INFLUENCE OF PURCHASING PROCESS ON PERFORMANCE OF MANUFACTURING FIRMS IN KENYA

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ABSTRACT

The study sought to establish the effect of the purchasing process on the performance of manufacturing firms in Kenya. The dependent variable is performance of manufacturing firms in Kenya, as influenced by the following independent variables; definition of specifications, supplier management, materials ordering and material quality evaluation. The performance of the manufacturing firms was analyzed with the help of following independent variables; - definition of specifications, Supplier management on a manufacturing firm’s performance; material ordering, material quality evaluation. Literature relevant to the variables was reviewed as Theoretical review, Empirical review, and a Conceptual framework in chapter two. The study adopted a descriptive research design, with a population of 553 manufacturing firms across Kenya; a questionnaire with both open ended and closed questions was used to collect raw data from a sample of 232 manufacturing firms in Kenya. The simple random sampling technique was carried out and primary data was collected through the use of questionnaires. A pilot study was conducted to test the reliability and validity of the data collection instrument. The data was analyzed with the help of SPSS version 22. The study adopted regression analysis at 5% level of significance to determine strength and direction of the relationship of the variables under study. It is notable that there exists strong positive relationship between the independent variables and dependent variable as shown by R value (0.799). The coefficient of determination (R²) explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable and the four independent variables that were studied explain 63.80% of the performance in manufacturing firms as represented by the R². This therefore means that other factors not studied in this research contribute 36.20% to the performance in manufacturing firms. The study recommends for the proper definition of specification to
enhance performance of the firms. Additionally, the manufacturing firms require supplier prequalification. Finally, the material quality evaluation should be enhanced in the manufacturing firms by promoting conformity with market requirements and securing a larger share in export markets and upgrading conformity assessment infrastructure. The study has contributed to knowledge by establishing definition of material specifications, supplier pre-qualification, order processing and material quality evaluation affect performance of manufacturing firms in the Kenyan context.

**Key Words:** Manufacturing firms, definition of specifications, Supplier management, material ordering and material quality evaluation.

1. INTRODUCTION

1.1 Background of the Study

In the backdrop of global markets, increased competition and extended supply chains, manufacturing firms are now confronting new challenges, despite their major contribution to the world economy. Supply chains are becoming increasingly complex and dynamic; distribution channels are expanding with an increasing dependence on outsourced manufacturing and logistics (Smith *et al.*, 2004). Today, purchased items represent approximately 60-70 of the total cost of goods sold (Soderborn & Teal, 2012). Indeed, the typical industrial firm spends more than one half of every sales dollar on purchased products and this percentage has been increasing with recent moves towards downsizing and outsourcing (Bresnan & Fowler, 2014). Manufacturing firms have realized the necessity of focusing their resources on their core businesses and competencies and on outsourcing auxiliary functions in which they do not have a competitive advantage.

1.1.1 Global Perspective of Manufacturing Firms

Economists across the globe propose that economic growth and enhanced standards of living are positively correlated with a nation’s industrial activity. Growth in GDP in positively related to growth in the nation’s manufacturing sector (Naude & Szirmai, 2009). They also argue that the productivity of the non-manufacturing sector, especially the services sector is associated with, and
depends on growth in the manufacturing sector. Economies therefore should focus on the structural transformation of the traditional economy dominated by primary activities into a modern economy where high-productivity activities in manufacturing assume an important role, and remains a defining feature of economic development (Zailani, 2011).

1.1.2 Local Perspective of Manufacturing firms

In third world economies like Kenya, structural transformation requires a type of manufacturing sector development that can deliver high-quality products, and employment, that is aligned with the international division of labour, and that would not lead to autarky, or a reversal of global gains in establishing openness in trade. Sound policies in all support sectors can make valuable contributions in this regard if the lessons of the past and the challenges of the future are sufficiently taken into consideration (Naude & Szirmai, 2009). This study seeks to find the meeting ground and the interrelations between purchasing process and manufacturing performance, by studying the influence the key purchasing processes have on the performance of manufacturing firms in Kenya.

1.1.3 Purchasing Process.

Purchasing is a key support activity in the manufacturing process of an organization, and creates value through purchase of inputs, services and facilities needed to produce a firm’s product and same time key up the maintenance of manufacturing facilities. In past 150 years, the purchasing function has achieved notable milestones which can be divided into seven golden periods in organizations from 1850’s up to beginning of twenty-first century (Zailani, 2011). The effect on purchasing structure and behavior followed. Zailani (2011) argues that, the evolution of purchasing has exposed the way of the purchasing process to reshape from traditional clerical function to a
strategic focal point in an organization by exchanging information with top management to attain best products and services through total cost, value and risk analyzing.

1.2 Statement of the Problem

The manufacturing sector in Kenya has not been performing as expected or projected, expressing declining performance in some sectors and stagnating figures in other sectors, in the recent past. According to the Kenya Economic Report (2013), the manufacturing sector contribution to GDP has stagnated at about 10 per cent, with the sector’s growth during the first Medium Term Plan being a mere 3.16 per cent. This slow growth and weak performance is attributed to high costs of production (mainly due to expensive inputs and poor coordination with support departments), stiff competition from imported goods, high costs of credit. Kenya’s share of manufacturing in total merchandise exports is 35 per cent compared to South Africa (47%), Malaysia (67%) and Singapore (73%). This indicates ample opportunities for Kenya to increase the share of manufacturing exports. (KIPPRA 2013).

The Kenya Manufacturing Association (KAM) attributes the exits to a host of factors, among them the high costs of production and the local market being flooded with cheap imports, poor infrastructure and limited market access. Manufactures also decry other operational costs, among them labour, rent and other overheads. This, coupled with the high cost of capital, is discouraging investment in critical areas, for example, setting up manufacturing plants or SME growth (Wafula, 2016). In light of this scenario, it has become inevitable for manufacturing firms to focus closely on purchasing to ensure that they are not eroded by the highly competitive global environment. This would enable manufacturing companies to outsmart their competitors and manage better profitability and counter the extensive competition waged in the current liberalized economies scenario (Monczka et al., 2004).
1.3 Research Objectives

i. To examine how definition of specifications influence performance of manufacturing firms in Kenya.

ii. To identify how supplier prequalification influence performance of manufacturing firms in Kenya.

iii. To determine how order processing influence performance of manufacturing firms in Kenya.


2. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Compositional Specification Theory.

Chen, (2012) proposed a compositional specification theory for reasoning about materials that interact by synchronization of inputs and outputs actions, in which the specification of a component constrains the temporal ordering of interactions with the environment. This theory seeks to support compatibility of components, in addition to modeling environmental assumptions, and reasoning about run-time behavior. According to Chen (2012), a specification theory suitable for components should be equipped with a refinement pre-order which is substitutive, to facilitate component re-use. This should include structural parallel composition, for inferring component interactions at run time; conjunction, to facilitate independent development constrained by several specifications; and quotienting, which supports incremental development. This theory generalizes
existing frameworks by supporting the above said operators, while retaining conceptual simplicity and strength in operations (Chen, 2012).

2.1.2 The Agency Theory of Supplier-manufacturer relationship

Agency theory is associated with the Supplier prequalification variable. It centers around two parties, a principal (manufacturer) and an agent (supplier) who collaborates with each other to achieve certain outcomes. This theory is concerned with resolving two problems that can occur in agency relationships. The first agency problem arises when the desires or goals of the principal and agent conflict, and when it is difficult or expensive (agency cost) for the principal to verify what the agent is actually doing. The general agency costs include the costs of structuring, monitoring, and bonding a set of contracts among agents and principals with conflicting interests. The second problem of risk sharing arises when the principal and agent have different attitudes toward risk. The principal and the agent may prefer different actions because of the different risk preferences (Logan, 2000). In many industries, the management of suppliers can account for as much as 60 and 80 percent of manufacturing cost. This relationship is a vital task for manufacturers as it can contribute to both competitiveness and profitability of a company. Effective supplier management can take costs out of the supply chain (Lemke, Goffin, & Szwejczewski, 2000).

2.1.3 The contingency theory of Ordering.

This theory related to the Material order processing variable. It is based on uncertainty, and the effect it has in ordering. According to this theory, when environmental conditions are stable, a high degree of formalization and centralization leads to greater organization effectiveness owing to the ability of the decision maker to plan, co-ordinate and control activities (Hall, 2016). In the context of buying, increasing levels of uncertainty lead to a buying decision process characterized by increasing participation by lower level members of the organizational hierarchy and less subject
to the control of formalized rules and procedures. According to the contingency theory, higher levels of product complexity and commercial uncertainty are associated with lower levels of formalization and centralization. At high levels of uncertainty, organizational decision-making processes are characterized by a constriction of authority (Donaldson, 2001).

2.1.4 The Six Sigma Quality Improvement Theory

On Material quality evaluation variable, the Six Sigma theory is commonly used by many as a synonym for "improvement" or "variability reduction". Additionally, it is used to describe the measurement tracking system for determining six sigma, usually Defects per Million Opportunities (DPMO). Two of the major advocates of this theory, Dr. Mikel Harry and Richard Schroeder (2006), define the theory as a business process that allows companies to drastically improve their bottom line by designing and monitoring everyday business activities in ways that minimize waste and resources while increasing customer satisfaction.

2.1.5 The Emerging Theory of Manufacturing

This theory relates to the dependent variable, performance of manufacturing. This theory is based on four principles and practices that together constitute a new approach to manufacturing; The use of Statistical Quality Control to change the social organization of a factory; The new concept of manufacturing accounting that allows people to make production decisions as business decisions; The use of “flotilla,” or module, organizations, and finally; The use of the systems approach to emphasize the economic process of business. Drucker explains that the system design approach “sees the plant as little more than a wide place in the manufacturing stream.” The manufacturing process does not end until the customer receives his/her product (Drucker, 2008).
2.2 Conceptual Framework

Definition of specifications
- Specification setting.
- Approvals by department heads.
- Presentation; quantity, packaging

Supplier Prequalification
- Supplier Sourcing
- Sampling.
- Negotiation.

Order Processing
- Tender Processing.
- Order Processing.
- Stock Management.

Material Quality Evaluation
- Material Evaluation
- Quality Control and Assurance
- Rejections and returns

Performance of Manufacturing firms in Kenya
- Market Share.
- Purchasing efficiency.
- Cost reduction.

Independent Variables

Dependent Variable

Figure 1: Conceptual Framework
2.2.1 Definition of specifications
Specifications comprise the type and design of the materials required, how and when they will be provided and the characteristics of the materials. Specifications should be compiled to the highest standard because they sharpen the buyers’ perception of manufacturing needs, ensures that potential suppliers are in no doubt about the nature of the required materials facilitates the evaluation stage and facilitates the inclusion of a clear statement of requirements in the final contract. It is assumed that a productive process of some kind will take place as a means of meeting the specification (Fisher, 2000).

2.2.2 Supplier Prequalification
Supplier decisions are one of the most important aspects that firms must incorporate into their strategic processes. With the increasing importance of the purchasing function, supplier management decisions have become more strategic.

2.2.3 Order Processing
Several ways are employed in improving the ordering process. For example, blanket purchase order, an open order which is usually effective for one year, for repetitive purchases from one supplier. This reduces the time in order releasing and makes the ordering of material a routine process. Online ordering system are also adopted in linking purchaser’s and supplier’s system electronically to faster order cycle time, reduce ordering errors, track order more efficiently and visualize back-ordered items better (Monczka, et al., 2009).

2.2.4 Material Quality Evaluation
Owen and Hargie, (2001) described evaluation as “an elastic word that stretches to cover judgments of many kinds”, diversified from public to private sector, and spread into areas such as recruitment and training, job performance, politics and manufacturing. As a pre-requisite for
evaluation, goals and objectives must be defined; which evaluation measures and whether these have been attained. In manufacturing, evaluation seeks to ascertain the quality of material inputs, so as to guarantee quality outputs. Evaluating material quality is associated with specification, feature, function or performance of a product.

2.3 Empirical Review

2.3.1 Definition of Specifications

There is substantial evidence that the specification has long been regarded as a "critical document" in the process of procuring materials (Myhill, 2000). The common activity of specifying the operational requirements of a system can consequently be a problematic, time consuming and expensive process for a manufacturing firm if there is no standard guidance available on the format and content of the specification. Problems encountered by firms in producing a specification are compounded by new developments in manufacturing systems. The procurement process is also difficult for potential suppliers who, in order to sell an item, must respond to specifications which are very variable in terms of content, format and quality (Fisher, 2000).

2.3.2 Supplier Prequalification.

Over last two decades, the evolution of the competitive environment has made company competitiveness and survival depend more and more on their suppliers. An increasing dependence on suppliers leads companies to be even more exposed to uncertain events, which is why the supplier prequalification has become one of the most important issues for purchasing managers (Micheli, 2008). Micheli, (2008) highlight that supplier prequalification, similarly to supply risk management, is considered a method for supply risk management, but as an alternative way in the typical current situation of resource constraints. This finding implies that a supplier selection approach has to explicitly consider the variability, due to the supply risks (generally, very high for
critical supplies), of the total cost of the supply, in order to clearly show it and to make the decision maker (i.e. the buyer) aware of the overall risk he/she is taking.

### 2.3.3 Order Processing.

It is widely accepted that organizational purchasing is a most important function to almost all types of enterprises for a number of good reasons. First, large expenditures are involved, draining a large proportion of enterprise income. On average, 60 per cent of every sales dollar goes towards material cost. Very often, procurement is characterized by many elaborate and formal processes needed to achieve accountability and transparency, but these processes may adversely affect manufacturing performance. If the integration of the purchasing function with the operational functions is not satisfactory, output disruptions, loss of income, and adverse effects on competitiveness may result because the purchasing function contributes to the design of competitive products (Lambros & Moschuris, 2001). Kotteaku, Laios, & Moschuris., (2005) used four parameters to describe the purchasing function process. These parameters are articulation (i.e. degree to which purchasing activities are conducted by specialized departments, committees and skilled personnel), formalization (i.e. extent to which purchasing tasks are defined by formal documents), centralization (i.e. extent to which purchasing responsibilities are delegated among several lower managerial levels), and depth of analysis (i.e. application of state-of-the art technical and financial tools to improve the performance of the purchasing function). In both of their papers they defined four purchasing phases (i.e. initiation, search, selection, and completion.

### 2.3.4 Material Quality Evaluation.

Quality evaluation activities are oriented towards promoting conformity with market requirements and securing a larger share in export markets, especially focusing on .Upgrading conformity assessment infrastructure. This works on Establishing the requisite legal and regulatory framework
for conformity, establishing recognized standards, accreditation, certification and inspection schemes, developing internationally recognized and harmonized conformity structures, upgrading laboratories and supporting international accreditation and establishing international calibration chains for measurement and precision manufacture.

2.3.5 Manufacturing Firm’s Performance.

The impact of Industrialization on advanced economies encouraged the less developed countries to adopt policies aimed at development of a modern industrial sector with much emphasis being put on the manufacturing sector, which has an important role to play in an economy with respect to the countries’ industrialization strategy. Like many developing countries, the structure of the manufacturing sector in Kenya since inception was based upon import substitution strategy, which was sustained through protection of industries by enhancement of tariff barriers (Ngui & Muniu, 2012). According to the Kenya Economic report (2013), currently, manufacturing sub-sector in Kenya constitutes 70 per cent of the industrial sector’s contribution to GDP with building, construction, mining and quarrying cumulatively contributing the remaining 30 per cent. Kenya’s manufacturing is largely agro-based. This contrasts with newly industrialized countries where food manufacture constitutes a small share, with manufacture of chemicals, electronics and machinery constituting over 40 per cent of total value added.

2.4 Research Gaps

Research gaps emerge in that most of the studies relating purchasing and manufacturing and their dependability for performance where conducted outside Kenya, mainly in USA, Europe and Asia, prompting a need for scholars to apply similar studies in Kenya, and/or replicate their findings in the local manufacturing industry. Most of their studies focus on purchasing strategies, in relation to manufacturing performance, and not how the actual purchasing process influences performance
and how it can be used to help improve manufacturing performance. Other gaps emerge in the association between suppliers and manufacturing, with limited literature focusing on the two. Supplier issues stop at the purchasing point, as well as manufacturing issues ending at stores point. Studies attempting to harmonize the two are few, leaving a grey area requiring deeper research. A gap also exists when manufacturing entities look at purchasing as a supporting department, rather than a strategic partner in the pursuit of manufacturing and a firm’s success. Studies are required to expose purchasing importance and enlighten top management how purchasing can strategically team up with both manufacturing and suppliers to work towards improving performance in terms of quality improvement and innovation in new product development. Therefore, no effort is given in bringing up the much desired alignment between purchasing processes and cooperate strategy, which includes manufacturing excellence. There are needs for scholars to formulate and execute effective studies on procurement process and strategies in order to overcome challenges in the context of sustaining and developing manufacturing performance.

3. RESEARCH METHODOLOGY

3.1 Research Design

The study used descriptive research design because according to Mugenda & Mugenda (2003), the purpose of descriptive research is to determine and report the way things are and it helps in establishing the current status of things and helps the study to observe, analyze and draw reliable findings.

3.2 Target Population
The study targeted manufacturing firms in Kenya. The Kenya Association of manufacturers has 553 registered member firms distributed across Kenya as follows; Nairobi and surrounding areas 399 firms (72%), Coast region 73 firms (13%), Athi-River 18 firms (3%), Central region 31 firms (5%), Nakuru and surrounding areas 18 firms (3%), and Eldoret 14 firms (2%) (See appendix III).

The head of the procurement staff acted as the target population for the study.

3.3 Sample Size and Sampling Technique

To achieve representation across the country, study used the following Taro Yamane formular at a 5% margin of error;

\[ n = \frac{N}{1+Ne^2} \]

Where;

- \( n \) is the sample size.
- \( N \) is the population (553 firms)
- \( E \) is the margin of error (5%)
- \( I \) is a constant value.

Therefore our sample size \( n \) is 232 firms, to be selected proportionally across the country.

3.4 Data Collection Instrument and Procedure

Individual-administered questionnaires were distributed to respondents in each of the 20 manufacturing firms. The study targeted manufacturing foremen, procurement officers, Lab technicians and quality assurance officers, who had sections to fill respective to their areas of specialization. The respondents were allowed a period of 2 weeks to answer the questions; after which questionnaires were then collected for further processing of data.

3.5 Pilot study
A pilot study was conducted and 5 questionnaires were distributed to 5 companies, 4 in Nairobi area and 1 in coast region. This was intended to test for reliability and validity of the research instruments.

### 3.6 Data Analysis and Presentation

Before analyzing the data, responses was edited, coded, entered to SPSS (Version 22) and data cleaned. Quantitative data was analyzed using descriptive statistics. Data analysis was done using SPSS (Version 22) and presented through percentages, means, standard deviations and frequencies. The information was displayed by use of bar charts, graphs and pie charts. The qualitative data was analyzed by use thematic analysis. Significance and correlation between variables were tested by the use of squared moment correlation coefficient, $R^2$, as a measure of significance, and a standard measure of an assumed linear relationship between variables.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon,$$

- $\beta_0$= constant (coefficient of intercept),
- $X_1$= Definition of Specifications,
- $X_2$= Supplier Management,
- $X_3$= Material Ordering,
- $X_4$= Material Quality Evaluation
- $\varepsilon$ = Error term
- $\beta_1$…….$\beta_4$= regression coefficient of variables.

### 4. DATA FINDINGS

#### 4.1 Response Rate

From the data collected, out of the 232 questionnaires administered, 128 questionnaires were fully completed and returned making a response percent of 55.17%. This percentage concurs with Mugenda and Mugenda (2012) who argues that for generalization a response rate of 50% is
adequate for analysis and reporting, 60% is good and a response rate of 70% and over is excellent, thus 55.17% was adequate for analysis.

4.2 Definition of Material Specifications
The study sought to establish from the respondents whether the specifications and quality standards are well defined. According to the study results in Figure 2, the study established that 28% of the respondents stated customer demands. The study findings are in tandem with literature review by Gonzalez, Carlo & Monge (2004) who stated that the constant evaluation of the most specifications and quality standards should be well defined.

Figure 2: Material Specification

4.3: Supplier Prequalification
The study sought to find out from the respondents the basis for supplier selection. According to Figure 4.7, the study results show that 30% indicated quality, 24% of the respondents stated the price, 16% of the respondents indicated the location, 18% of the respondents stated that delivery ability, 6% of the respondents stated from the history of presence and 6% of the respondents also indicated from the references from other firms. This implies that basis for supplier selection in manufacturing firms as per the quality, the price, location, delivery ability, the history of presence and the references from other firms. The study results are in tandem with literature review by
Chapman and Ward (2003) who established that the supplier selection should be based on the quality, price and delivery ability of the supplier. This approach is composed of two subsequent phases: supplier evaluation, which gives as an output an assessment of every potential supplier, and comparison, which aims at comparing the assessed potential suppliers in order to rank them and to select the most appropriate one. As far as the evaluation phase is concerned, a cost profile of the potential supplier is provided instead of a single value, which clearly shows the effect of the mitigation/exploitation interventions, with regard to every potential supplier separately. As far as the comparison phase is concerned, the decision maker can compare the cost profiles that give him/her information about the variability of the total cost, besides the single value of the TCO, related to every possible intervention that can be performed to exploit the upside and to mitigate the downside supply risks (Micheli, 2008).

Figure 3: Supplier Prequalification
4.4 Order Processing
The third objective of the study was to establish whether order processing affect performance of manufacturing firms. The findings show that who controls purchasing process was 44% of the respondents indicated that manufacturing department, 30% of the respondents stated finance department, 16% of the respondents stated the marketing department and 10% of the respondents stated the outsourced/External firm. This indicates that marketing department, finance department and manufacturing department are involved in control of purchasing process in the manufacturing firms. For example, blanket purchase order, an open order which is usually effective for one year, for repetitive purchases from one supplier. This reduces the time in order releasing and makes the ordering of material a routine process. Online ordering system are also adopted in linking purchaser’s and supplier’s system electronically to faster order cycle time, reduce ordering errors, track order more efficiently and visualize back-ordered items better (Monczka, et al., 2009).

Figure 4: Order Processing
4.5 Material Quality Evaluation

The fourth objective of the study was to establish whether material quality evaluation affect performance of manufacturing firms. The study sought to establish the material quality control measures are in place in the manufacturing firms. As illustrated in Figure 4.17, 30% of the respondents stated the quality control and assurance department, 32% of the respondents indicated the regular checkups, 24% of the respondents stated the supplier Involvement and 14% of the respondents stated the payment conditioning. This infers that material quality control measures are in place in the manufacturing firms include the quality control and assurance department, regular checkups, supplier Involvement and the payment conditioning. The materials quality control includes the regular quality control evaluation of the incoming materials. This process most usually is done by the quality control department if it is direct materials and it would be done by the maintenance or purchasing department if it is MROs or office and other supplies respectively. After sampling the incoming materials, they are ready to move into the process. A measure for supplier performance can be obtained from this control, since the supplier quality performance can be measured by the number of deliveries defect-free divided by the number of deliveries recorded (Gonzalez, et al., 2004).

**Figure 4: Material Quality Control measures**
4.6 Performance of Manufacturing Firms
The study requested the respondents to indicate the trend of their market share over the past five years. As illustrated in Table 4.6, in the year 2011, 55% of the respondents stated below 50%. 25% of the respondents indicated 50%-60%, 15% of the respondents stated 60%-70% and 5% of the respondents indicated above 70%. Additionally, in the year 2012, 45% of the respondents stated below 50%, 35% of the respondents indicated 50%-60%, 10% of the respondents stated 60%-70% and 10% of the respondents indicated above 70%. For the year 2013, 60% of the respondents stated below 50%, 15% of the respondents indicated 50%-60%, 23% of the respondents stated 60%-70% and 2% of the respondents indicated above 70%. Further, in the year 2014, 48% of the respondents stated below 50%, 13% of the respondents indicated 50%-60%, 12% of the respondents stated 60%-70% and 27% of the respondents indicated above 70%. Finally, in the year 2015, 65% of the respondents stated below 50%, 25% of the respondents indicated 50%-60%, 5% of the respondents stated 60%-70% and 5% of the respondents indicated above 70%. This can be deduced that trend of their market share over the past five years in manufacturing firms is below 50%.
Table 1: Performance of Manufacturing Firms

<table>
<thead>
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<tbody>
<tr>
<td>Below 50%</td>
<td>55%</td>
<td>45%</td>
<td>60%</td>
<td>48%</td>
<td>65%</td>
</tr>
<tr>
<td>50%-60%</td>
<td>25%</td>
<td>35%</td>
<td>15%</td>
<td>13%</td>
<td>25%</td>
</tr>
<tr>
<td>60-70%</td>
<td>15%</td>
<td>10%</td>
<td>23%</td>
<td>12%</td>
<td>5%</td>
</tr>
<tr>
<td>Above 70%</td>
<td>5%</td>
<td>10%</td>
<td>2%</td>
<td>27%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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4.7 Multiple Regression Analysis
In addition, the study conducted a multiple regression analysis so as to test relationship among variables (independent) on the performance of manufacturing firms. The study applied the statistical package for social sciences (SPSS V. 22) to code, enter and compute the measurements of the multiple regressions for the study. According to the model summary it is notable that there exists strong positive relationship between the independent variables and dependant variable as shown by R value (0.799). The coefficient of determination ($R^2$) explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable and the four independent variables that were studied explain 63.80% of the performance in manufacturing firms as represented by the $R^2$. This therefore means that other factors not studied in this research contribute 36.20% to the performance in manufacturing firms. This implies that these variables are very significant therefore need to be considered in any effort to improve performance in manufacturing firms in the study area. The study therefore identifies these variables as critical procurement issues affecting performance in manufacturing firms.
Table 2: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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<tbody>
<tr>
<td>1</td>
<td>.799</td>
<td>.638</td>
<td>.619</td>
<td>.044</td>
</tr>
</tbody>
</table>

Further, Table 3 show the Analysis of Variance and the study revealed that the significance value is 0.002 which is less that 0.05 thus the model is statistically significance in predicting how definition of specifications, supplier management, order processing and material quality evaluation affect performance of manufacturing firms. The F critical at 5% level of significance was 2.3719. Since F calculated (44.1923) is greater than the F critical (value = 2.3719), this shows that the overall model was significant.

Table 3: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>22.980</td>
<td>4</td>
<td>5.745</td>
<td>44.1923</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>15.987</td>
<td>123</td>
<td>.1300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>38.967</td>
<td>127</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NB: F-critical Value = 2.3719; Predictors: (Constant): Definition Of Specifications, Supplier Prequalification, Order Processing, Material Quality and Evaluation

Table 4: Regression Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>Std. Error</td>
<td>β</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>1.876</td>
<td>.245</td>
<td>7.654</td>
</tr>
<tr>
<td></td>
<td>Order Processing</td>
<td>.658</td>
<td>.112</td>
<td>.402</td>
</tr>
<tr>
<td></td>
<td>Supplier Pre-qualification</td>
<td>.599</td>
<td>.137</td>
<td>.354</td>
</tr>
<tr>
<td></td>
<td>Material Quality Evaluation</td>
<td>.541</td>
<td>.175</td>
<td>.216</td>
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</tbody>
</table>
As per the SPSS generated in Table 4.10, the model equation would be \( Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \) becomes: \( Y = 1.876 + 0.658X_1 + 0.599X_2 + 0.541X_3 + 0.508X_4 \). This indicates that Performance in Manufacturing Firms = 1.876 + 0.658(Order Processing) + 0.599(Supplier Prequalification) + 0.541(Material Quality Evaluation) + 0.508 (Definition of Specifications) + 0.245.

**CONCLUSION**

Based on the study findings, the study concludes performance of manufacturing firms is affected by definition of material specifications, supplier prequalification, order processing and material quality evaluation of the purchasing process are the major factors that mostly affect performance of manufacturing firms in Kenya. The study concludes that order processing is the first important factor that affects performance of manufacturing firms. Supplier pre-qualification is the second important factor affects performance of manufacturing firms. The regression coefficients of the study show that supplier pre-qualification has a significant influence on performance of manufacturing firms. This implies that increasing levels of supplier pre-qualification by a unit would increase the levels of performance of manufacturing firms thus material quality evaluation has a positive influence on performance of manufacturing firms. Finally, the study concludes that definition of material specifications is the fourth important factor that affects performance of manufacturing firms. Increasing levels of definition of material specifications by a unit would increase the levels of performance of manufacturing firms. This shows that definition of material specifications has a positive influence on performance of manufacturing firms.
RECOMMENDATIONS

The study recommends for the proper definition of specification to enhance performance of the firms. The common activity of specifying the operational requirements are problematic, time consuming and expensive process for a manufacturing firms. Thus there is need to have standard guidance available on the format and content of the specification. Additionally, the manufacturing firms require supplier prequalification which has become one of the most important issues for purchasing managers. This will create the importance of selection, developing and maintaining good supplier relationships. Further, manufacturing firms need to adopt ways in improving the ordering process. For example, blanket purchase order, an open order which is usually effective for one year, for repetitive purchases from one supplier. This reduces the time in order releasing and makes the ordering of material a routine process. Finally, the material quality evaluation should be enhanced in the manufacturing firms by promoting conformity with market requirements and securing a larger share in export markets and upgrading conformity assessment infrastructure. This works on establishing the requisite legal and regulatory framework for conformity, establishing recognized standards, accreditation, certification and inspection schemes, developing internationally recognized and harmonized conformity structures, upgrading laboratories and supporting international accreditation and establishing international calibration chains for measurement and precision manufacture to boost performance of manufacturing firms.

REFERENCES


