, and is usually, attributed to the IT function within an organization. More appropriately it should be attributed to the organization as a whole because no function within an organization is an island. Each gains from the other and in turn enriches them. This value "bleed" from one function to another cannot be quantified in a meaningful way, however, it exists. It can be positive or negative. When the organization plays as a team i.e. the functions collaborate, positive value passes between functions. In this case, the organization's capability is greater than the sum of its parts. The functions are better off together. Conversely, when the organization does not play, as a team i.e. is dysfunctional, then the value bleed is negative. In this case, the organization's capability is less than the sum of its parts. It follows then that the functions are better off not being with each other! The net of this phenomenon is that no function within an organization would create the same value within another organization. For example, if an IT organization is moved from one company to another, it will deliver more or less but never the same value as it was creating in the original company.

Business process monitoring is the activity of reviewing and analyzing the performance of such

processes to identify successes and problems. Monitoring is an integral part of the business process management (BPM) lifecycle. BPM monitoring is usually carried out via software known as a business process-monitoring tool (BPM monitoring tool). The concept of business process monitoring covers such a broad scope, potentially looking at activities within every aspect of the business. To achieve success within business process monitoring, a structured approach is needed (Javidroozi, Shah & Feldman, 2019). Process monitoring is a more comprehensive type of BPM, as it encompasses the whole spectrum of activities and workflows that exist in a business. It compares performances of systems, equipment, and software and how they integrate and work within a whole process. It's an essential part of business process monitoring as a whole.

Organizational performance refers to how well an organization is doing to reach its vision, mission, and goals. Assessing organizational performance is a vital aspect of strategic management, and assessment can be through actual net results of an organization as measured against its intended goals and objectives. According to Egbunike and Okerekeoti (2018), organizational performance comprises of three specific areas of firm results that include financial performance. Financial performance can be used as measures of performance relating to organizational effectiveness and profits. Examples include financial ratios such as return on assets, return on equity, and return on investment. Other common financial measures include profits and stock price. Such measures help answer the key question of shareholder's return that can be considered as economic value added. Product market share performance is also a key indicator of organization performance, it also reflects the market competitiveness and how well a firm is doing against its competitors. Market share denotes revenue, market value of the product and competitive advantage (Kaleka & Morgan, 2017). Market share is the percentage of business or sales

revenue a company wields out of total business or sales by all competitors combined in any given market. The final measure of organizational performance is growth performance, how a company is growing should be aligned with business plan and should reflect the objectives that of the company, as well as the methods the organization plan applies in trying to achieve them. Measuring company growth, the management will consult business plan to not only see if they have managed to achieve objectives, goals and mission, but also confirm how successfully they have followed the strategic plan set out for business (Nderitu & Njuguna, 2017).

## **METHODOLOGY**

The study used descriptive design, a method that describes variables by first collecting appropriate data, tabulating this data and deriving frequencies and determining any existing correlation (Silverman, 2019). The target population was all the 177 Agro-processing firms in Nairobi City County as registered with the Kenya Association of Manufacturers (KAM, 2019). One representative in each firm and who was knowledgeable of business strategy adopted by the firm was selected. Given the population (N) of 177 firms, coefficient of variation (C) of 0.5 and the margin of error or the level of precision (e) of 0.05, the sample size (n) of the study was 65 participants. The study adopted a random sampling technique in which each sample has an equal chance of being chosen. The study used both primary and secondary data. Primary data was collected through a questionnaire. Secondary data for the growth (dependent variable) was obtained from the financial statements of the agro-processing firms. The researcher sought permission/authorization from the Agro-processing firms' managements to collect data after having acquired the introductory letter from the University. The researcher explained to the respondents the importance of the study (informed permission) and assured the respondents of their confidentiality and anonymity of their identities. The respondents were debriefed

in the case of challenging questions, voluntary participation by respondents was enhanced and data collection method was free from emotional harm to respondents. Further, only respondents competent enough to address the study objectives were considered. The questionnaire was administered through drop and pick-later method to the sampled respondents. Before actual data collection, a pilot study was conducted on 10% of the population. Pilot study of 18 participants from the participating organizations was selected and excluded from the final study. Cronbach alpha coefficient which is used to assess the internal consistency among research instruments items was used. Cronbach Alpha was used to test the reliability of the proposed constructs. The study used both content and constructs validities. Content validity was observed by questionnaire being examined by experts in the strategic management discipline. Construct validity was observed by dividing the questionnaire into several parts which had information for a specific objective and ensured that it was in tandem with the conceptual framework.

Data obtained from the field was cleaned, coded, keypunched into a computer and analyzed. The collected data was analyzed quantitatively with the help of Statistical Package for Social Sciences Version 24. Descriptive statistics was used to meaningfully describe the distribution of results depending on the variables in the study and the scale of measurements used. To quantify the strength and direction of the relationship between the variables, the study used Pearson's coefficient of correlation. Quantitative data was presented using instruments such as tables and graphs. Multiple regression analysis was used to analyze the relationship between the dependent variable and independent variables. The coefficient of determination (R-Square) resulting from the linear regression was used to determine the goodness of fit (Armstrong, 2019). The research used the following multiple regression model.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where

$Y$  = Performance of Agro-processing firms

$X_1$  = Organizational Restructuring

$X_2$  = Knowledge management

$X_3$  = Information Technology capabilities

$X_4$  = Process Monitoring

$\beta_0$  = Constant;  $\beta_1, \beta_2, \beta_3, \beta_4$  = Beta Coefficients

$\varepsilon$  = Error Term

## FINDINGS AND DISCUSSIONS

In this study, out of the 65 questionnaires that were administered, 59 were returned, recording a 90.77 % response rate. Cronbach's Alpha method was used to check on the reliability and validity of the instruments used by determining the internal consistency of the scale used. While different levels of reliability are required, depending on the nature and purpose of the scale, a minimum level of 0.7 Cronbach alpha values was recommended. The average Cronbach's Alpha value was 0.754.

### Descriptive Analysis

Descriptive analysis was used to describe the basic features of the data in the study giving a summary about the sample and the measure. It also helped in the simplification of large amounts of data in a sensible and manageable form. It expressed the variables into frequencies and percentages.

### Organizational Restructuring

The study sought to determine the effect of organizational re-structuring on the performance of agro-processing firms in Nairobi City County. This objective was measured using downsizing, turnaround and divestment as indicators in the opinion statements given. Respondents were asked to indicate the extent to which organizational restructuring affects the performance of agro-processing firms in Nairobi City County. This was based on a likert scale of not at all, small extent, moderate, large extent and very large extent. Therefore, in this study, a scale of not at all and small extent implied disagree while large and very large extent implied agreement. The results were expressed as percentages as indicated in Table 1 below.



**Table 1: Responses on the effect of Organizational Restructuring on performance of Agro-processing firms**

Statements on Organization Re-structuring	1	2	3	4	5
	%	%	%	%	%
Organizational re-structuring is part of our organizational strategy	0	1.69	10.17	23.73	54.24
Our organization has previously undertaken downsizing in the organization	1.69	6.78	16.95	23.73	50.85
Our organization eliminates business function that are not relevant through down scoping	1.69	5.08	25.42	30.51	37.29
Leveraged buyout strategy is part of our corporate strategy	8.47	15.25	20.34	22.03	33.89
Organizational restructure leads to profitability	0	8.47	25.42	32.20	33.89
Organizational restructure leads to market share	0	3.39	6.78	33.89	45.76

Key: 1-Not at all, 2-Small Extent, 3-Moderate Extent, 4-Large Extent and 5- Very Large Extent.

From the results in Table 1, majority of the respondents (77.97%) agreed that organizational re-structuring was part of their organizational strategy. Where else, 1.69% of the respondents disagreed with the statement that restructuring is part of their organizational strategies as 10.17% indicated moderate. On the other side, respondents (74.58%) confirmed that agro-processing organizations had previously undertaken downsizing in their organization. This is a form of organizational restructuring aimed at boosting efficiency and effectiveness in the organizations. Further, the results indicate that most of the agro-processing organizations (67.8%) eliminate business functions that are not relevant through down scoping. Bake (2017) opined that Business Process Reengineering entails reinventing processes by abolishing the old ones and finding imaginative ways of accomplishing work while designing completely and radically new processes.

Respondents indicated that majority (55.92%) of the agro processing firms had adopted leveraged buyout strategy as part of their corporate strategy. Additionally, the results indicate that agro-processing firms enjoyed the benefits of organizational restructuring such as profitability and increased market share as indicated by 66.09% and 79.65% of the respondents' opinions respectively. Contrariwise, 8.47% and 3.39% of the respondents dissented on the same, disputing the

imperative role of organizational restructuring on organizational profitability and market share.

The findings of this study are in agreement with Fitria, Mukhtar and Akbar (2017) that organizational structure is the formal system of task and reporting relationships that controls, coordinates and motivates employees so that they cooperate to achieve organizational goals. Further, the study found that there is an increased achievement on changes in structure and reporting channels with employees and increased performance.

#### **Knowledge Management**

The study sought to establish the effect of knowledge management on the performance of agro-processing firms in Nairobi City County. This objective was measured using big data, communication tool and decision support as indicators in the opinion statements given. Respondents were asked to indicate the extent to which knowledge management affected the performance of agro-processing firms in Nairobi City County. This was based on a likert scale of not at all, small extent, moderate, large extent and very large extent. Therefore, in this study, a scale of not at all and small extent implied disagree while large and very large extent implied agreement. The results were expressed as percentages as indicated in Table 2 below.

**Table 2: Responses on the effect of Knowledge Management on performance of Agro-processing firms**

Statements on Knowledge Management	1 %	2 %	3 %	4 %	5 %
Knowledge management is critical foundation of our corporate strategy	0	0	25.42	33.90	40.68
Our organization implement big data analytics in our organizations	0	1.69	33.90	33.90	30.51
Organization utilize different communication tools to manage business	0	1.69	23.73	27.12	47.46
Our organization adopts decision support system in implementing change in our organization	1.69	6.78	16.95	23.73	50.85
Knowledge management strategy leads to better organization performance	0	0	8.47	33.90	57.63

Key: 1-Not at all, 2-Small Extent, 3-Moderate Extent, 4-Large Extent and 5- Very Large Extent.

The results in Table 2 showed that knowledge management is a critical foundation of corporate strategy as indicted by 74.58% and 25.42% who agreed and moderately agreed respectively to the statement. Respondents were asked to indicate whether agro processing organizations had implemented big data analytics. 64.41% and 33.90% agreed and moderately agreed that their organizations had implemented big data analytics in their operations. Different communication tools were used to manage the business of agro processing as confirmed by 23.73% and 74.58% of the respondents who agreed to the statement.

Majority of the agro processing firms (74.58%) had adopted decision support systems in implementing change. Contrariwise, 8.47% of the respondents disagreed on the adoption of decision support systems in change implementation. Lastly, respondents agreed that knowledge management strategy lead to better organization performance

as indicated by 8.47% and 91.53% of the respondents who moderately agreed and agreed to the statement.

### Information Technology Capabilities

The study sought to explore the effect of Information Technology Capabilities on the performance of agro-processing firms in Nairobi City County. This objective was measured using Buy in technology, Innovation capability and Technical staff as indicators in the opinion statements given. Respondents were asked to indicate the extent to which Information Technology Capabilities affected the performance of agro-processing firms in Nairobi City County. This was based on a likert scale of not at all, small extent, moderate, large extent and very large extent. Therefore, in this study, a scale of not at all and small extent implied disagree while large and very large extent implied agreement. The results were expressed as percentages as indicated in Table 3 below.

**Table 3: Responses on the effect of Information Technology Capabilities on performance of Agro-processing firms**

Statements on Information Technology Capabilities	1 %	2 %	3 %	4 %	5 %
Our business operations are driven by Information Technology	0	3.39	10.17	42.37	44.07
Our organization regularly upgrade its IT capacity	0	1.69	16.95	23.73	57.63
Employees are always willing to buy in new technologies	1.69	13.56	30.51	30.51	23.73
Our organization has adequate innovation capabilities	3.39	10.17	16.95	35.59	33.90
Our organization has key technical staff that guide Information technology implementation	5.08	13.56	15.25	30.51	35.59
Information technology capabilities improves performance	0	0	13.56	35.59	50.85

Key: 1-Not at all, 2-Small Extent, 3-Moderate Extent, 4-Large Extent and 5- Very Large Extent.

As indicated in Table 3, majority of the respondents agreed that their business operations are driven by Information Technology as 86.44% and 10.17% of the responses were in agreement. Elsewhere, 3.39% of the respondents dissented that the business operations were driven by information technology. Most of the agro processing firms regularly upgrade their IT capacity as shown by 81.36% of the respondents to the study. Results indicate that agro processing employees are always willing to buy in new technologies that are used in the industry.

Respondents agreed that their agro processing firms had adequate innovation capabilities and employed key technical staff that guide the implementation of information technology systems. This is stipulated in the study results where 69.49% and 66.1% agreed to the same. Lastly, 86.44% and 13.56% agreed and moderately alluded that information technology capabilities improves performance of agro processing firms. The findings of this study confirm Swartz (2018) assertions the aim of business process reengineering is to redesign and achieve dramatic improvements in organizational performance. To him, business process reengineering uses the power of modern information technology to redesign business processes for better organizational performance.

Further, Nold (2017) considers Information Technology (IT) as the key factor in BPR for organization that wants to witness a radical change in its operation. Nold prescribes the use of Information technology to challenge the assumption inherent in the work processes that have existed since long before the advent of

modern computer and communication technology. Khashman (2019) identified Information and Communication Technology as a critical component of the business process reengineering process.

Jovanoski, Malinovski and Arsenovski (2017) referred to this broadened, recursive view of Information Technology and Business Process Reengineering as the new industrial reengineering process, which represents a new approach to coordination across the firm. IT promises and its ultimate impact is to be the most powerful tool for reducing cost of coordination. Information Technology can best enhance an organization's position by supporting a business strategy, which would be clear and detailed. Information technology is considered as the major enabler for spanning processes over functional and organizational boundaries and supporting process driven organizations.

#### Process Monitoring

The study sought to assess the effect of process monitoring on the performance of agro-processing firms in Nairobi City County. This objective was measured using Progress statistics, Stakeholder participatory reviews and Staff meetings as indicators in the opinion statements given. Respondents were asked to indicate the extent to which process monitoring affected the performance of agro-processing firms in Nairobi City County. This was based on a likert scale of not at all, small extent, moderate, large extent and very large extent. Therefore, in this study, a scale of not at all and small extent implied disagree while large and very large extent implied agreement. The results were expressed as percentages as indicated in Table 4 below.

**Table 4: Responses on the effect of process monitoring on performance of Agro-processing firms**

Statements on Process Monitoring	1 %	2 %	3 %	4 %	5 %
Status assessment are done during redesigning of business process	1.69	6.78	13.56	33.90	44.07
Process monitoring reports are generated periodically	0	5.08	16.95	44.07	33.90
Progress statics are considered important in our organization	0	13.56	25.42	30.51	30.51
Stakeholders participates in process monitoring	3.39	16.95	16.95	28.81	33.90
Staff meetings are held to aid process monitoring	3.39	13.56	13.56	18.64	33.90

Key: 1-Not at all, 2-Small Extent, 3-Moderate Extent, 4-Large Extent and 5- Very Large Extent.

From the results in Table 4, majority of the respondents (77.97%) agreed that status assessment are done regularly during the redesigning of business process. Elsewhere 13.56% moderately agreed as 8.47% disagreed to the same. Respondents were asked the frequency in which process-monitoring reports are generated. 77.97% and 16.95% agreed that the reports are generated periodically. Majority of the respondents (61.02%) agreed that progress statistics are considered important in the agro processing organizations. Further, the results indicated that stakeholders participated in process monitoring and staff meetings were held to aid process monitoring as shown by 33.90% and 33.905 of the respondents respectively.

Sharing the same view is Bhaskar (2018) who found out that BPR reduces costs and cycle time by eliminating unproductive activities and the employees who perform them. Reorganization by teams decreases the need for management layers, accelerated information flows and eliminates the

errors and network caused by multiple hand-offs. Elsewhere, Zaini and Saad (2019) observed that process monitoring involves incrementally improving an existing process by reducing the time, complexity and bureaucracy of the individual steps and sub processes.

#### Performance of Agro-Processing firms

The study sought to determine the extent the organizations had achieved performance due to business process re-engineering efforts. This objective was measured using cost reduction, profitability, market share, productivity, rationalization of staff, motivation of employees and customer satisfaction as indicators in the opinion statements given. This was based on a likert scale of not at all, small extent, moderate, large extent and very large extent. Therefore, in this study, a scale of not at all and small extent implied disagree while large and very large extent implied agreement. The results were expressed as percentages as indicated in Table 5 below.

**Table 5: Responses on performance of Agro-processing firms**

Performance Measurements	Mean
Cost reduction	3.65
Profitability	3.80
Market share	3.85
Productivity	3.79
Rationalization of staff	3.40
Motivation of employees	3.67
Customer satisfaction	3.76

The findings of the study indicated that agro processing firms had benefited from business process reengineering efforts. Among the benefits resultant from business process re-engineering included cost reduction (Mean=3.65), profitability (Mean=3.80), market share (Mean=3.85), productivity (Mean=3.79), rationalization of staff (Mean=3.40), motivation of employees (Mean=3.67) and customer satisfaction (Mean=3.76). The findings of this study are in agreement with Bhasin and Dhama (2018) that BPR is a fundamental rethinking, as well as, a drastic restructure of processes to realize improvements

of various performance indices, like cost, quality, speed and service. Ringim, Razalli and Hasnan (2018) claimed that if the concept of BPR is correctly implemented, organizations would achieve quantum leap of improvement in cost, speed, organizational performance and profitability.

#### Qualitative Analysis

##### Organizational Restructuring

Exploration of the views of respondents on organizational restructuring was conducted using two items. First, the study sought to determine the

organizational restructuring process in the agro-processing organizations and secondly, the study sought to establish how the organizational restructuring affected performance of firms. The process of restructuring that commonly emerged from the respondents views begins with an assessment of the mission, goals and objectives of the organization as well as the requirements of customers. The process proceeds to interrogation of the status quo and questioning the way an organization usually operates giving answers to the questions that provide insight as to why an organization does what it does with a goal of accomplishing its mission. Sharing the same view is Rejeb, Keogh, Zailani, Treiblmaier and Rejeb (2020) that reengineering of business processes calls for getting to the roots of the issues and making far-reaching changes rather than superficial ones in order to effectively solve all the underlying problems.

### **Knowledge Management**

Examination of respondents views on knowledge management were examined using two open-ended questions. The first question sought to identify the functions in agro-processing organization that are supported by knowledge management. Secondly, respondents' opinions was sought on the importance of knowledge management to agro processing firms. From the views of the respondents to the study, the main goal of knowledge management is to improve an organization's efficiency and save knowledge within the company. Often it is referring to training and learning in an organization or of its customers. It consists of a cycle of creating, sharing, structuring and auditing knowledge, in order to maximize the effectiveness of an organization's collective knowledge.

On the importance of knowledge management, the respondents alluded that successful knowledge management improves an organization in several ways. First, it ensures that the specialized knowledge of employees does not leave with them, or go unutilized by other employees who would

benefit from that knowledge. Additionally, it allows for better situational awareness, as well as opening doors for learning about best practices, lessons learned, and overall organizational improvement. Knowledge management is important because it boosts the efficiency of an organization's decision-making ability. Further, in making sure that all employees have access to the overall expertise held within the organization, a smarter workforce is built who are more able to make quick, informed decisions that benefit the company. Innovation is easier to foster within the organization, customers benefit from increased access to best practices and employee turnover is reduced. Grimsdottir and Edvardsson (2018) argued that the importance of knowledge management is growing every year. He advised that as the marketplace becomes ever more competitive, one of the best ways to stay ahead of the curve is to build your organization in an intelligent, flexible manner.

### **Information Technology Capabilities**

An examination of respondents' views on information technology capabilities were examined using one open-ended question. The study sought to determine examples of information technology capabilities in the agro-processing organization and their usefulness. From the views of respondents, modern agro processing firms work far differently from those who existed a few decades ago, primarily because of advancements in technology, including sensors, devices, machines, and information technology. Today's agro processing firms routinely uses sophisticated technologies such as robots, temperature and moisture sensors, aerial images, and GPS technology. These advanced devices and precision agro processing and robotic systems allow businesses to be more profitable, efficient, safer, and more environmentally friendly.

### **Process Monitoring**

Exploration of the views of respondents on process monitoring was conducted using two items. First, the study sought to determine how processing monitoring is done and secondly, the study intended to determine the benefits of process

monitoring. From the views of respondents process monitoring entails the Periodic tracking of process progress by systematically gathering and analyzing data and information. Monitoring of a process involves the collection of routine data that measures progress toward achieving certain objectives. It is used to track changes in process outputs and performance over time. It provides regular feedback and early indications of progress (or lack of progress). The purpose of process monitoring is to permit the management and stakeholders to make informed decisions regarding the effectiveness of the processes and the efficient use of resources.

### Multicollinearity Test

Multicollinearity is the undesirable situation where the correlations among the independent variables

are strong. For Multiple Regression to be applicable there should not be strong relationships among variables. Statistics used to measure multicollinearity include tolerance and Variance Inflation Factor. Tolerance of a respective independent variable is calculated from  $1 - R^2$ . A tolerance with a value close to 1 means there is little multicollinearity, whereas a value close to 0 suggests that multicollinearity may be present. The reciprocal of the tolerance is known as Variance Inflation Factor (VIF). A VIF of around or greater than 5, indicates there is multicollinearity associated with that variable. Table 6 showed the values of the statistics, obtained from the data. The table indicates the test results for multicollinearity, using both the VIF and tolerance. With VIF values being less than 5, it was concluded that there was no presence of multicollinearity in this study.

**Table 6: Multicollinearity Statistics**

Variables	Tolerance	VIF
Organizational Restructuring	.478	2.092
Knowledge Management	.604	1.656
Information Technology Capabilities	.550	1.818
Process Monitoring	.589	1.697

### Inferential Analysis

Inferential statistics infer from the sample to the population. They determine probability of characteristics of population based on the characteristics of the sample. Inferential statistics help assess strength of the relationship between the independent variables and the dependent variables.

### Correlations of the Study Variables

Table 7 illustrated the correlation matrix among the independent variables. Correlation is often used to explore the relationship among a group of variables (Pallant, 2010), in turn helping in testing for Multicollinearity. If the correlation values are not close to 1 or -1, this is an indication that the factors are sufficiently different measures of separate variables (Farndale, Hope-Hailey & Kelliher, 2010). It is also an indication that the variables are not multicollinear. Absence of

Multicollinearity allows the study to utilize all the independent variables. On the other side, Saunders et al. (2009) asserts that, correlation coefficients enable a researcher to quantify the strength of the linear relationship between two or more variables. Correlation is a measure of the degree of relatedness of variables (Ken, 2010). Several measures of correlation are available, the selection of which depends mostly on the level of data being analyzed.

Correlation coefficients provide a numerical summary of the direction and the strength of the linear relationship between two variables. Pearson correlation coefficients ( $r$ ) range from  $-1$  to  $+1$ . The sign at the front indicates whether there is a positive or a negative correlation. The size of the absolute value provides information on the strength of the relationship. A value of 0 means that the variables are perfectly independent that is

no relationship exists, a value of +1 represents a perfect positive correlation and a value of -1 represents a perfect negative correlation (Saunders et al., 2009). To determine the strength and direction of the linear relationship between

independent and dependent variables for this study, Pearson Product Moment Correlation was used and the results obtained are summarized in the below;

**Table 7: Pearson Product-Moment Correlations Between business process reengineering and Performance of agro-processing firms**

Variable		Organizational Restructuring	Knowledge Management	IT Capabilities	Process Monitoring	Performance of Agro-processing firms
Organizational Restructuring	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	59				
Knowledge Management	Pearson Correlation	.461**	1			
	Sig. (2-tailed)	.000				
	N	59	59			
Information Technology Capabilities	Pearson Correlation	.576**	.578**	1		
	Sig. (2-tailed)	.000	.001			
	N	59	59	59		
Process Monitoring	Pearson Correlation	.450**	.459**	.397**	1	
	Sig. (2-tailed)	.001	.003	.000		
	N	59	59	59	59	
Performance of Agro-processing firms	Pearson Correlation	.662**	.583**	.631**	.564**	1
	Sig. (2-tailed)	.001	.000	.002	.000	
	N	59	59	59	59	59

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

The correlation between business process reengineering and performance of agro-processing firms in Nairobi City County was investigated using Pearson product-moment correlation coefficient. There was positive correlation between the dependent and the set of independent variables. The strength of the relationship between the independent variables and the dependent variable (performance of agro-processing firms in Nairobi City County) varied from moderate to strong with organizational restructuring (r=0.662), knowledge management (r=0.583), information technology capabilities (r=0.631) and process monitoring (r=0.564). All the

relationships were rendered significant since their p values are less than 0.05.

The findings in Table 7 indicated that there is a moderate and significant positive relationship between organizational restructuring and knowledge management as attributed by the correlation coefficient of 0.461 and p-value of 0.000. This is because knowledge is a prerequisite in organizational restructuring to determine the most efficient and effective functions that need to be retained or eliminated with an organization. The correlation matrix table shows presence of strong and significant positive relationship between organizational restructuring and

information technology capabilities ( $r=0.576$ ,  $p=0.000$ ). The results shows presence of a positive and significant moderate relationship between organizational restructuring and process monitoring as proved by the p-value and the correlation coefficient ( $r=0.450$ ,  $p=0.001$ ). A positive and significant moderate relationship between knowledge management and information technology capabilities exists as proved by the p-value and the correlation coefficient ( $r=0.578$ ,  $p=0.001$ ). There is an evidence of significant moderate relationship between knowledge management and process monitoring as attributed by the p value and correlation coefficient ( $r=0.459$ ,  $p<0.005$ ). Lastly the results in the correlation matrix indicate a moderate and significant weak relationship between information technology capabilities and process monitoring as shown by  $r=0.397$  and p-value of 0.00.

### Regression Analysis Results

This study utilized multiple linear regression analysis to examine the relationship of the predictor variables with the dependent variable. Since there are four independent variables in this study, the multiple regression models generally assumed the

following equations;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \dots\dots (1)$$

Where

$Y$  = Performance of Agro-processing firms

$X_1$  = Organizational Re-structuring

$X_2$  = Knowledge management

$X_3$  = Information Technology capabilities

$X_4$  = Process Monitoring

$\beta_0$  = Constant;  $\beta_1, \beta_2, \beta_3, \beta_4$  = Beta Coefficients

$\varepsilon$  =Error Term

Adjusted  $R^2$  which is known as the coefficient of determination was used to explain how performance of agro-processing firms varied with organizational restructuring, knowledge management, information technology capabilities and process monitoring. The model summary table shows that 77.0% of change in performance of agro-processing firms can be explained by four predictors namely organizational restructuring, knowledge management, information technology capabilities and process monitoring. This implies that the remaining 23.0% of the variation on the performance of agro-processing firms could be accounted for by other factors not in this study.

**Table 8: Model Summary**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.878 <sup>a</sup>	.770	.732	.594
Predictors: (Constant), Organizational Restructuring, Knowledge Management, Information Technology Capabilities and Process Monitoring				

Analysis of variance (ANOVA) was done to establish the fitness of the model used. The ANOVA table shows that the F-ratio ( $F=21.107$ ,  $p<.005$ ) was statistically significant. This means that the model

used was appropriate and the relationship of the variables shown could not have occurred by chance.

**Table 9: ANOVA**

ANOVA <sup>a</sup>						
Model	Sum of Squares	Df	Mean Square	F	Sig.	
Regression	28.367	4	7.092	21.107	.000 <sup>a</sup>	
Residual	18.159	54	.336			
Total	46.526	58				

a. Dependent Variable: Performance of Agro-processing firms

b. Predictors: (Constant), Organizational Restructuring, Knowledge Management, Information Technology Capabilities and Process Monitoring



**Table 10: Regression coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.
	B	Std. Error			
(Constant)	.281	1.234		.228	.048
Organizational Restructuring	.484	.530	.238	.913	.001
Knowledge Management	.392	.421	.386	.931	.000
Information Technology Capabilities	.469	.389	.329	1.206	.000
Process Monitoring	.352	.660	.632	0.533	.001

a. Dependent Variable: Performance of Agro-processing Firms

The above table gives the results for the regression coefficient for the multiple linear equations ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$ ) which by supplying the coefficients becomes:

$$Y = 0.281 + 0.484 X_1 + 0.392X_2 + 0.469X_3 + 0.352X_4$$

Where

$Y$  = Performance of Agro-processing firms

$X_1$  = Organizational Restructuring

$X_2$  = Knowledge management

$X_3$  = Information Technology capabilities

$X_4$  = Process Monitoring

According to the regression equation established, holding all independent factors a constant (*Ceteris paribus*) performance of agro-processing firms will be 0.281 units. From the regression equation holding all other independent variables a constant, a unit increase in organizational restructuring will lead to a 0.484 performance of agro-processing firms. A unit change in knowledge management will lead to a 0.392 increase performance of agro-processing firms; a unit increase in information technology capabilities will lead to a 0.469 improvement in performance of agro-processing firms and a unit increase in process monitoring will lead to a 0.352 increase in performance of agro-processing firms in Nairobi City County. Further, at 5% level of significance and 95% level of confidence organizational restructuring, knowledge management, information technology capabilities and process monitoring have a significance effect ( $P\text{-value} < 0.05$ ) on performance of agro-processing firms with  $p\text{-values}$  of 0.001,

0.00, 0.00 and 0.001 respectively and therefore their coefficients should be retained in the final model. The results further infers that of all the predictors considered in this study organizational restructuring contributes the most to performance of agro-processing firms followed by information technology capabilities, knowledge management and then process monitoring as implicated by their coefficients.

#### CONCLUSION AND RECOMMENDATION

From the findings of this study, it was concluded that organizational restructuring had a positive significant effect on the performance of agro-processing firms. The findings indicated that organizational re-structuring was part of agro-processing organizational strategy and that agro-processing organizations had previously undertaken it in their organizations. Organizational restructuring is made to boost efficiency and effectiveness in organizations and eliminates business functions that are not relevant. The results revealed that majority of the agro processing firms had adopted leveraged buyout strategy as part of their corporate strategy. Additionally, the results indicated that agro-processing firms enjoyed the benefits of organizational restructuring such as profitability and increased market share.

Regarding knowledge management, it was concluded that knowledge management had a positive significant effect on the performance of agro-processing firms. The findings showed that knowledge management is a critical foundation of agro processing corporate strategy. Respondents

indicated that agro processing organizations had implemented big data analytics in their operations. Different communication tools were used to manage the business of agro processing as confirmed by the respondents who agreed to the statement. Further, majority of the agro processing firms had adopted decision support systems in implementing change. Lastly, respondents agreed that knowledge management strategy lead to better organization performance.

Information technology capabilities was found to have a significant positive effect on the performance of agro-processing firms. Majority of the respondents agreed that their business operations were driven by Information Technology and that most of the agro processing firms regularly upgraded their IT capacity. Results indicated that agro processing employees are always willing to buy in new technologies that are used in the industry. Respondents agreed that their agro processing firms had adequate innovation capabilities and employed key technical staff that guided the implementation of information technology systems. Lastly, findings alluded that information technology capabilities improved performance of agro processing firms.

From the findings of this study, it was concluded that process monitoring had a positive significant effect on the performance of agro-processing firms. From the results, majority of the respondents agreed that status assessments were done regularly during the redesigning of business process and monitoring reports generated periodically. Further, majority of the respondents agreed that progress statistics are considered important in the agro processing organizations. Additionally, stakeholders participated in process monitoring and staff meetings were held to aid process monitoring.

In relation to organizational restructuring, the study recommended that agro processing firms should restructure their organization depending on their objectives. Since restructure of an organization determines the mode of operations of

the firms and subsequently influences performance. Organizational structure allows the expressed allocation of responsibilities for different functions and processes to different departments, workgroups and individuals. Additionally, management of agro processing firms should adopt a more flexible and flatter structure that encourages creativity and innovation to achieve effective performance.

The findings that knowledge management improves an organization's efficiency and save knowledge within the company calls for agro processing firms to invest more on knowledge management in the industry. Knowledge management ensures that the specialized knowledge of employees does not leave with them, or go unutilized and boosts the efficiency of an organization's decision-making ability.

Based on the findings of this study, it is recommended to agro processing organizations intending to carry out business process reengineering should invest in information technology tools and equipment. Additionally, the agro processing firms should adequately train their staff on how to exploit the ICT resources to bring down the cost of operations, enhance efficiency, increase the speed of operations and improve the quality of goods and services. Proper education and training of the organizational staff could go a long way to encourage employees to accept changes in the new technologies. The study recommended that agro-processing firms automate their operations. The greatest potential of automation is the increasing complexity of organizational decision making and information needs.

The study recommended for periodic tracking of processes' progress by systematically gathering and analyzing data and information in agro processing firms. Process monitoring in any organization should be made top priority for any organization that seeks for improvement in their overall performance. The purpose of process monitoring is to permit the management and stakeholders to

make informed decisions regarding the effectiveness of the processes and the efficient use of resources.

### **Suggestion for Future Research**

The study recommended that a similar research be undertaken in another region/area or the same county overtime to see if they validate, support or contradict the findings of this particular study. The study focused on four business process-reengineering aspects, which included organizational restructuring, knowledge

management, information technology capabilities and process monitoring. The findings that these factors could not account for up to 23% of the variations in performance of agro processing firms calls for future research to interrogate other possible BPR tenets. Future studies may consider a moderating variable for the study or undertake a comparative study using a different research methodology and model to see whether the results would be any different.

### **REFERENCES**

- Alaneme, G. C. (2017). *Knowledge Management Capabilities and Competitive Advantage in the Nigerian Food, Beverage and Tobacco Industry* (Doctoral dissertation).
- Anderson, D. L. (2019). *Organization development: The process of leading organizational change*. SAGE Publications, Incorporated.
- Armstrong, R. A. (2019). Should Pearson's correlation coefficient be avoided? *Ophthalmic and Physiological Optics*, 39(5), 316-327.
- Aziz, W. A. (2019). Business process reengineering impact on SMEs operations: evidences from GCC region. *International Journal of Services and Operations Management*, 33(4), 545-562.
- Bake, H. (2017). *Practices and Challenges of Business Process Reengineering Implementation at Dukem City Administration* (Doctoral dissertation, St. Mary's University).
- Bako, Y., & Banmeke, M. (2019). The Impact of Business Process Re-Engineering On Organizational Performance; a Study of Commercial Banks and Micro-Finance Banks in Ilaro). *Journal of Management and Technology [JORMATECH]*, 5(1), 1-14.
- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of management*, 27(6), 643-650.
- Bhasin, S., & Dhami, S. (2018). Business Process Reengineering–The Role of Human Resource Function: A Comprehensive Review of Literature. *International Journal of Business Management & Research (IJBMR) ISSN (P): 2249-6920; ISSN (E): 2249, 8036*, 1-18.
- Bhaskar, H. L. (2018). Business process reengineering framework and methodology: a critical study. *International Journal of Services and Operations Management*, 29(4), 527-556.
- Bhaskar, L. H. (2018). Business process reengineering: A process based management tool. *Serbian journal of management*, 13(1), 63-87
- Busch, C., & Barkema, H. (2020). From necessity to opportunity: Scaling bricolage across resource-constrained environments. *Strategic Management Journal*.
- Chassiakos, A., Karatzas, S., & Farmakis, P. (2019). BIM and Lean-Business Process Reengineering for Energy Management Optimization of Existing Building Stock. In *Advances in Informatics and Computing in Civil and Construction Engineering* (pp. 711-718). Springer, Cham.

- Chege, S. M., Wang, D., & Suntu, S. L. (2020). Impact of information technology innovation on firm performance in Kenya. *Information Technology for Development, 26*(2), 316-345.
- Chege, T. M. (2018). *Influence of Transformational Leadership on Organizational Performance of Commercial Banks in Kenya* (Doctoral dissertation, COHRED-JKUAT).
- Dalkir, K. (2017). *Knowledge management in theory and practice*. MIT press.
- Davenport T, & Wilson H. 2003. *Creating and Capitalizing on the Best New Management Thinking*. Boston.
- Di Ciccio, C., Meroni, G., & Plebani, P. (2020). Business process monitoring on blockchains: Potentials and challenges. In *Enterprise, Business-Process and Information Systems Modeling* (pp. 36-51). Springer, Cham.
- Doumeingts, G., & Browne, J. (Eds.). (2016). *Modelling techniques for business process re-engineering and benchmarking*. Springer.
- Dumas, M., La Rosa, M., Mendling, J., & Reijers, H. A. (2018). Introduction to business process management. In *Fundamentals of Business Process Management* (pp. 1-33). Springer, Berlin, Heidelberg.
- Dutta, P., Choi, T. M., Somani, S., & Butala, R. (2020). Block chain technology in supply chain operations: Applications, challenges and research opportunities. *Transportation Research Part E: Logistics and Transportation Review, 142*, 102067.
- Egbunike, C. F., & Okerekeoti, C. U. (2018). Macroeconomic factors, firm characteristics and financial performance. *Asian Journal of Accounting Research*.
- Fitria, H., Mukhtar, M., & Akbar, M. (2017). The Effect of Organizational Structure and Leadership Style on Teacher Performance in Private Secondary School. *IJHCM (International Journal of Human Capital Management), 1*(02), 101-112.
- Galeazzo, A., & Furlan, A. (2019). Good problem solvers? Leveraging knowledge sharing mechanisms and management support. *Journal of Knowledge Management*.
- Grimsdottir, E., & Edvardsson, I. R. (2018). Knowledge management, knowledge creation, and open innovation in Icelandic SMEs. *Sage Open, 8*(4), 2158244018807320.
- Haseeb, J., Ahmad, N., Malik, S. U., & Anjum, A. (2019). Application of formal methods to modelling and analysis aspects of business process reengineering. *Business Process Management*.
- Hazen, B. T., Russo, I., Confente, I., & Pellathy, D. (2020). Supply chain management for circular economy: conceptual framework and research agenda. *International Journal of Logistics Management, The*.
- Hicks, M. (2020). *Identification of Opportunities for Business Process Reengineering to Improve Aviation Safety* (Doctoral dissertation, Trident University International).
- Hofmann, F., & Jaeger-Erben, M. (2020). Organizational transition management of circular business model innovations. *Business Strategy and the Environment, 29*(6), 2770-2788.
- Hornung, T. (2017). *Business Process Reengineering at Daimler Trucks-An evaluation of the project Integration Accounting & Controlling*.
- Humphress, R. (2018). *The Contractor Shadow Government: A Literature Review*. Available at SSRN 3268125.
- Immaculate, N. C. (2017). *Business Process Reengineering Practices and Performance of Pharmacy and Poisons Board in Kenya* (Doctoral Dissertation, Kenyatta University).

- In, J. (2017). Introduction of a pilot study. *Korean journal of anesthesiology*, 70(6), 601.
- Intezari, A., Taskin, N., & Pauleen, D. J. (2017). Looking beyond knowledge sharing: an integrative approach to knowledge management culture. *Journal of Knowledge Management*.
- Javidroozi, V., Shah, H., & Feldman, G. (2019). A framework for addressing the challenges of business process change during enterprise systems integration. *Business Process Management Journal*.
- Jouanjean, M. A. (2019). Digital opportunities for trade in the agriculture and food sectors.
- Jovanoski, D., Malinovski, T., & Arsenovski, S. (2017). Links between strategic goals, information technology and customer satisfaction during business process reengineering. *International Journal of Business Process Integration and Management*, 8(3), 200-213.
- Kaiser, A. K. (2018). *Reinventing ITIL® in the Age of DevOps: Innovative Techniques to Make Processes Agile and Relevant*. Apress.
- Kaleka, A., & Morgan, N. A. (2017). Which competitive advantage (s)? Competitive advantage–market performance relationships in international markets. *Journal of International Marketing*, 25(4), 25-49.
- Kasemsap, K. (2020). The roles of business process modeling and business process reengineering in e-government. In *Open Government: Concepts, Methodologies, Tools, and Applications* (pp. 2236-2267). IGI Global.
- Khashman, A. M. (2019). The Effect of Business Process Re-Engineering on Organizational Performance: The Mediating Role of Information and Communications Technology. *International Journal of Business and Management*, 14(9).
- King'ori, G. N., & Waithaka, P. (2017). Pricing strategies and performance of agro-chemical firms in industrial area Nairobi County, Kenya. *International Academic Journal of Human Resource and Business Administration*, 2(4), 97-107.
- Kiswili, N. E., Shale, I. N., & Osoro, A. (2021). Influence of Supply Chain Leagility on Performance of Humanitarian Aid Organizations in Kenya. *Journal of Business and Economic Development*, 6(1), 37.
- Kumar, A., Kumar, P., Palvia, S. C. J., & Verma, S. (2017). Online education worldwide: status and emerging trends.
- Kumar, V., & Sharma, P. (2019). *An insight into mergers and acquisitions: A growth perspective*. Springer.
- Malhotra, A. K., & Chauhan, A. K. (2018). Market Response of Mergers and Acquisitions' announcement and Its Predictive Ability In Forecasting Post Merger Long Term Performance Of The Acquiring Company. *Academy of Accounting and Financial Studies Journal*, 22(2), 1-16.
- Mending, J., Decker, G., Hull, R., Reijers, H. A., & Weber, I. (2018). How do machine learning, robotic process automation, and blockchains affect the human factor in business process management? *Communications of the Association for Information Systems*, 43(1), 19.
- Moşteanu, N. R. (2020). Challenges for Organizational Structure and design as a result of digitalization and cybersecurity. *The Business & Management Review*, 11(1), 278-286.
- Muranga, B. K. (2020). *Determinants of Competitiveness of Small and Medium Agro Processing Firms in Kenya* (Doctoral dissertation, JKUAT-COHRED).

- Mwanyika, N. T., & Koori, J. (2020). Credit accessibility and performance of small scale farms in Taita Taveta County, Kenya. *International Academic Journal of Economics and Finance*, 3(5), 220-237.
- Nderitu, D. M., & Njuguna, R. K. (2017). The influence of retail network expansion on the competitive advantage of oil marketing firms in Kenya: case of Vivo Energy. *International Journal of Sales, Retailing and Marketing*, 6(2), 3-16.
- Nisar, T. M. (2019). *Smartphone and App Implementations that Improve Productivity*. Walter de Gruyter GmbH & Co KG.
- Nold, M. L. (2017). An Idea Whose Time Has Come? Explaining the Adoption of the Board Business Process Reengineering Project.
- Ogada, G. O. (2017). Business Process Re-engineering and Organizational Performance of Commercial State Corporations in Kenya.
- Ongeri, R. N., Magutu, P. O., & Litondo, K. (2020). The Moderating Effect of Information Technology Infrastructure on the Relationship between Business Process Re-Engineering Strategy and Performance of Food Manufacturing Companies in Kenya. *DBA Africa Management Review*, 10(4), 71-91.
- Parent, M. M., Naraine, M. L., & Hoyer, R. (2018). A new era for governance structures and processes in Canadian national sport organizations. *Journal of sport management*, 32(6), 555-566.
- Raman, A., & Goyal, D. P. (2017). Extending implement framework for enterprise information systems implementation to information system innovation. In *Enterprise information systems and the digitalization of business functions* (pp. 137-177). IGI Global.
- Rejeb, A., Keogh, J. G., Zailani, S., Treiblmaier, H., & Rejeb, K. (2020). Blockchain Technology in the Food Industry: A Review of Potentials, Challenges and Future Research Directions. *Logistics*, 4(4), 27.
- Ringim, K. J., Dantsoho, M. A., & John, H. T. (2017). Effect of dynamic information technology capabilities on organizational performance of deposits money banks in Nigeria. *MAYFEB Journal of Business and Management*, 1.
- Ringim, K. J., Razalli, M. R., & Hasnan, N. (2015). The relationship between information technology capability and organizational performance of Nigerian banks. *International Journal of Business Research and Development*, 4(2).
- Ringim, K. J., Razalli, M. R., & Hasnan, N. Organizational Transformation: Influence of Radical Improvement of Processes and Information Technology Capability.
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International journal of applied research*, 3(7), 749-752.
- Silverman, D. (2019). *Interpreting qualitative data*. Sage Publications Limited.
- Singh, A., Payal, A., & Bharti, S. (2019). A walkthrough of the emerging IoT paradigm: Visualizing inside functionalities, key features, and open issues. *Journal of Network and Computer Applications*, 143, 111-151.
- Soja, E., & Soja, P. (2017). Exploring root problems in enterprise system adoption from an employee age perspective: a people-process-technology framework. *Information Systems Management*, 34(4), 333-346.

- Stouten, J., Rousseau, D. M., & De Cremer, D. (2018). Successful organizational change: Integrating the management practice and scholarly literatures. *Academy of Management Annals*, 12(2), 752-788.
- Swartz, E. M. J. (2018). *Challenges to the implementation of business process re-engineering of the recruitment process in the Ministry of Fisheries and Marine Resources, Namibia* (Doctoral dissertation, Stellenbosch: Stellenbosch University).
- Tama, E., Molyneux, S., Waweru, E., Tsofa, B., Chuma, J., & Barasa, E. (2018). Examining the implementation of the free maternity services policy in Kenya: a mixed methods process evaluation. *International journal of health policy and management*, 7(7), 603.
- Waweru, S. W., & Maina, S. (2019). Corporate restructuring and organization performance of national police service in Kenya. *International Academic Journal of Human Resource and Business Administration*, 3(6), 55-70.
- Zaini, Z., & Saad, A. (2019). Business process reengineering as the current best methodology for improving the business process. *Journal of ICT in Education*, 6, 66-85.