

**BUSINESS PROCESS RE-ENGINEERING AND PROCESS TIME AMONG
SELECTED LARGE MANUFACTURING FIRMS IN NAIROBI, KENYA**

BY

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**A Research Project Submitted in Partial Fulfillment of the Requirement for the
Award of Master of Business Administration (MBA), School of Business,
University of Nairobi.**

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DECLARATION

This research project is my own original work and to the best of my knowledge it has not been submitted for a degree award in any other University or institution of higher learning for examination/academic purposes.

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This research project has been submitted for examination with our approval as the University Supervisors.

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DEDICATION

To almighty God, who has been my strength and divine inspiration in everything I do.

To my late father, Mr. Daniel Kibitok Chirchir and my loving mother Sally Chepketer Chirchir for their solid foundation they built in me and the sacrifice they endured in seeing me through my education.

To my dear wife Irene, my daughter Patricia and son Ignatius who offered me unconditional love, support, encouragement and prayers which has been the corner stone in my quest for academic excellence.

Also to my brothers, sisters, relatives and friends who facilitated success while doing my studies.

May the Almighty God bless you all abundantly.

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I am heavily indebted to them all for their sacrifice.

ABSTRACT

The aim of this study was to study the adoption process of BPR and its effect on process time in the selected large manufacturing firms in Kenya. Lately majority of the organizations have adopted the BPR and others are in the process of adopting. This study aimed at analyzing to what extent large manufacturing firms in Kenya adopted the BPR; find out the challenges, benefits and impact of BPR in organizations process.

The study was undertaken on selected manufacturing companies; in this case 80 companies were sampled. The data collections procedure and tools adopted was questionnaires, where these questionnaires were administered by the researcher to the senior management team. The data collected was analyzed.

The collected data was analyzed and summarized using tables and other data analysis tools.

The study found that majority of the large manufacturing firms in Kenya have adopted the BPR and others are in the process of adoption. The study also indicated that BPR process adoptions have lead to massive benefits in the organizations. Some of the benefits found were efficiency of production process, quality of products and workforce, elimination of non-value adding process, inspection time, moving time and waiting/queuing time. This is an indication that BPR has significant positive influence on process time.

LIST OF ABBREVIATIONS

BPR	- Business Process Re-engineering
ERP	- Enterprise Resource Planning
GDP	- Gross Domestic Product
GRM	- Global Reference Model
HR	- Human Resource
IFC	- International Finance Corporation
JICA	- Japan International Cooperation Agency
JIT	- Just-in-Time
KAM	- Kenya Association of Manufacturers
PCK	- Productivity Center of Kenya
APO	-Asian Productivity Organization
JPC	-Japan Productivity Centre
SPSS	-Statistical package for social sciences.

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CHAPTER ONE: INTRODUCTION

1.1 Background

There has been a growing recognition that to succeed in the current environment characterized by intense competition and rapid changes in the global market, firms must develop a coherent operations strategy. Today firms are faced with a wide spectrum of different equipment and system choices, involving substantial levels of investments and risks, with strategic implications for the firms. This has seen several firms apply different strategies in order to cope and remain profitable. These strategies include continuous improvement, total quality management (TQM), quality circles and business process re-engineering (BPR). BPR, although a close relative, seeks radical rather than merely continuous improvement. It escalates the efforts of just-in-time (JIT) and TQM to make process orientation a strategic tool and a core competence of the organization (Johansson et al., 1993).

Waller (2003) states that the primary objective of BPR is intended to boost competitiveness in the operations network through simpler, leaner and more productive processes. BPR helps companies to rethink the way they do business, and is a more radical approach to bringing about improvements. It has been applied in labour and capital intensive industries such as automobile production, telecommunications, and pharmaceuticals as well as in service sectors such as insurance and banking.

The competitiveness of a company is mostly dependent on its ability to perform well in dimensions such as cost, quality, delivery dependability and process time (cycle time or throughput time), innovation and flexibility to adapt itself to variations in demand. While alignment of operations with strategic priorities is core to competitiveness, business process re-engineering of operation processes plays a very important complementary role in quest of competitiveness in the long run (Bessant et al., 1994).

1.1.1 Business Process Re-engineering

In the 21st century, successful manufacturing companies are those which adapt to the environment dynamically by implementing process oriented structures. Thus it is essential that these organizations utilizing such techniques understand adequately the concept of business processes. A business process as defined by Hammer and Champy (1993) cited in Dubey and Bansal (2013) is, “a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer”. A business process has a goal and is affected by events occurring in the external world or in other processes. On the other hand business process re-engineering is a thorough rethinking and radical redesign of business processes, job definitions, management systems and organizational structures to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed (Dubey & Bansal, 2013).

Operations should be organized around the total process that adds value to customers and not around the functions and activities that form the value- adding activity. In turn a review of operations should similarly be based on the process rather than the functions providing the various parts and the analysis should begin, not with the existing process or procedure, but with the outputs from the process or procedure that customers wants. The core guidelines of BPR in many occasions are cost reduction, time reduction, the output and quality of work life (QWL) / learning / empowerment of employees.

An organization where application of BPR is being done is process -oriented, where all processes are identified and given specific names. Each individual is aware of the particular process in which he or she is involved and complete process measurement such as monitoring and control is performed. BPR brings numerous benefits to organizations and companies in which it is implemented. One such benefit is increased effectiveness and efficiency which comes in due to reduced time lag in service delivery; reduced costs as a result of efficiency; meaningful jobs for employees as they understand the underlying processes; flexibility and adaptability help to improve organizational approach to management; and lastly it opens up business growth opportunities (Kapoor, 2011).

1.1.2 Process Time

Hammer (1990) defined business process as a flow of work passing from one person to the next, and for a larger process, probably from one department to the next. Processes are thus defined at a number of levels but they will always have a definite beginning, a number of steps in the middle and a defined end. Viswanadham (2000) on the other hand defines business process as a structured, measured set of activities ordered in time and space, designed to produce a customer-desired output(s). It basically transforms inputs such as materials, people and technology into finished products through a series of value-added work process with facilitation of finances. Process-time is the interval between the start and end of a process. Processes are therefore flows of work and the timelines or boundaries that mark beginnings and end (Viswanadham, 2000).

1.1.3 Large Manufacturing Firms in Nairobi, Kenya

The success of manufacturing firms has been a feature of world competition since the early 1950s. A review of the production or operations contribution to this success reveals a number of approaches, some new but most of which have been widely known and publicized through the world (Hill, 1985). According to Hill (1985), business process reengineering has been widely applied in the manufacturing sector to among others, eliminate waste, improve product design, ensure quality at the source (Jidoka), promote process re-design, encourage Just- In- Time production control systems, and encourage people involvement in the production process.

GRIPS (2009) observe that manufacturing activities in Kenya vary widely, since the country was a popular investment destination in the 1970s and 80s within East Africa. There are some leading multinational companies operating in Kenya which are bringing in Kaizen methods (BPR) including Toyota East Africa Ltd., Kenya Tea Development Agency and GlaxoSmithKline Kenya Ltd. Furthermore, the Kenya Association of Manufacturers (KAM), which has approximately 600 members, has been actively involved in organizing seminars and training to upgrade the capacity of its members. KAM has partnered with the Kaizen Institute in Mauritius since 2005 and has been inviting experts for seminars and consultations. These costs are now partly covered by the African Management Services Company whose original sponsor

is the International Finance Corporation (IFC). KAM and the Kaizen Institute set up an annual award on Kaizen in 2008.

In Kenya, certain manufacturing firms have developed and implemented BPR. For instance, according to Magutu et. al., (2010), Wrigley Company (East Africa) undertook to implement BPR known as WeBEspirit, globally by adopting the supply chain concept and the Enterprise Resource Planning Concept (ERP) technology called Systems Applications and Products Release (SAPR/3) as enabler. Further, the company contracted Deloitte International that came up with a BPR model known as Global Reference Model (GRM). The BPR project started in 2001, and the implementation took place in Kenya subsequently in 2004. The project was successfully completed in 2005.

Japanese Government has since then furthered the implementation of BPR Projects in Kenyan manufacturing firms using the Kaizen approach (Continuous Improvement Approach). According to JICA, the manufacturing sector in Sub-Saharan Africa is generally not dominant compared to the agriculture and service sectors. Kenya is no exception. In 2007, the contribution to GDP of the manufacturing sector in Kenya was 11.8%, whereas the agriculture and the service sectors accounted for 22.7% and 58.2%, respectively (GRIPS, 2009).

As for public initiatives, the Productivity Centre of Kenya (PCK), which has been receiving assistance from APO and JPC since 2006, has organized seminars and provided consultations to 3 model manufactures, in addition to 4 governmental and service institutions. PCK, currently under the Ministry of Labour, has only 5 personnel. Its activities have received good attention from the Government, and there is a plan to legally expand the mandate and capacities of PCK during the 2009/10 Fiscal Year. Yet, the Ministry of Industrialization as well as its agencies, which are the key public institutions for the manufacturing sector, are yet to be conversant with the kaizen methodology and cannot guide local manufacturers.

1.2 Research Problem

Organizations which have embraced BPR have affirmed their global market position in this dynamic business environment. BPR requires time and proper paperwork (planning) before introducing new process otherwise there are great chances of

failure. A business will have relatively few core business processes through which it fulfills its business purpose. The examples are product development (the concept to market process), order fulfillment (the order to collection process), customer service (the inquiry to resolution process), market management (strategic and tactical process of building and defending valuable market franchises) and planning, resourcing and control (Carpinetti, Buosi, & GeroÁlamo, 2003).

The core guidelines of BPR in many occasions are cost reduction, time reduction, the output and quality of work life (QWL) / learning / empowerment of employees. The achievement of these objectives that are fundamental to core business processes, certain values have to be embraced by organizations. Such values are proper communication, training of human workforce, proper formation of teams that are going to perform BPR and committed and strong leadership together with adequate funding. A well-formed matrix of core business process, objectives of BPR and the norms and culture adopted by organizations have a measurable impact on process time.

Alsudairi (2013) in his study observed that recent changes in business environment as a result of deregulation, privatization, globalization and consequently increased competition has seen organizations struggle to survive. A new breed of information systems, termed as enterprise systems, is being implemented to reengineer outdated business processes and integrate information flows across the enterprise. Although ERP implementation is a risky task and expensive proposition, Alsudairi (2013) posits that it can provide a variety of benefits to the organization, especially efficiency in process time. Against this conclusion, the study will endeavor to identify key benefits that accrue to manufacturing firms that have deployed ERP. This recommendation will also broaden the objectives of BPR implementation in the manufacturing firms in Kenya.

The study, therefore reviewed BPR and Process time in selected manufacturing firms in Nairobi with a view to determine the extent of BPR adoption and benefits that arise from BPR implementation among Manufacturing Firms in Nairobi, Kenya. This study therefore aimed to answer the following research questions: What is the extent of BPR adoption among manufacturing firms in Nairobi? What are the benefits of BPR in relation to process time in these firms?

1.3 Objectives of the Study

The study objectives therefore were to:

- (i) To determine the extent of BPR adoption among large Manufacturing Firms in Nairobi, Kenya.
- (ii) To identify the benefits of BPR in relation to process time in these firms.

1.4 Value of the Study

Manufacturing firms, in both private and public sectors who want to keep pace with the development in the market will be interested in this study as they will instill, implement and use ideas brought out in it. Secondly, Operations Managers in the Manufacturing Sector who are in effect consultants for change, and who now have to change their mode of delivery of the subject matter will find this study vital in helping them to draw and develop vital links between the extent of BPR adoption and Process Time. Thirdly Academicians, who will be expected to introduce new techniques, influence management styles and also synthesis the ideas presented to develop new ways of impacting knowledge will find this study important in generating and expanding knowledge on the subject matter of this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Business Process Re-engineering

Business process re-engineering (BPR) began as a private sector technique to help organizations fundamentally rethink how they do their work in order to dramatically improve customer service, cut operational costs, and become world-class competitors. A key stimulus for re-engineering has been the continuing development and deployment of sophisticated information systems and networks. Leading organizations are becoming bolder in using this technology to support innovative business processes, rather than refining current ways of doing work. BPR is basically rethinking and radically redesigning an organization's existing resources. BPR, however, is more than just business improvising; it is an approach for redesigning the way work is done to better support the organization's mission and reduce costs. Reengineering starts with a high-level assessment of the organization's mission, strategic goals, and customer needs (Davenport, 1990).

According to Maureen et al., (1995) the idea of reengineering sketches its origin back to management theories built-up in the early nineteenth century and the aim of BPR is to revamp and modify the on hand business practices or processes to attain remarkable development in organizational performance. During the industrial age of mass production, organizations and companies were built around Adam Smith's brilliant discovery of, 'work should be broken down into its simplest components and be assigned to specialists (the notion of division of labor and specialization)'.

The new world requires organizations to build working system that can make them responsive, flexible and customer focus. The fragmentation and traditional bureaucratic organization of mass production era do not fit to these requirements. These new feature of organization (responsiveness, flexibility and customer focus) achieved in new perspective shift the approach of work from task based to process based thinking. Thus any organization which hopes to thrive in today's world must shift approach to 'work' and organization to 'process centered' in order to provide seamless services and products.

According to Berihu Assefas' (2009) work, business process reengineering began as a private sector technique to help organizations fundamentally rethink how they do their

work in order to dramatically improve customer service, cut operational costs, and become world-class competitors. According to Al-Mashari, (2001) an increase in consumer requirements for both product and service efficiency and effectiveness has resulted in BPR. Since the 1990s process redesign or business process reengineering has been embraced by organizations as a means to cut non-value-added activities (Grover & Malhotra, 1997). As stated by Hammer and Champy, (1993) the reengineering of business processes is concerned with fundamentally rethinking and redesigning business processes to obtain dramatic and sustaining improvements in quality, cost, service, lead-times, outcomes, flexibility and innovation which guarantee the performance of the organization in the world of competition that is why reengineering has become a fairly accepted approach today in the reform efforts of any organizations.

BPR has been implemented in both service and manufacturing firms in different countries around the world (Shin and Jemella, 2002). Successful implementation of BPR brings many benefits to the organization and it increases customer satisfaction, increased productivity, higher flexibility, increased employees and improved coordination, and improved competitive advantage are the main benefits of successful BPR implementation. BPR helps organizations to achieve new heights of success by dramatically changing existing business processes (Holland and Kumar, 1995).

Radhakrishnan (2012) argues that the important strategic dimensions for BPR are developing and prioritizing the key business objectives, defining the process, structure and assumptions, identifying the trade-offs between the processes, identifying the new products and market opportunities, coordinating the reengineering efforts, and developing human resource strategy. BPR requires altering of company's in-house procedures and practices, which is an essential prerequisite to effective innovation and growth. More often, a change in the industrial culture and infrastructure should be necessary before investment in new plant can take effect.

BPR is a top-down, process-driven approach managed by senior executives, which aims to improve the performance by radical changes in the system over the short term (Ardhaldjian and Fahner 1994). Companies usually have to meet three important goals to achieve effectiveness: a process, not product perspective; cross-functional coordination or integration, and consistency between goals and improvement plans

(Wickens 1995; Jones et al. 1997; Lockamy and Smith 1997). Information technology (IT) is an enabler to the reengineered process, and any reengineering programme must consider the tremendous advantage offered by technologies such as document image processing and expert systems (Childe et al. 1994; Morris and Brandon 1993). The successful implementation of BPR for a radical change in manufacturing strategy requires a change in attitude and the serious involvement of dedicated individuals and teams (Roby 1995). Smith (1995) indicates that a major aspect of BPR is the human element.

Therefore, companies should ensure that their employees are suitably motivated and the technology required for training is available, especially for radical change for BPR. The objective of business reengineering is to make a significant contribution to an organization's competitive strength. The ultimate source of an organization's competitive strength springs from the excellence with which it designs and executes those few operational and/or management processes that are either critical to success in its industry or are chosen as a basis for differentiation. Consequently, the focus of business reengineering and the way that business reengineering initiatives make their most important contributions is to bring about dramatic changes in the performance of those few fundamental (core) business processes where major improvement is critical to competitiveness.

Business process reengineering involves developing business vision and process objectives, prioritizing objectives and set stretch targets, identifying processes to be redesigned, identify critical or bottleneck processes, understanding and measuring existing processes, identifying current problems and setting baseline, brainstorming new process approaches, designing and building a Prototype of the Process, and implementing organization's and technical aspects.

In order to create a dramatic increase in efficiency, productivity, or profitability, a drastic change in the design of the organization's processes is required. That is why reengineering is a useful tool that has been adopted by and hailed as one of the current major drivers of change within many organizations (Graham, 2010). Business Process Reengineering is playing a vital role in the enhancement of productivity and efficiency of many organizations. A crowd of interrelated tasks that creates value is called a business process (Habib & Wazir, 2012). Reengineering primary goals aims

at reducing wastage, improve efficiency and ultimately reduce costs (Lotfollah et al., 2012). An increase in consumer requirements for both product and service efficiency and effectiveness has resulted in Business Process Reengineering (Al-Mashir et al., 2001). Reengineering also helps organizations to throw away their old fashioned processes to achieve new heights of success (Jemal et al., 2011). Hammer and Champy, (1993) also stated that BPR focuses on processes and not on tasks, jobs or people. It endeavors to redesign the strategic and value added processes that transcend organizational boundaries.

Hill (1991) argued that market competition is compelling firms to reconsider how they are organized to compete. As a basis for change, they are exploring a variety of concepts including time-based competition, quality function deployment, activity-based costing, quality circles, continuous improvement, process innovation and chief among all these attempts to improve business process is BPR.

Hammer and Champy (1993) distinguished the following characteristics that are common to BPR project, and that makes BPR implementation significant to a firm includes Several jobs are combined into one; Workers make decisions and own processes and outcomes. The division between doing and deciding is thus eliminated, as this resulted in delays and lower employee satisfaction; steps in the process are performed in a natural order. By having a natural order of process steps and allowing processes to be performed in parallel, the process time (throughput) is reduced significantly; processes have multiple versions.

BPR can help create flexibility by ensuring that processes are executed depending on the specific circumstances, rather than a single-mass-production approach; work is performed where it makes most sense. This helps to reduce time and money and unnecessary hands-offs; checks and controls are also significantly reduced by empowering workers and making them more accountable for their actions; reconciliation is minimized by reducing the number of hand-offs and activities; a case manager provides a single point of contact between the complex processes and the customer; and hybrid centralized/ decentralized operations are prevalent by the use of IT, allowing organizations to gain economies of scale of centralization while decentralizing decision making to its operational units.

The BPR success factors are supported by Bashein et. al. (1994) who also identified negative pre-conditions related to BPR to include among others; wrong sponsor; “Do it to me” attitude; cost-cutting focus and narrow technical focus. He also identified negative pre-conditions relating to the organization to include unsound financial condition, too many projects underway, fear and lack of optimism, animosity towards and by Information System (IS) and Human Resource Specialists (HRS). In an earlier study by Al-Mashari and Zairi (1999), the scholars gave a detailed account of BPR failure factors which they grouped into the several clusters.

Problems in communication which include inadequate communication of need to change (Davenport, 1993; Grover et al., 1995; Buday, 1993); Organizational resistance for instance Fear, lack of optimism, and skepticism about BPR results (Bashein et al., 1994; Davenport, 1993); Lack of organizational readiness for change for example, Lack of determination or courage or skills of management for radical changes (Randall, 1993) or Line managers are not receptive for change (Grover et al., 1995); Problems related to creating a culture for change that is not considering existing management systems and organizational culture (Zairi and Sinclair, 1995; Davenport, 1993; Davidson, 1993; Grover et al., 1995); Lack of training and education, for instance the absence of theory (Business Process Re-engineering RIP, 1996) or lack of understanding of BPR (Grover et al., 1995; Davenport, 1993, Alter, 1990);

Factors related to management support include problems related to commitment, support, and leadership for instance, lack of sustained management commitment and leadership (Bashein et al., 1994; Hammer and Champy, 1993; Grover et al., 1995; Hall et al., 1993) or a “Do It to ME” attitude (Bashein et al., 1994); and Problems related to championship and sponsorship for example lacking the visible sponsorship of senior management (Is Reengineering A Fad? 1996; Hoffman, 1997); Third on the list are factors related to organizational structure such as ineffective BPR teams and lack of a cross-functional project team (Hoffman, 1997).

Davenport (1993) and Grover et al., (1995) also presented problems related to the integration mechanism, job definition, and allocation of responsibilities such as was illustrated in a study on inflexible hierarchical structures. A study by Grover et al., (1995) and Davidson (1993) argued for factors related to BPR project management

for instance problems related to planning and project management such as inadequate planning for BPR project.

Problems related to goals and measures such as lack of clear performance objectives and milestones for BPR project were also presented by Dixon et al. (1994); Hagel (1993); Randall (1993) or poorly defined needs (Business Process Re-engineering RIP, 1996) or difficulty in establishing performance goals (Grover et al., 1995; Davenport, 1993).

Other factors for BPR failure is to do with inadequate focus and objectives characterized by narrow technical focus (Bashein et al., 1994; Moad, 1993); cost-cutting focus (Bashein et al., 1994; Coulson-Thomas, 1994); absence of strategic focus (Rastogi, 1994); focusing on planning rather than on doing (Is Re-engineering A Fad? 1996); and using re-engineering to avoid making hard decisions (Is Reengineering A Fad? 1996); old patterns of automating existing processes without redesign (Hammer, 1990; Moad, 1993; Furey, 1993) and short-term view and quick fix mentality (Grover et al., 1995).

Also pointed out by other scholars as factors necessary for BPR failure is ineffective process redesign illustrated by missing process understanding and orientation (Hammer and Champy, 1993); missing process owners (Furey, 1993; Jackson, 1997; Hammer and Champy, 1993; Grover et al., 1995); inadequate determination of scope of change (Hall et al., 1993; Hagel, 1993; Grover et al., 1995); inadequate focus on core processes (Randall, 1993); and re-engineering the wrong processes (Grover et al., 1995) with narrowly defined processes (Hall et al., 1993).

Other scholars also argued for problems related to BPR resources such as lack of required resources for BPR efforts (Hammer and Champy, 1993; Cole et al., 1993) within an unsound financial condition (Bashein et al., 1994) or management's inability to comprehend and understand the total financial impact. Other failure factors noted by Bashein et. al., (1994) include unrealistic expectations and scope for BPR Implementation, Ineffective use of consultants and poor implementation by consultants; Lack of adequate BPR methodology; inappropriate identification of customer's needs for BPR; problems related to IT investment and sourcing decisions such as optimizing lower-level processes that can be outsourced for cheaper cost and less efforts or premature IT; Improper IS integration characterized by inadequate

treatment of compatibility issues and insufficient telecommunication infrastructure capabilities (Davenport, 1993).

2.2 Objectives of BPR

Different studies have observed that BPR objectives are very critical to the realization of an organization's goal. When applying the BPR management techniques to a business organization, the implementation team effort is focused on several objectives. Customer focus which involves customer service oriented processes aiming to eliminate customer complaints; process time is a very essential component since it makes a company to dramatically compress the time it takes to complete a task for key business processes. For instance, if process before BPR had an average cycle time 5 hours, after BPR the average cycle time should be cut down to half an hour; compression entails cutting major tasks of cost and capital, throughout the value chain. By organizing the processes a company develops transparency throughout the operational level thus reducing cost. For instance the decision to buy a large amount of raw material at 50% discount is connected to eleven cross checking's in the organizational structure from cash flow, inventory, to production planning and marketing. These checking have become easily implemented within the cross-functional teams, optimizing the decision making and cutting operational cost (Zigiaris, 2000).

Flexibility enhances adaptive processes and structures to changing conditions and competition. Being closer to the customer the company can develop the awareness mechanisms to rapidly spot the weak points and adapt to new requirements of the market. Quality facilitates more obsession with the superior service and value to the customers. The level of quality is always the same controlled and monitored by the processes, and does not depend mainly on the person, who servicing the customer. Enhancing innovation is key to good leadership who engage in imaginative change providing to organization competitive advantage. Finally, productivity improves drastically effectiveness and efficiency (Zigiaris, 2000).

2.3 Benefits of BPR to a Firm

Kapoor (2011) argued that BPR brings numerous benefits to organizations and companies in which it is implemented especially increasing organizational effectiveness and efficiency. As all employees are aware of the processes to which they belong, they have a greater sense of responsibility. All processes are completely monitored under the strict control of the management. The net result of this is that employees deliver high quality products to their customers. Besides, BPR helps to improve efficiency. Proper management and control of all business processes reduces the time lag between different processes, which otherwise is quite high causing delays. This in turn reduces the time to market the product to the target customers and gives quicker response to buyers.

BPR also help to reduces cost. Kapoor (2011) states that with the proper management of processes, improved efficiency and quick delivery of products to the buyers, the overall product costs are reduced resulting in cost saving for the organization in the long run. On the other hand, BPR help create meaningful job for employees. As the time lag of product processing between different departments gets reduced due to the application of business process reengineering, there are more meaningful tasks to be performed by employees. This leads to increase their levels of motivation and the desire to perform well.

Another advantage of BPR is its ability to improve organizational approach to management. According to the traditional approach of managing an organization there is no flexibility or adaptability to change. The management formulated strict rules for employees of the organization. Whereas now, when most organizations have implemented business process reengineering there is an increase in flexibility and adaptability for change. This has created better environment for people to work, thus leading to employee satisfaction. Finally, BPR is instrumental for supporting growth of business. Implementation of BPR results in the growth of the present business thus enabling the emergence of new businesses within the same organization.

2.4 Process Time

Viswanadham (2000) defined process time as the period during which one or more inputs are transformed into a finished product by a manufacturing procedure. A business will typically seek to minimize its process time for a particular manufactured good without compromising quality to the point where consumers would purchase less of it. Process Time is vital as it will help free resources, reduce cost and improve quality. Process time strategies therefore include reduction of interface lead times, removal on non-value-adding activities and use of new technologies in ways that improve product quality. Quality was one of the key competitive criteria that manufactures focused on in the 1980s and since the 1990s; companies have increasingly made use of “six sigma”. However, since the late 1980s, delivery performance has become an important competitive factor for some companies. The process time proponents, the Toyota productions systems and time-based competition (Stalk and Hout, 1990) has provided companies with approaches that allow them to be more competitive on the delivery performance dimension, and in particular, with regard to the delivery lead time element.

In the past, companies would quote long delivery lead times to customers because they had long manufacturing lead times. Managers would accept long manufacturing lead times since they could not see any way of reducing them aside from purchasing faster process technology. However, with the advent of the new techniques like just-in-time (JIT) and time –based competition, they begun to recognize the strategic importance of process- Time reduction, also known as lead time reduction. Gregory and Rawlings (1997) argued that, when a company reduces its lead times, it can respond more quickly and meet the change in demand of its customers, resulting in greater customer loyalty and so more orders company lead time can be expressed in terms of queue time, more time, set up time and processing time.

2.5 Measures of Process Time

In order to understand measures of process time (lead time), Little’s law may be applied. The law states that lead time equals working in progress divided by throughput. For instance, if a company’s throughput is 1000 units per week, and the will be 4000 units. The relationship presented in the little’s law means that if you should either increase the throughput or reduce WIP or combination of the two. One

such method of reducing the manufacturing lead time is through process -time-reduction. Szwejczewski and Jones (2012) suggest that one method of reducing the process time is that a product can be re-designed so that a fewer operations need to be carried out and or that the time per operation is reduced. Marek and Jones (2012) also points out that the process time can be minimized by reducing the level of scrap. This can be achieved by improving the quality of raw materials and components coming in from external suppliers, or by using “Poka-yoke” devices to help stop the production of poor quality products.

The time interval is referred to as the throughput time and consists of five elements. Processing time which is the actual time the product is being worked on. In this hypothetical production process, it is the time necessary to process the product in each of the four departments. Inspection time is the time spent to inspect the product to make it conform to production standards as it moves from one production department to the next and before it is shipped to customers. Inspection time also includes the time it takes to rework products that are found not to conform to specifications. Note that in addition to inspecting the product as it moves through the production departments, inspection is also required when the raw material is purchased. In this example, inspection time is 1 day.

Moving time is the time it takes to move the product from one production department to the next and the time to move it to and from storage. For example when raw materials are received from suppliers, assume that they are stored before they are delivered to department A. when department A has completed processing the product and has inspected it (and reworked it, if necessary), it is transported to department B. after processing and inspection are completed in department B, the product is transported to department C, and so on. The moving time for this hypothetical production process is 0.5 day.

Waiting time or queue time is the time that the product remains in a production department before it is worked on. For example, after the product is transported from department A, it may not be worked on immediately in department B. In this example, the waiting time in department B is essential to be 0.1 day. For the entire production process, the waiting time is 0.6 day.

Finally, storage time is the time that raw material, work in progress, and finished products remain in storage before they are used by production department (in the case of raw material and work in progress) and they are shipped to customers (in the case of finished products). It assumed that only raw materials and the finished products are held in storage. The storage time is 5days in this example.

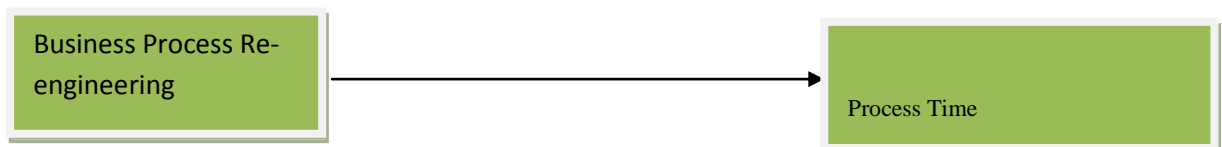
Looking at the five elements above, all but the first involve the actual production of the product. From manufacturing production perspective, the first element could be thought of as value 0 added time while the last four elements can be viewed as nonvalue added time. The term nonvalue added time is used because it refers to the fact that no value is added to the product when it is not worked on.

Thus throughput time can be viewed as follows: Throughput time = value added time +non value added time or Throughput time = processing time +non value added time.

2.6 Conceptual Framework

Independent Variable(s)

Dependent Variable(s)



Source: (Author, 2013)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodology of the study. It gives the specific procedure that was to be followed in undertaking the study. The research design, population, sampling design, data collection methods and data analysis are described in this chapter.

3.2 Research Design

The research adopted a cross sectional survey of existing large scale manufacturing firms in Nairobi county. Surveys allow the collection of large amount of data from a sizable population in a highly economical way. The study will be used to determine the extent of BPR adoption and benefits that arise from BPR implementation among Manufacturing Firms in Nairobi, Kenya.

Gray (2004) argues that survey method is widely used to obtain data useful in evaluating present practices and in providing basis for decisions.

3.3 Target Population

The target population for this study consisted of 80 large manufacturing companies. Although there are over 455 large manufacturing firms, only a fraction have adopted BPR. With this background, the researcher settled on the above number to yield a better judgment of BPR status in Kenya. Population is well defined or set of people, services, elements, events group of things or households that are being investigated (Ngechu, 2004).

3.4 Sample Design

A purposive selection of firms that have implemented BPR was done from the 455 large manufacturing firms in Kenya. Then a random sample of 80 firms was taken which formed the sample size population. The selected sample was deemed adequate for general conclusions about the entire population. The sample was also adequate for the statistical tools which were used in the data analysis.

3.5 Data collection

Relevant data for analysis was primary data, which was obtained through the administration of structured questionnaires. The questionnaire was considered most appropriate because it allows for collection of data from many respondents within a short time and provides a high degree of data standardization and adoption of generalized information amongst any populations. The questionnaire consisted of closed and open-ended questions since this will lead to control over the data collected. The respondents will fill in the questionnaire as the research assistants await. This helped to reduce the instances of non-response. Where necessary, the questionnaires was left and picked later in order to ensure a high proportion of usable responses.

3.6 Data Analysis

Completed questionnaires were edited for uniformity, completeness and consistency. The questionnaires were to be coded to allow for statistical analysis. Analysis was done using descriptive and inferential statistics. This includes tables, averages and percentages to represent the response rate and information on the other variables that the study considered. The statistical package of social science (SPSS) version 14 was employed to analyze the data. Descriptive statistics which include frequencies percentages mean and standards deviation ware utilized to represent quantitative data.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

In this chapter, data was analyzed qualitatively and quantitatively. The purpose of analysis was to answer the research questions based on the responses from the completed questionnaires. The data was presented using statistical tools in form of tables. The population in question constituted 80 questionnaires administered to the production managers, customer relationship officers, marketing and business development.

62.5% of responses were received from the sampled population. The questionnaires were circulated by hand delivery, e-mail and via the respective section heads. The researcher collected the questionnaires from their offices with the assistance of the Firm Receptionist and Customer Service Officers who also helped in collecting the responses.

4.2 Classification of company.

In Kenya there many large scale manufacturing firms that are involved in different sectors of the economy. Majority of them are quoted at the NSE. The respondents were asked to indicate the category in which their company falls under and the responses are as in table 4.1 below.

Table 4.1 Company Classification

Company classification	Frequency	Percentage	Cumulative %
Food, Beverages & Tobacco	10	20	20
Motor Vehicles Assembly	7	14	34
Building & Mining Construction	4	8	42
Energy, Electrical & Electronics	6	12	54
Plastics & Rubber	4	8	62
Chemical & Allied	3	6	68
Pharmaceutical & Medical Equipment	5	10	78
Leather Product	2	4	82
Timber and Furniture	6	12	94
Others	3	6	100
Total	50	100	

Source: Author (2013)

From the table 4.1, 20% of the respondents were from food, beverages and tobacco, 14% were from Motor Vehicles Assembly, 8% were from building, mining and construction, and Plastics and rubber, 12% were from energy, electrical and electronics, and timber and furniture, 6% were from chemical and allied, 10% were from Pharmaceutical & Medical Equipment, 4% were from leather product, while 6%

of the respondents from other manufacturing sector. This implies majority of the company sampled were from food, beverages and tobacco.

4.2.1 Legal organization

Any large scale manufacturing firm should be regulated as a legal entity. The respondents were asked to indicate the legal organization of their firm, and the responses are as in table 4.2 below.

Table 4.2 Type of legal organizations

Responses	Frequency	Percentage
Private Ltd	10	20
Public corporation	27	54
sole proprietorship	4	8
Partnership	7	14
Co-Operative Society	2	4
Total	50	100

Source: Author (2013)

From the results of table 4.2 above, majority of the large scale manufacturing organization are public corporations (54%), followed by private limited companies (20%), the rest were partnership (14%), sole proprietorship (8%) and Co-operative societies (4%). This means public and private large scale manufacturing firms were well represented.

4.2.2 Number of years in operation

Large scale manufacturing firms in Kenya has been increasing at a steady state since 1963, the respondent were asked to indicate the number of years the company has been operating in Kenya, and the responses were indicated by table 4.3

Table 4.3: Number of years since the company has been in business

Number of years	Frequency	Percentage
0-5 years	1	2
6-10 years	5	10
11-15 years	4	8
16-20 years	8	16
20-25 years	14	28
Over 25 Years	18	36
Total	50	100

Source: Author (2013)

From the table 4.3, most of the responses showed majority of the companies has been operating for over 20 years. As shown in the above table, 28% have been operating for 20-25 years, followed by those companies who have been operating for over 25 years being 36%, the remaining 64% was from companies that have been operating for less than 20 years. It was deduced that majority of those large manufacturing companies studied on has been operating for over 20 years. Maureen et.al (1995) argued that for companies to realize the benefits of BPR they must have been operating at least two years after adoption of BPR.

4.2.3 Seminar participation and consultations

BPR is a new concept in Kenya, majority of large manufacturing in Kenya has adopted BPR in less than 20 years ago. Kenya association of manufacturers (KAM) and KAIZEN institute always organizes seminars to train and educate benefits of adopting newer technologies. Respondent were asked to indicate whether their organization attended and participated in this seminars, and their responses are in the table 4.4 below.

Table 4.4 KAM seminars and Consultations participation

Responses	Frequency	Percentage
Participated	39	78
Not Participated	11	22
Total	50	100

Source: Author (2013)

From the table 4.4 above, it was observed that those who have participated in seminars and consultations organized by Kaizen institute and KAM were 78%. Where the rest, 22% never participated. Those firms that participated in those seminars seemed to have adopted new BPR process and enjoyed efficiency and effectiveness in their operations. Firms consider those seminars to be an eye opener for the new BPR innovations and changes. The respondents who have never participated in this seminar seemed not to enjoy the BPR innovations. According to Davidson (1993), companies need constant re-training of its employees and keep them learning new techniques.

4.2.4 Work experience

The number of years an employee has worked in the organization will in the current large manufacturing organization will determine the level of experience especially in the firm's business process. The respondent were asked to indicate the number of years they have worked in that large scale manufacturing firm and their responses were as in table 4.5.

Table 4.5 Work experience

Years	Frequency	Percentage
1-5 years	6	12
6-10 years	7	14
11-15 years	10	20
16-20 years	12	24
Over 20 years	15	30
Total	50	100

Source: Author (2013)

From the table 4.5, Most of the respondents have been in the company for over 10 years, 20% have been in the company for 11-15 years, 24% for 16-20 years while 30% over 20 years. The rest 26% have been in the company for less than 10 years. The researcher considered the period the respondent has been in business since it may reflect how well he or she knows the company. From the above table it does indicate majority of respondent has been in the company for over 10 years hence more reliable and credible.

4.2.5 Level of management

The level management in which respondent belongs in organization was a key indicate of how well he/she understands organizations process. The respondent were asked to indicate the level of management he/she was in the studied large manufacturing organization and their responses is indicated in the table 4.6

Table 4.6 Position in the company

Position	Frequency	Percentage
Support Staff	0	0
Clerical Staff	0	0
Supervisor	10	20
Line Manager	10	20
Production Manager	17	34
CEO/ MD	13	26
TOTAL	50	100

Source: Author (2013)

From the table 4.6, Supervisors and line managers constituted 20% each, production managers were majority respondent at 34% while 26% of the respondent was chief executive officers or managing directors. These indicate that they were the senior management who has better understanding of the organization system.

4.2.6 Classification of firm based on origin

Pioneer large manufacturing firms in Kenya were foreign owned, i.e. multinational organisation, with time many locally formed organizations has evolved in Kenya in the recent past. The respondents were asked to indicate whether their companies were locally owned or foreign and their responses have been summarized in the table 4.7.

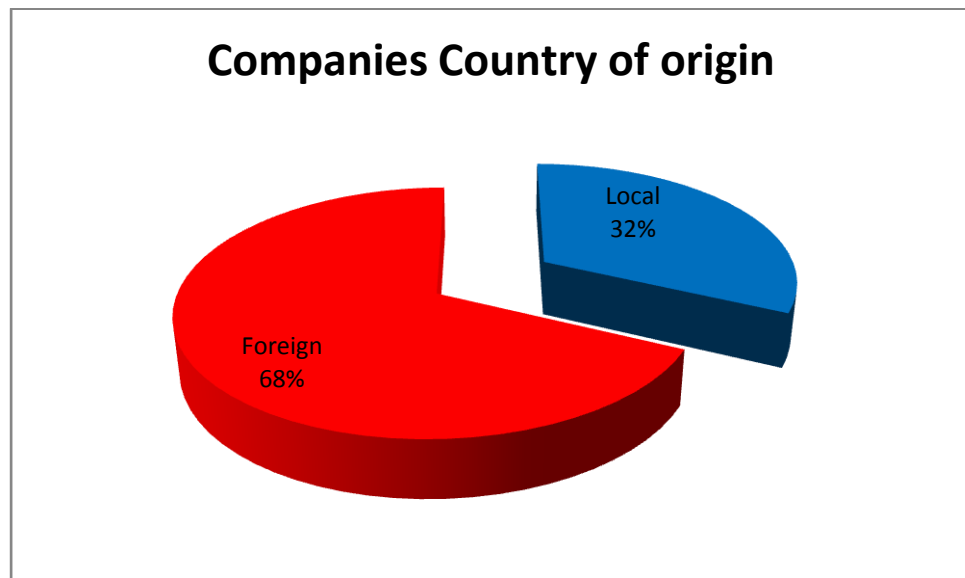
Table 4.7 Classification of firm based on origin

Country of origin	Frequency	Percentage
Local	16	32
Foreign	34	68
Total	50	100

Source: Author (2013)

This information was further represented in the pie chart below

Figure 4.1 Responses companies Country of origin



Source: Author (2013)

From the table 4.7, the researcher found that majority of large manufacturing firms was owned by foreign which was 68%, while those locally owned constitute 32%. This is a clear indication that locally owned large manufacturing firms are still few.

4.2.7 Number of full time employees

One criteria of determining large manufacturing is number of full time employee an organization employs, for the sake of this study the researcher classified organization with more than 100 full time employees as large manufacturing firm. The respondents were asked to indicate the number of full time employees they have and the responses were as the table 4.8.

Table 4.8 Number of full time employees

Number of Fulltime employees	Frequency	Percentage
1-100	0	0
101-200	2	4
201-300	3	6
301-400	1	2
401-500	3	6
501-1000	17	34
1001-1500	20	40
Over 1500	4	8
Total	50	100

Source: Author (2013)

From the table 4.8, it was evident that majority of firms employs between 501-1500, accounting for 74%, while 8% had over 1500 employees. The rest 18% have employees ranging between 100-500 employees. This is an indication that large manufacturing firms were well represented in the study.

4.2.8 Annual turnover of the company

Annual turnover of the company is another good indicator of the size of the organization; the researcher for this study classified any manufacturing company

making an annual turnover of more than Ksh. 50 million as a large scale manufacturing firm. The respondent were asked to indicate their organization annual turnover in Ksh and the responses are indicated by table 4.9

Table 4.9 Annual company turnover

Annual turnover in Ksh. “Million”	Frequency	Percentage
0-10	1	2
10-50	3	6
50-100	2	4
100-200	3	6
200-300	4	8
300-400	2	4
400-500	1	2
500-1,000	8	16
1,000- 5,000	7	14
5,000-10,000	9	18
Over 10,000	10	20
Total	50	100

Source: Author (2013)

From the table 4.9, out of the respondents, 68% had an annual turnover of between over Ksh. 500 million while the rest 32% had an annual turnover of less than Ksh. 500 million. The research was concerned with large manufacturing companies in Kenya. This is an indication that the data was collected from majority large manufacturing companies this can be indicated by the annual turnover.

4.3 BPR adoption by organization

BPR is a modern concept; majority of organizations has been using other managerial and operational concepts such as mass production, total quality management and others. Respondent were asked to indicated whether their organizations have fully adopted of BPR or are in the process of adopting BPR and those which has not

adopted BPR and they are not in the process and responses are indicated in the table 4.10.

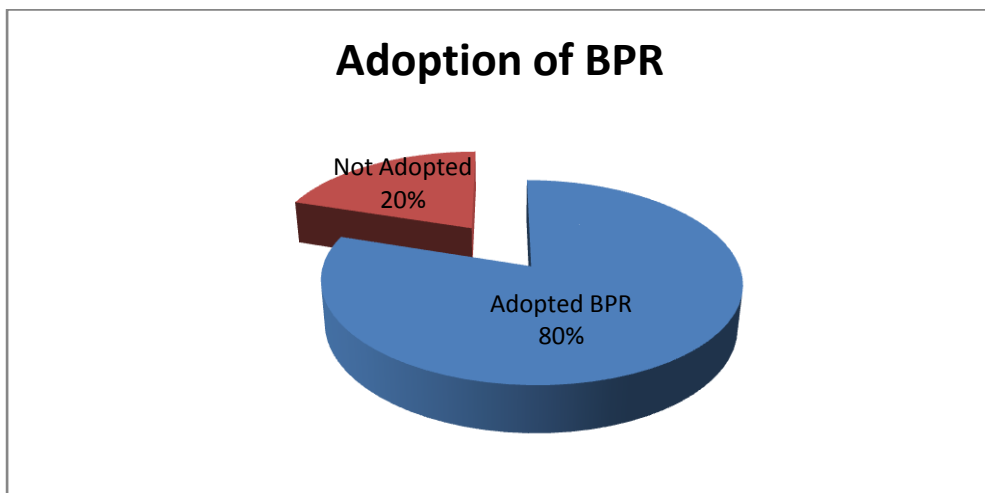
Table 4.10: Adoption of BPR

Responses	Frequency	Percentage
Adopted BPR	40	80%
Not Adopted BPR	10	20%
Total	50	100

Source: Author (2013)

The above data was further represented in a chart below

Figure 4.2 Adoption of BPR



Source: Author (2013)

As from table 4.10, its evident that majority of large manufacturing companies have adopted the BPR or are in the process of adopting BPR which constituted 80%, while only 20 % have not adopted BPR and may be the have adopted other techniques. According to Kapoor (2011), BPR brings numerous benefits to organizations and companies in which it is implemented especially increasing organizational effectiveness and efficiency.

4.3.1 Number of years since the company adopted BPR

BPR is a modern concept, the study was to investigate the effect of BPR on process time, among the large manufacturing firms that have adopted BPR. The respondents were asked to indicate the number of years since the organization adopted BPR and the response is in the table 4.11.

Table 4.11: Number of years since adoption of BPR

Number of years	Frequency	Percentage
1-5	12	30
6-10	16	40
10-15	7	17.5
15-20	5	12.5
Over 20	0	0
Total	40	100

Source: Author (2013)

From the table 4.11 it is evident majority of companies have adopted BPR in the recent past, 30% 1-5 years, 40% 6-10 years, 17.5% 10-15 years while 12.5% 15-20 years ago. It's also evident no company have adopted BPR for more 20 years. To realize the benefits of BPR, they must have been in operation for more than 2 years after BPR adoption (Kapoor 2011).

4.3.2 BPR objectives that have achieved.

There are a number of objectives of BPR initiatives which a firm seeks to achieve if they implement BPR. The respondents were asked to indicate the extent to which they had achieved these BPR objectives. Some of BPR objectives in a Likert Scale 5 point scale, (1-very small extent, 2-small extent, 3-moderate, 4-great extent and 5-very great extent) and the responses are in the table 4.12.

Table 4.12: BPR objective achievement.

BPR Objectives	1	2	3	4	5	Total
Improved Customer service to eliminate customer complaints	0(0%)	3(7.5%)	12(30%)	20(50%)	5(12.5%)	40(100%)
Flexibility to enhances adaptive processes	0(0%)	5(12.5%)	15(37.5%)	17(42.5%)	3(7.5%)	40(100%)
Retraining of staff for BPR success	0(0%)	7(17.5%)	12(30%)	16(40%)	5(12.5%)	40(100%)
Essence of Process time in business processes	1(2.5%)	8(20%)	11(27.5%)	17(42.5%)	3(7.5%)	40(100%)
Effective communication hence successful re-engineering.	2(5%)	7(17.5%)	8(20%)	16(40%)	7(17.5%)	40(100%)
Project resources adequacy for a successful BPR	0(0%)	4(10%)	12(30%)	16(40%)	8(20%)	40(100%)
Essence of Attitude, behaviour, integrity, people in BPR implementation	0(0%)	4(10%)	17(42.5%)	16(40%)	3(7.5%)	40(100%)

Source: Author (2013)

According to Zigiari (2000), a number of different analyses can be employed to analyze Likert scale data: Measures of central tendency summarized by median and mode, mean), measures of variability summarized by range and inter-quartile range but not standard deviation. The researcher employed measures of central tendency mean and measures of variability standard deviation and results were as per table 4.13

Table 4.13: Descriptive analysis BPR objective achieved (From 1 very small extent to 5 very great extent)

BPR objectives	Total respondent	Mean	Standard deviation
Q1customer service improvement	40	3.45	0.6123
Q2.Flexibility to enhance BPR	40	3.07	0.6148
Q3Employee Retraining	40	3.25	0.6987
Q4Essence of process time	40	3.75	0.9682
Q5Effective communication	40	4	0.8351
Q6project resource adequacy	40	3.73	0.7592
Q7Personal attributes	40	3.11	1.0338

Source: Author (2013)

From the table 4.13, is a clear indication that BPR has led to improved customer service hence elimination of customer complain to a great extent (mean> 3.45), BPR objective of flexibility has been achieved to a moderate extent (mean> 3.07), large manufacturing organization that has undertaken retraining of employee for achieved successful BPR implementation to moderate to a extent (mean> 3.25), adequacy of project resources and the essence of BPR in improvement of process time has been achieved to a great extent (mean>3.75).

Kapoor (2011) argued that successful implementation of BPR required organization commitment to process improvement, adequate resources and efficient communication, this will lead to organization enjoying BPR benefits such as reduction in process time, efficient production process etc.

4.3.3 Existence of process management department

BPR implementation is a massive project, complex and very vital in any organization. Organizations should set up the BPR steering and coordination committee who are mandated BPR design and implementation (Davidson 1993). Respondent were asked to indicate whether their organization had created process management department and responses were as in table 4.14.

Table 4.14 Existence of process management department

Responses	Frequency	Percentage
Available special process department	35	87.5
No special process department	5	12.5
Total	40	100

Source: Author (2013)

From the table 4.14, its clear indication majority of the firms who have adopted BPR have created a special process management department; this is represented by 87.5%, while only 12.5% of the respondent who had not creates the special production management department.

4.3.4 Efficiency in production process

One of the major benefits of BPR implementation and adoption in large manufacturing organization is improved efficiency in the production process hence leading to massive saving. The respondent were asked to indicate whether BPR adoption in their organization has lead to improved efficiency in the production process and their responses were as indicated in the table 4.15.

Table 4.15 Efficiency in production process

Responses	Frequency	Percentage
Improvement	38	95
No improvement	2	5
Total	40	100

Source: Author (2013)

From the table 4.15, shows clearly that BPR process adoption have led to significant improvement in production process efficiency, this is represented by 95% , while only 5% felt that BPR process have not led to improvement in production process efficiency.

4.3.5 Improvement of quality of products and workforce

BPR process adoption and successful implementation guaranteed massive improvement in product quality, reduction in redundant process and massive cost saving. The respondent were asked to indicate whether BPR adoption in their organization have led to improvement in product and workforce quality improvement and their responses are indicated by table 4.16 below.

Table 4.16 Product and workforce quality

Responses	Frequency	Percentage
Improvement	33	82.5
No improvement	7	17.5
Total	40	100

Source: Author (2013)

From table 4.16, it clearly indicates large manufacturing companies that have adopted BPR process have significantly led to massive improvement in quality of products and workforce which is represented by 82.5% of the respondent, while only 17.5% of the respondent are for the opinion that BPR has not led to any improvement in products and workforce quality.

4.3.6 Elimination of non-value adding processes

BPR involves radical re-thinking and re-design of organizational process with sole aim of eliminating inefficiency hence improvement of organization products and process. Respondent were asked to indicate whether the large manufacturing firms who have adopted BPR has reduced non- value adding processes and their responses are indicated by table 4.17

Table 4.17 Elimination of non-value adding processes

Responses	Frequency	Percentage
Eliminated	37	92.5
Not Eliminated	3	7.5
Total	40	100

Source: Author (2013)

From table 4.17, it clearly indicated that 92.5% of the respondent felt that BPR process had led to decline or total elimination of non-value adding process while only 7.5% of the respondent felt that BPR process had not led elimination of non-value adding process. This is in line with Davidson (1993), argument that BPR adoptions involves massive elimination of non-value adding processes and concentrate on value addition processes.

4.3.7 Measures of process time.

Benefits of BPR implementation and adoption in large manufacturing organization are improved efficiency in the production process hence leading to massive saving. Indicators of efficiency process are: reduction of inspection time, improved quality of products, improved moving time and reduction in waiting time/ queue time.

The respondents were asked to rate their companies since they adopted BPR to evaluate the effect of BPR on process time and their responses are summarized in the table 4.18 using the Likert Scale 5 point scale (1 – Very Slow; 2 – Slow; 3 – Normal; 4 – Fast; 5 – Very fast).

Table 4.18 Measures of process time

Measures of Process Time	1	2	3	4	5	Total
Q1.Inspection Time	0(0%)	5(12.5%)	15(37.5%)	17(42.5%)	3(7.5%)	40(100%)
Q2.Moving Time	2(5%)	7(17.5%)	8(20%)	16(40%)	7(17.5%)	40(100%)
Q3.Waiting Time/Queue Time	1(2.5%)	8(20%)	11(27.5%)	17(42.5%)	3(7.5%)	40(100%)

Source: Author (2013)

The data in table 4.18 was further analyzed in the table 4.19

**Table 4.19: Descriptive statistics on measures of process time
(From 1 very slow to 5 very fast)**

Measures of Process Time	Total respondent	Mean	Standard deviation
Q1.Inspection Time	40	3.19	0.7123
Q2.Moving Time	40	3.17	0.36148
Q3.Waiting Time/Queue Time	40	3.25	1.6987

Source: Author (2013)

From table 4.19, this is a clear indication that majority large manufacturing organization that have adopted BPR are of the opinion that inspection time very fast and fast (mean>3.19), BPR process adoption has also significantly reduced waiting and queuing time and improved moving time (mean> 3.25 and mean 3.17 respectively), this indicates that majority of them felt that it was fast and very fast.

The competitiveness of a company is mostly dependent on its ability to perform well in dimensions such as cost, quality, delivery dependability and process time (cycle time or throughput time), innovation and flexibility to adapt itself to variations in demand. While alignment of operations with strategic priorities is core to competitiveness, business process re-engineering of operation processes plays a very important complementary role in quest of competitiveness in the long run (Bessant et al., 1994).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The Chapter discusses the summary of findings, conclusions and the recommendations that were laid down by the researcher. The Chapter concludes by giving suggestions for further research on the extent of BPR adoption and its influence on process time.

5.2 Summary of Findings

Findings from this study indicated that majority of large manufacturing firms in Kenya, are in the Food, Beverages and Tobacco sectors represented by 20% as shown in our study, followed by Motor Vehicles Assembly at 14%. The study further indicated that majority of Large manufacturing firms in Kenya are public corporations, represented by 27%, followed by Private limited companies which accounted for 10% from this study.

Study also indicated that majority of large manufacturing firms in Kenya has been operating in for more than 15 years which accounted for 80% , while the rest 20% percent has been in operation for less than 15 years.

Most firms studied have been participating in seminars organized and managed by KAM and Kaizen, accounting for 78% of the respondent companies. In the seminars, they indicated they learnt new ideas, technology and come up with better and most efficient process in their operations. Majority of the respondents employee who participated in the study indicated they have worked for the respondent company for over 10 years accounting for 74%, this is a good indicator they have a better understanding of the company and can have a better comparison for the period prior to adoption of BPR and afterward, and give concrete effect on process time.

Majority of the respondents employees were senior management personnel accounting for 80%, and had better understanding of companies operations and also participated in policy formulation meeting, which was a key issue in determining BPR effect on process time. Study also indicated majority of firms were foreign owned accounting for 68% of the sampled organizations.

The study also indicated that majority of the firms are in the process or have already adopted the BPR process and are enjoying the benefit, this was represent by 80% of the sampled companies, while only 20% didn't show slightest clue or indication of BPR adoption process. The companies that have adopted BPR process, adopted them in the recent past, less than 10 years ago, this was represented by 70% of sampled companies. This may be due to the fact that BPR concepts in a new concept which is still evolving.

The study indicated that BPR process has led to great improvement in customer services hence high level of customer satisfaction; this was represented by 77.5% of the respondent. Also the study indicated companies Re-training of the employees on BPR concepts has greatly influenced the BPR adoption process, this was indicated by 81.5% of the respondent. Factors such as effective communication, adequacy of project resources and personality traits greatly influenced the success of BPR process adoption.

Further findings indicated that adoption of BPR process has led to significant improvement in; efficiency of production process, quality of products and workforce, elimination of non-value adding process, inspection time, moving time and waiting/queuing time. This is an indication that BPR has significant positive influence on process time.

5.3 CONCLUSION

The study has conclusively indicated that BPR process is an emerging trend and majority of the firms are slowly adopting them. The benefits of BPR are massive such as, improvement in efficiency of production process, quality of products and workforce, elimination of non-value adding process, inspection time, moving time and waiting/queuing time. Large manufacturing organizations are slowly embracing BPR process, hence significant improvement in their operations.

The objective of this study was to study the extent and adoption of Business Process Re-Engineering in large manufacturing organizations in Kenya, also find out the influence of BPR on Process Time. This study has proved empirically that BPR process adoption process slowly picking up and BPR has significant positive influence on process time.

5.4 Recommendations

From the study it was clear that majority of the organizations that have adopted the BPR process has not fully utilized its benefit. Majority of the firms were facing major challenges in BPR implementation process and were operating on very strict budget.

Companies should re-train their employees on benefits; challenges and BPR implementations process so as the companies enjoy optimal BPR benefits. Also the BPR adoption process should be well designed and implemented with support of every organization stakeholders. This will led to BPR high acceptance level hence great benefits to the organizations.

The firm management should also appoint BPR steering committee that should spearhead the BPR process, this committee should come up with framework and identify key areas of focus in BPR process.

5.5 Limitations of the study

The researcher was a student and combined both school and work and therefore time was limited to carry out an extensive research.

The researcher also operated on a lean budget following the rising cost of living in the recent past. Finally the organizations involved were in stiff competition and therefore confidentiality of information was high. Some respondents were afraid of giving information that may have ended up in the hands of competitors.

5.6 Suggestions for further Research

The researcher suggested that there is a need for a similar research study to be carried out targeting other sectors of the economy such as farming, banking etc. The research will go further to identify key areas that remain under-exploited by organizations and also expound on challenges facing BPR adoption process.

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APPENDICES

Appendix I: Questionnaire

Instructions

Dear Sir/Madam,

You are humbly requested to answer all the questions in the research questionnaire.

The information provided will be treated with utmost confidentiality and will not be used for any other purpose other than for the purposes of this study.

The study aims at determining the extent of Business Process Re-engineering (BPR) adoption among selected Large Manufacturing Firms in Nairobi, Kenya and to identify the benefits of BPR in relation to process time in these firms.

Note: Business Process Re-engineering means making radical changes or restructuring or rethinking on the way of doing things.

Philemon Bitok -D61/68384/2011

SECTION A: General Information

1. Please indicate the industrial classification of your company

SEC TOR	CODE	SUB-SECTOR	SELECT
MANUFACTURING	001	Building, construction and mining	
	002	Food, Beverage and Tobacco	
	003	Chemical and Allied	
	004	Energy, Electrical and Electronics	
	005	Plastics and Rubber	
	006	Textile and Apparels	
	007	Timber, Wood Products and Furniture	
	008	Metal and Allied	
	009	Leather Products and Footwear	
	010	Paper and paper products	
	011	Motor Vehicle Assembly and Accessories	
	012	Pharmaceutical and Medical Equipment	
	013	Other Manufacturing...	

2. What are this company's main activities in detail?

.....

.....

.....

.....

.....

3. What is the type of legal organization of this company?

Select One	
Private Limited Liability Company	
Public Corporation	
Sole Proprietorship	
Partnership	
Co-operative Society	
Others, please specify.....	

4. Please indicate this company's main products and their current share in the total company sales:

No.	Product Description	Share (%)
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		
	TOTAL	100%

5. When did this company start its operations in Kenya? _____ (year)

6. Has your organization participated in seminars and consultation organised by Kaizen institute and KAM? YES NO
7. For how long have you (respondent) worked in this company?
- 1 – 5 years
- 6 – 10 years
- 11 – 15 years
- 16 – 20 years
- Over 20 years
8. What is your current position in the company?
- Support Staff
- Clerical Staff
- Supervisor
- Line Manager
- Finance Manager
- Departmental Manager
- Managing Director
- Chief Executive Officer
9. What is the company's country of origin?
- Local
- Foreign
10. How many full time employees does this company have?
- 1 – 100
- 101 – 200
- 201 – 300
- 301 – 400
- 401 – 500
- 501 – 1000
- 1001 – 1500
- Over 1500

11. What is the annual turnover for this company (in Kshs.)?

- 0 – 10,000,000
- 10,000,000 – 50,000,000
- 50,000,000 – 100,000,000
- 100,000,000 – 200,000,000
- 200,000,000 – 300,000,000
- 300,000,000 – 400,000,000
- 400,000,000 – 500,000,000
- 500,000,000 – 1,000,000,000
- 1,000,000,000 – 5,000,000,000
- 5,000,000,000 – 10,000,000,000
- Over 10,000,000,000

SECTION B: Objectives of Business Process Re-engineering (BPR)

12. Has your company/organization implemented BPR? Yes [] No []

13. If your answer to question 1 is “yes”, when did the company start implementing its BPR initiatives? _____ (year)

14. What factors and or challenges prompted this company to consider implementing BPR-related initiatives?

- a.
- b.
- c.
- d.

15. To what extent have the following objectives of BPR initiatives in your firm has been achieved? *(use a 5- point scale : 1 – very small extent; 2 –small extent; 3 – moderate; 4 – great extent and 5 – very great extent)*

BPR Objectives	1	2	3	4	5
(i) Customer service oriented processes aim to eliminate customer complaints					
(ii) Flexibility enhances adaptive processes and structures to changing conditions and competition					
(iii) Retraining of staff on BPR concepts and skills contribute towards success of BPR					
(iv) Process time is a very essential component to make a company dramatically compress the time for key business processes					
(v) Effective communication between stakeholders inside and outside the organization is necessary to all levels for successful re-engineering.					
(vi) Adequate project resources are important for a successful BPR project.					
(vii) Attitude, behaviour, integrity, people participation and team spirit have influence on BPR implementation					

16. What benefits did the company realize from implementing BPR initiatives?

- a.
- b.
- c.
- d.

SECTION C: Process Time

17. Do you have a special department production process management? Yes No

18. Does this company interact with suppliers, consumers and sub-contractors with the intention of helping it to improve its operations in any of the following ways?

Process Time Indicators	YES	No
(i) Upgrade the efficiency of its production processes		
(ii) Upgrade the quality of its products		
(iii) Improve the quality of work force		
(iv) Eliminate non-value adding processes		
(v) Improve on value adding processes		

19. How do you rate the following measures of process time within your manufacturing process?

Use a 5- point scale: 1 – Very Slow; 2 – Slow; 3 – Normal; 4 – Fast; 5 – Very fast

Measures of Process Time	1	2	3	4	5
Inspection Time					
Moving Time					
Waiting Time/Queue Time					
Storage Time					

20. Which measures has the company put in place to ensure process time?

- (a)
- (b)
- (c)
- (d)
- (e)

Thank you very much for your response

Appendix II:**List of Selected Large Manufacturing Firms in Nairobi, Kenya**

Company	Sector
1. Central Glass Industries Ltd 2. Kenya Builders and Concrete Ltd 3. Kenbro Industries Ltd 4. Mombasa Cement Ltd	Building, Construction and Mining
5. Bidco Oil Refineries Ltd 6. British American Tobacco Kenya Ltd 7. Coca Cola East Africa Ltd 8. Nestle Kenya Ltd 9. Del Monte Kenya Ltd 10. East African Breweries Ltd 11. Premier Flour Mills Ltd 12. Proctor & Allan (EA) Ltd 13. London Distillers (K) Ltd 14. Manji Food Industries Ltd 15. Brookside Dairy Ltd 16. Kenya Tea Development Agency 17. Nairobi Bottlers Ltd 18. Nas Airport Services Ltd 19. Excel Chemical Ltd 20. Kenya Wine Agency Limited 21. Wrigley Company (E.A) Ltd	Food, Beverages and Tobacco
22. Bayer East Africa Ltd 23. Cooper Kenya Limited 24. European Perfumes & Cosmetics Ltd 25. Procter & Gamble East Africa Ltd 26. Crown Berger Kenya Ltd 27. PZ Cussons Ltd 28. Unilever Kenya Ltd 29. BOC Kenya Ltd 30. Synresins Ltd 31. Syngenta East Africa Ltd	Chemical and Allied
32. A.I Records (Kenya) Ltd 33. East Africa Cables Ltd 34. Assa Abloy East Africa Ltd 35. East Africa Cables Ltd 36. Kenya Power & Lighting Co Ltd 37. Kenya Shell Ltd 38. Libya Oil Kenya Limited 39. Sollatek Electronic (Kenya) Limited	Energy, Electrical and Electronics

<p>40. Kenpoly Manufacturers Ltd 41. Kingway Tyres & Automart Ltd 42. Haco Industries Kenya Ltd 43. Nairobi Plastics Industries 44. Treadsetters Tyres Ltd 45. Rubber Products Ltd 46. Sameer Africa Ltd</p>	<p>Plastics and Rubber</p>
<p>47. Premier Knitwear Ltd 48. Tarpo Industries Limited</p>	<p>Textile and Apparels</p>
<p>49. Timsales Ltd 50. Rosewood Office Systems Ltd 51. Kenya Wood Ltd 52. Tetrapak Ltd 53. Wood Makers Kenya ltd 54. Twiga Stationers and Printers Ltd</p>	<p>Timber, Wood Products and Furniture</p>
<p>55. Beta Healthcare International Limited 56. Ely's Chemical Industries 57. Cosmos Limited 58. KAM Industries Ltd 59. Laboratory & Allied Limited 60. Glaxo smithkline Kenya ltd 61. Regal Pharmaceuticals</p>	<p>Pharmaceutical and Medical Equipments</p>
<p>62. Davis & Shirthiff Ltd 63. General Aluminum Fabricators Ltd 64. Nails & Steel Products Ltd 65. Steel Structures Limited 66. Tononoka Steel Ltd</p>	<p>Metal and Allied</p>
<p>67. Bata Shoe Co. (K) Ltd 68. East Africa Taners (K) Ltd</p>	<p>Leather Products and Footwear</p>
<p>69. Kenya vehicle manufacturers limited 70. Labh Singh Harnam Singh Ltd 71. Megh Cushion Industries Ltd 72. Pipe Manufacturers Ltd 73. Toyota East Africa Ltd 74. General Motor East Africa Limited 75. Unifilters Kenya Ltd 76. Impala Glass Industries Ltd</p>	<p>Motor Vehicle Assembly and Accessories.</p>
<p>77. Carton Manufacturers Ltd 78. Kenya Stationers Ltd 79. Jomo Kenyatta Foundation 80. Kartasi Industries Ltd</p>	<p>Paper and Paperboard</p>

Source: Kenya Association of Manufacturers (KAM)