

Effect Of Process Approach And Performance Of Manufacturing Firms In Nakuru County, Kenya.

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Abstract

Kenya's industrial sector encountered various challenges in the past. While the manufacturing sector's contribution to Kenya's overall economic output remained steady at 10%, its proportion of total wage employment declined. The adoption of total quality management was considered a potential enhancer for the financial performance of manufacturing companies. The primary objective of the study was to explore the correlation between process approach and performance of manufacturing firms in Nakuru County. The study was guided by *Quality Improvement Theory*, *Juran Theory*, and *Performance Theory*. A descriptive research design was utilized for the investigation conducted in Nakuru County. The study encompassed 34 manufacturing companies in Nakuru County, all of which were members of the Kenya Association of Manufacturers, serving as the units of observation. Additionally, 89 top and middle management personnel in the human resources division of these manufacturing companies were the units of analysis. The study encompassed the entire target population using a census approach. Data collection was carried out through the use of questionnaires. A pilot study was conducted in Nairobi County, involving a sample of nine randomly selected respondents from the general community, distinct from the final sample. The questionnaire's content validity was assessed by the supervisor for relevance and appropriateness to the study's objectives. The research questionnaire's validity for this study was determined through the Cronbach alpha value. The Cronbach's alpha reliability coefficient typically ranges from 0 to 1, and values exceeding 0.7 were considered indicative of instrument reliability. The study employed both quantitative and qualitative data collection methods. Qualitative analysis utilized themes and narratives, employing content analysis. Quantitative data were analyzed using descriptive statistics with the Statistical Package for Social Sciences (SPSS) version 25, and the results were presented through tables, pie charts, and bar charts. The study established that there is a positive significant association between process approach and performance of manufacturing firms as shown by a correlation coefficient of 0.266 and a p-value of 0.005 the researcher concluded that the firm should ensure that there is a clear process consistency to improve the operations of the firm. The study recommends that Manufacturing firms should adopt customer focus as a practice of TQM with the aim of enhancing organizational performance through customer satisfaction. The researcher recommends that the manufacturing firms should embrace employee involvement as quality management strategy to enhance organizational performance. The study recommends there is need for future researchers on the effect of quality management practices, recent practices, trends in another sector other than manufacturing firms in Kenya.

Key words: process approach, performance, manufacturing firms

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I. Introduction

Bourguignon (2019) defines a performance as an action with a specific behavior as opposed to just anything that occurs. A high-performing business respects, safeguards, and satisfies the needs of its stakeholders. As stated by Peterson, Gijsbers, and Wilks (2020), an organization's ability to use its resources to the fullest, consistently meet its objectives, and consider how important those objectives are to its users determines how well it performs.

Organizational performance is a measure of how well the business has achieved its aims and objectives. It is expressed as the difference between actual production and projected output. Njagi and Shalle (2021) claim that performance criteria includes specifying the goals, roles, and outputs that the client or customer requires. An organization's success can be assessed in two different ways: financially and non-financially.

Globally and in the USA High-performing tech businesses have more QMPs in place than low-performing tech organizations, claim Kaynak and Hartley (2018). Quality management techniques provide these

companies a competitive edge. According to Li (2020), information exchange benefits China's industrial companies' quality control procedures. Furthermore, supplier-specific investment and quality control activities have a favorable and considerable influence on market share and the success of innovations.

To explore the correlation between national culture and the utilization of quality management systems, Souza (2019) investigates the integration of TQM in South Africa and Nigeria. The results of the study reveal a multitude of distinct links between the national cultures of each country and the incorporation of quality management principles. Consequently, they recommend that when implementing quality management systems, it is essential to take into account the unique cultural factors of each country.

Kefasi (2019) asserts that the accounting and auditing sector in South Africa has seen significant improvements in business performance as a result of the use of quality management techniques including information exchange and customer focus. These businesses use quality management ideas as a means of gaining an advantage over their competitors and as a means of connecting with consumers. Ismail and Robert (2019) believe that the fundamental tenets and driving forces behind the entrepreneurial triumph of Uganda's Small and Medium Enterprises are quality management practices. Toga (2017) found a substantial and positive correlation between the performance of companies in the South African steel industry and quality management techniques including leadership, people management, and customer focus.

Researchers (Kihiu, 2016; Macharia and Mwangangi, 2016; Muvunyi and Mulyungi, 2018) examined the impact of implementing total quality management on industrial performance in Kenya. While previous studies had already established the links between procurement performance and total quality management techniques, they were deficient in providing comprehensive insights into the root causes and solutions for the ongoing increase in quality-related issues despite organizations embracing total quality management.

The process approach involves identifying opportunities to enhance quality, operational performance, and ultimately customer satisfaction, as well as planning and overseeing the tasks required to achieve high performance in key organizational processes (Evans & Lindsay, 2018). Process improvement is a critical factor in the performance of organizations in this study, with a specific emphasis on the practices and outcomes of manufacturing companies.

Despite the positive correlation between Total Quality Management Practices (TQMPs) and organizational performance, some researchers argue that the two dimensions of QMPs affect organizational performance differently. Khairul (2020) concluded that only the soft elements influence firm performance, while Owusu, Baidoo, and Ayaburi (2021) argued that the hard factors can enhance organizational performance independently of the soft elements. On the other hand, some researchers contend that the soft elements have a more significant impact on firm performance than the hard elements (Sharma & Joshi, 2020). Nonetheless, there is a consensus in the majority of Quality Management literature that the implementation of QMPs should contribute to organizational effectiveness and improved quality performance. It is important to note that most of the previous research has focused on the service sector in Nakuru, with limited attention given to the manufacturing sector in Nakuru County. This study's objective is to investigate how general quality management practices affect the productivity of manufacturing businesses in Nakuru County.

Statement Of The Problem

The industrial sector in Kenya has faced several challenges. Currently, manufacturing makes up 10% of Kenya's total economic production as a percentage of wage employment (Kenya Economic Report, 2019). One of the "Big Four agenda" pillars of the government's "Big Four agenda" for achieving Vision 2030 is the Kenyan manufacturing sector, which has excellent possibilities for fostering growth in other sectors, particularly export (GOK, 2021). However, the manufacturing sector's GDP contribution decreased from 10% in 2020 to 7.8% in 2019, and it has had sporadic growth over the past several years (KNBS, 2019; 2.5% in 2019, 3.6% in 2018, 3.1% in 2017, 0.7% in 2016 and 4.3% in 2015). While manufacturing companies in Nakuru, like Eveready Ltd, reduced their production capacity to 50 million units annually from a previous high of 180 million units annually, some manufacturing plants in Nairobi closed their doors after their net profits dropped by 58.7 percent to \$493,237 from \$784,783 (RoK, 2019). Results of the turnaround initiatives have been inconsistent (Carlinn, 2018). A further implication of the falling performance is that the entire quality management solutions implemented have not been successful in raising performance.

A number of manufacturing facilities in Nairobi closed down due to a 58.7% decrease in their net profits, which went from \$784,783 to \$493,237. Meanwhile, manufacturing companies in Nakuru, including Eveready Ltd, downsized their annual production capacity from a previous high of 180 million units to 50 million units (RoK, 2019). The outcomes of the turnaround programs have exhibited varying results (Carlinn, 2018). Another factor contributing to the declining performance is that, overall, the quality management solutions have not succeeded in enhancing performance. It's worth noting, however, that the survey did not assess how Kenyan manufacturing businesses performed concerning comprehensive quality management techniques.

In Nakuru, manufacturing companies like Eveready Ltd. have reduced their annual production capacity from a previous high of 180 million units to 50 million units. Simultaneously, some facilities in Nairobi closed due to a 58.7% drop in net profits, falling from \$784,783 to \$493,237 in 2019 (RoK, 2019). The outcomes of the turnaround programs have shown varying results (Carlinn, 2018). Notably, the overall ineffectiveness of quality management solutions in improving performance is contributing to this decline. Additionally, previous empirical studies suffered from methodological flaws and relied on an exploratory survey research methodology. However, the study aimed to address these gaps by employing a descriptive research strategy. It investigated the correlation between overall quality management techniques and the productivity of manufacturing companies in Nakuru County, Kenya.

General Objective of the Study

The general purpose of the study is to investigate effect of total quality management practices on the performance of manufacturing firms in Nakuru County, Kenya.

Specific Objectives

To examine the effect of process approach and performance of manufacturing firms in Nakuru County, Kenya.

Research Hypothesis

H₀₁: There is no statistically significant effect of process approach and performance of manufacturing firms in Nakuru County, Kenya.

II. Literature Review

Theoretical Review

Quality Improvement Theory

By Deming in 1986, the Quality Improvement Theory was first put out. The idea holds that one feature of excellent management is that it places the burden of building good connections on senior management. The idea holds that management controls frameworks and that frameworks are to blame for 80% of company issues (Hill, 1995). No quality management system could be successful, according to Deming (1986). Top management is responsible for allocating resources to processes, establishing business culture, choosing suppliers, and fostering long-distance connections. Deming's Quality Improvement Theory allows businesses to employ effective administrative processes to minimize low-quality control issues. The actions of the management team set the tone for the organization and define what is necessary for its success and survival.

Hubert (2000) has expanded upon Deming's (1986) theoretical framework for quality management, aiming to enhance the effectiveness of process management activities and envisioning the establishment of an organizational structure that fosters engagement. This fosters ongoing innovation in processes, products, and services, all while elevating employee satisfaction. These elements play a pivotal role in capturing the attention of customers and ultimately ensuring the sustainability of any relationship.

In addition to advancing the well-recognized Plan Do Check Act cycle, Deming (1986) honed in on a specific strategy for addressing critical issues. The strategy revolves around narrowing the gap between customer requirements and assembly business performance by continually enhancing execution through the Plan Do Check Act (PDCA) continuous improvement cycle (Goetsch and Davis, 2006). As per Anderson et al. (1994), the foundational principles of the Quality Improvement Theory revolve around quality concerns, constructing a robust framework that encourages participation and learning to support the adoption of process management practices, ultimately bolstering performance.

The concepts and practices of the System of Profound Knowledge (SOPK) should be actively implemented by senior management. According to Deming (1986), an organization can simultaneously improve quality, customer loyalty, employee satisfaction, and profitability while reducing waste, rework, staff turnover, and legal expenses. This theory is pivotal in the examination of various Total Quality Management (TQM) components, including the commitment of senior management to continuous improvement and employee engagement, as well as their impact on organizational performance.

Juran Theory

Juran's concept, as presented in 1964, delineates techniques that, when appropriately applied, can enhance the quality management process and, in turn, organizational performance. It centers on organizational challenges, planning, the imperative for enhancement, and management's responsibility for quality. To effectively institute quality control and improvement, the emphasis is placed on the importance of quality planning, as emphasized by Neyestani in 2017. The Quality Trilogy, introduced by Juran in 1986, is built upon the notion that quality management consists of three fundamental processes focused on quality: quality planning, quality control, and quality improvement, as outlined by Beckford in 2016. Furthermore, it stipulates

that the following steps must be taken to achieve quality planning: assessing customer requirements, engaging key stakeholders, defining quality objectives, establishing quality metrics, integrating a planning process, and achieving enhanced market share results, as proposed by Kiran in 2016.

Neyestani (2017) underscores that this concept holds management responsible for subpar quality rather than poor performance. It posits that to attain the desired quality outcomes, management must define explicit objectives, devise strategies for their achievement, allocate responsibilities fairly, and acknowledge achievements. The theorists additionally advocate for the initiation of continuous training at the management level, in line with Langabeer's insights in 2018.

This theory provokes considerations on how the commitment of management and the stewardship of employees can be critical factors in the successful implementation of Total Quality Management (TQM), while emphasizing planning, organizational challenges, management's accountability for quality, and the pursuit of improvement. This theory regarding managerial effectiveness serves as the bedrock for the influences that ultimately determine the company's performance. Therefore, this theory has facilitated a comprehensive understanding of how TQM elements impact performance.

Performance Theory

In the 1970s, Richard Schechner introduced the concept of performance theory, aimed at elucidating the phenomenon of performance within organizations. This theory lays the foundational principles upon which we can comprehend the gradual enhancement of performance over time in any organizational setting. To elaborate on this notion, Elger (2010) defined performance as the capacity to yield valuable results. It underscores that achieving improved performance is not an instantaneous occurrence; instead, it necessitates a significant investment of time and effort (Zakuan, Yousof, Laosirihongthong, & Shaharoun 2010). Elger (2010) draws a parallel between performance improvement and a journey, with the performance level acting as the ultimate destination. This study employs a multi-dimensional performance assessment encompassing both financial and non-financial metrics, including cost reduction, increased profitability, market share growth in subsequent years, product reliability, and service quality. Profitability, in particular, gauges the extent to which a business derives value from its core production elements: labor, management, and capital.

The linchpin of a business's prosperity is its profitability. An unprofitable firm is unlikely to endure, while a highly profitable one can reward its investors handsomely. The analysis of profitability places significant emphasis on the interplay between profits and expenses, as well as the value dimension concerning stakeholders' interest in the company (Masood, Hassan, and Saqi 2013). Four pertinent measures of corporate profitability include total revenue, net income, return on equity (ROE), and return on assets (ROA). ROA, often utilized as a broad gauge of a company's profitability, indicates that the higher the ROA, the more profitable a company's operations are. ROA estimates the value generated per unit of corporate resources, while ROE quantifies the return on the owners' equity employed in the company's activities.

According to the tenets of performance philosophy, Total Quality Management (TQM) systems should be the focal point for both internal and external customers. Internal customers collaborate within the company, interacting with colleagues or various departments and availing themselves of services within the organization. External customers, on the other hand, are the clients who place orders for goods and services. For instance, an internal customer might oversee the installation process. Consequently, the most effective approaches for meeting customer needs should be identified and determined by employees in a commercial setting. This philosophy guides researchers in evaluating how the performance of manufacturing enterprises aligns with quality-related factors.

Empirical Literature Review

Process Approach on Performance of Firms

Ranganathan's (2021) research delved into the evolution of manufacturing industry production processes in Sweden. The study compared the industrial sectors of Sweden and India, employing a literature study as the primary method for data collection. This approach was chosen because it was deemed comprehensive, providing answers essential for addressing the specific area of inquiry. It involved the collection of all relevant papers, whether published or unpublished, related to the research themes. The reviewed literature encompassed data, statistics, hypotheses, and other elements that could support various viewpoints on the particular issue. Additionally, the study utilized interviews with managerial personnel from manufacturing enterprises' production systems. The interview questions were tailored, taking into account the personality types of the interviewees. Departmental managers from firms such as M&M, Ashok Leyland, ABB, Mahindra and Mahindra Limited (M&M), and a Swedish-Swiss multinational headquartered in Switzerland participated in these interviews. The study revealed that skill development and job rotation played pivotal roles in fostering adaptability and creativity within Japanese industrial processes. Furthermore, it emphasized the importance of hiring flexible employees with diverse experiences, access to current information, and the

requisite skills for process innovation. The study recommended investing in their skill development and encouraging the adoption of new business-related procedures from the outset. It's important to note that the study's findings may not be directly applicable to the present research due to differences in the study areas.

Munywoki's (2018) study explored the operational effectiveness of Kenyan cement manufacturing companies and their use of the just-in-time technique approach. The research focused on operations managers, quality control managers, and procurement managers in several manufacturing companies, adopting a descriptive study methodology. Primary and secondary data sources were utilized in the study. The primary data collection tool employed was a questionnaire. The findings indicated that the implementation of just-in-time manufacturing directly enhanced the operational effectiveness of Kenyan cement producers. Consequently, Kenyan cement manufacturing businesses significantly benefited from the Just-in-Time inventory management system. The study highlighted the importance of personnel readiness, the use of information and communication technology (ICT), and the active involvement of top-level management in the successful implementation of a just-in-time supply chain. The study's conclusion emphasized the continued adoption of just-in-time inventory management systems by cement manufacturers and the importance of ongoing employee training and development. It's worth noting that this study focused on just-in-time inventory management, while the present research centers on the process approach and its impact on the performance of manufacturing firms.

Abuto's (2020) examination centered on market re-engineering as a strategic transformation strategy during collaboration with the Kenya Revenue Authority (KRA). The research predominantly consisted of qualitative methods, drawing from both primary and secondary data sources to address its objectives. To gather primary data, researchers utilized an interview guide, posing questions to senior, middle, and operational management levels within the organization. Secondary information was constructed from the Authority's existing records, such as bulletins, service charters, strategy plans, and the company's website. The report's contents underwent analysis using the content analysis technique. The research showed that the Kenya Revenue Authority experienced significant benefits from the implementation of business process reengineering as part of its strategic development plan for enhancing operations management. It is important to note that the findings from this study may not be directly applicable to the current research as it pertains to a different organization.

III. Research Methodology

Research Design

The investigation employed a descriptive research design, following the methodology outlined by Creswell (2013). The primary objectives of this approach were to assess the current state of the study phenomenon and delineate the status of research variables without making any alterations while observing them in their natural environment. This design proved most suitable for achieving the study's goal of assessing the impact of general quality management techniques on the performance of manufacturing firms in Nakuru County, Kenya. The descriptive design stood out for its efficiency, cost-effectiveness, and practicality. It did not require variable manipulation or repeated data collection from the same participants over time.

Target Population

Novikov and Novikov (2013) asserted that a population is defined as the aggregate of units or objects sharing similar attributes, which can be utilized to address a specific research question. This viewpoint is concurred with by Ritchie, Lewis, Nicholls, and Ormston (2013), who describe it as a category of items that can be sampled to draw conclusions pertaining to a particular research inquiry. The study was conducted in Nakuru County, with the unit of observation being 34 manufacturing firms registered under the Kenya Association of Manufacture in Nakuru County, as detailed in the Appendix. Meanwhile, the unit of analysis encompassed 89 employees, comprising 49 individuals from top and middle management, and 40 from the human resources department within the 34 targeted manufacturing firms in Nakuru County

Data Analysis Technique

For data collection, analysis, and coding, SPSS software was employed. Specifically, in quantitative analysis, data underwent thorough verification and adjustments to ensure completeness, consistency, clarity, readability, applicability, and relevance. Both quantitative and qualitative data were collected. Qualitative data was analyzed using content analysis and subsequently presented through themes and narratives. Quantitative data was analyzed using SPSS version 25, applying descriptive statistics and multiple regression analysis. Before commencing the analysis process, the data was preprocessed through scanning, editing, coding, categorization, and tabulation as appropriate. The choice of the analysis method aligned with the study's objectives and its capacity to address the research questions or hypotheses (Kothari, 2004). The findings were presented in the form of table. The multiple regression model was used in analyzing the data through the equation given below.

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

IV. Findings And Discussions

Effect of process approach and performance of manufacturing firms.

The researcher sought to determine level of agreement on the effect of process approach and performance of manufacturing firms in Nakuru County, Kenya. Table 4.8 shows the respondent's views.

Table 4.1: Effect of process approach and performance of manufacturing firms.

Statement	N	Min	Max	Mean	SD
The firm should ensure that there is a clear process consistency to improve the operations of the firm	73	1	5	4.325	0.941
Process innovation needs new workers with diverse backgrounds and new abilities.	73	1	5	4.425	0.865
The firm's operational success was directly and favorably impacted by the implementation of just-in-time manufacturing.	73	1	5	4.288	0.949
The firm has ensured that there is proper resource efficiency which has led to higher organizational performance	73	1	5	4.493	0.819
Management process in the firm is effective and efficient	73	1	5	4.315	0.984

From the findings, a high mean indicates that the respondents agreed with the statements and the low standard deviation indicated high clustering around the mean of the distribution. Respondents agreed that the firm should ensure that there is a clear process consistency to improve the operations of the firm with a (mean = 4.325; SD = 0.941). The findings showed that process innovation needs new workers with diverse backgrounds and new abilities with (mean = 4.425; SD = 0.865) further respondents agreed that the firm's operational success was directly and favourably impacted by the implementation of just-in-time manufacturing (mean = 4.288; SD = 0.949). Additionally respondents agreed that the firm has ensured that there is proper resource efficiency which has led to higher organizational performance (mean = 4.493; SD = 0.819). Finally respondents agreed that management process in the firm is effective and efficient (mean = 4.315; SD = 0.984) The results confirm the argument by Vonderembse and Dismukes (2015), alludes that enhancing the operations and processes of a firm is the main process that a company can utilize its capacity fullest for better performance. Consistent with Maria and Panagiotis (2019) that aligned processes is characterized with performance aspects of product tracking, information transparency, reduction of the bullwhip effect, inventory accuracy, improvement of product life cycle management, labor cost reduction and flexibility.

Performance of manufacturing firms

The researcher sought to determine level of agreement on performance of manufacturing firms Table 4.2 shows the respondent's views.

Table 4.2: Performance of manufacturing firms

Statement	N	Min	Max	Mean	SD
Total quality management strategies have improved the level of customer satisfaction	73	1	5	4.288	1.007
The sale volume of the firm has increased in the last 5 years	73	1	5	4.206	1.142
The profit margins in the firms have gone up	73	1	5	4.329	0.987
In the last 5 years, the market share of the organization has increased	73	1	5	4.260	1.014

From the findings, a high mean indicates that the respondents agreed with the statements and the low standard deviation indicated high clustering around the mean of the distribution. The study result showed that quality management strategies have improved the level of customer satisfaction with (mean = 4.288; SD = 1.007). The sale volume of the firm has increased in the last 5 years (mean = 4.206; SD = 1.142). The respondents agreed that the profit margins in the firms have gone up (mean = 4.329; SD = 0.987) and in the last 5 years, the market share of the organization has increased (mean = 4.260; SD = 1.014)

Inferential Findings

Effect Of Process Approach And Performance Of Manufacturing Firms

The study determined effect of process approach and performance of manufacturing firms in Nakuru County. The relationship between the two study variables was ascertained. The outcome of the analysis is shown in Table 4.3.

Table 4.3: Correlation Between Process Approach And Performance Of Manufacturing Firms

Process Approach	Performance of manufacturing firms	
	Pearson Correlation	.266**
	Sig. (2-tailed)	.005
N	73	

** . Correlation is significant at the 0.05 level (2-tailed).

The study established that there is a positive significant association between process approach and performance of manufacturing firms in Nakuru County, Kenya. This is shown by a correlation coefficient of 0.266 and a p-value of 0.005.

**Multiple Regression Analysis
Regression Coefficients^a**

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Beta	Std. Error	Beta		
1	(Constant)	2.853	.904		3.155	.000
	Process Approach	.211	.150	.188	1.409	.005

a. Dependent Variable: performance of manufacturing firms

The overall significant test results for the hypothesized research model. The interpretations of the findings indicated follow the following regression model.
 $Y = \beta_0 + \beta_1 X_1$

The results also indicate that there is a positive significant relationship between process approach and performance of manufacturing firms as shown by a regression coefficient of 0.211. The p-value (0.005) was less than the significance level (0.05). Therefore; we reject the null hypothesis and conclude that process approach have positive significant effect on performance of manufacturing firms in Nakuru County.

V. Conclusion And Recommendations Of The Study

Conclusion

The researcher concluded that the firm should ensure that there is a clear process consistency to improve the operations of the firm. Process innovation needs new workers with diverse backgrounds and new abilities further the firm's operational success was directly and favorably impacted by the implementation of just-in-time manufacturing. The firm has ensured that there is proper resource efficiency which has led to higher organizational performance and management process in the firm is effective and efficient.

Recommendations

The researcher recommended that customer needs and complaints should be handled in the shortest time possible. The firm should ensure that there is a clear process consistency to improve the operations of the firm. Process innovation needs new workers with diverse backgrounds and new abilities further the firm's operational success was directly and favorably impacted by the implementation of just-in-time manufacturing.

The study recommends there is need for future researchers on the effect of quality management practices, recent practices, trends in another sector other than manufacturing firms in kenya. An example could be the banking industry or the insurance industry then findings can be compared and conclusions drawn upon which plausible conclusions can be made

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