

**DECISION MAKING APPROACHES AND OPERATIONAL PERFORMANCE OF
LARGE MANUFACTURING FIRMS IN NAIROBI COUNTY**

BY

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DECLARATION

I declare that this research project is my original work and has not been submitted for presentation in this or any other university.

Hillary Bungei D61/19525/2019

Signature.....  Date: 13-07-2022

This research proposal has been presented for examination with our approval as the University supervisors.

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ABBREVIATIONS AND ACRONYMS

BDT	Behavioural Decision Theory
GDP	Gross Domestic Product
KNBS	Kenya National Bureau of Statistics
RBV	Resource Based View

ABSTRACT

The decision-making processes and operational effectiveness of large industrial enterprises in Nairobi County were the main subjects of this study. The study's goals were to assess the extent to which large manufacturing companies in Nairobi County use decision-making techniques when making operational decisions and to ascertain the impact of these approaches on the operational performance of manufacturing companies in Nairobi County. The study employed a descriptive cross-sectional research approach and conducted a survey. Data were gathered from operations managers, production managers, or their counterparts at significant manufacturing enterprises in Nairobi City County using web-based google form surveys. 46 people were included in the sample, stratified by manufacturing subsectors. To individual managers, all of the surveys were distributed by email and WhatsApp. There were forty responses in total, and it was decided that they could be analyzed. Both descriptive and inferential statistics were employed in the study's analysis. According to the respondents' background data, we had more men than women working in the targeted departments. The respondents were in a good position to supply the information the researcher was looking for because they had a decent degree of education and had worked for the individual companies for long periods of time. Findings show that significant manufacturing enterprises in Nairobi City County apply the identified decision-making processes to a moderate to a considerable level, as indicated by three or more. Dependent decision-making models are the most often employed, whereas avoidant decision-making models are the least. The second goal was to investigate the connection between large manufacturers' operational success and their decision-making processes. According to the study's multiple regression model's positive coefficients, the dependent and rational decision-making techniques and operational performance are positively correlated. Though the latter was not statistically significant, it was discovered that intuitive and avoidant decision-making processes had a negative association with operational performance. The methods used to make decisions have a greater overall impact on operational performance. The study recommends that manufacturing firms avoid using an intuitive decision-making approach but instead rely on multi-criteria methods by employing methods and tools available for aiding decision-making. They could also use a group decision support system (GDSS), an interactive computer-based tool that helps a number of decision-makers (working together in a group) discover answers to situations that are inherently unstructured, to improve dependent decision-making. The study's main shortcoming is that it used a simple multiple regression model to determine the relationship between decision-making strategies and operational performance, despite the fact that there are other factors that can influence this relationship and should be considered in the research. Future studies should strengthen this model by integrating environmental dynamism or complexity as a moderating or intervening variable to offer it greater explanatory power.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The top echelon of an organization are charged with the central responsibility of making operations decisions. Lucia and Karina (2015) opine that organizational operations decisions are executed based on decision making framework. Every decision made within an organization has a huge impact on an organization's performance as they have a direct bearing on competitiveness as well as strategic plan (Dutton, 2014). Often, top management makes decisions as guided by environmental factors, which would either be opportunities or threats. Internal factors also come into play as they affect organizational capabilities directly.

The two most relevant theories that this study was anchored on are: Behavioural decision theory (BDT) (Nutt, 1976) and Resource Based View (RBV) (Barneys 1991). To explain the behavior of managers in making decisions of higher good, BDT was utilized while RBV helped to demonstrate how sound decision-making capacity can enhance operational efficiency. Resource based view considers an organization's possession of valuable but rare and imitable resources which become a source of competitive advantage. The theory considers having managers' decision-making skills and practice as a very outstanding resource to a firm and would enhance its capacity to achieve set goals.

Production managers are faced with a myriad of challenges including but not limited to globalization, uncertainty, and environmental complicatedness. The rise in globalization brings about heightened competition between manufacturers from diverse countries, more especially where the goods are non-specialized. Some countries boast of low labour cost thus exerting pressure on high -wage countries. More so, decision-making within the manufacturing industry gets even complicated due to customers' ever-increasing demand for customized goods. Such demands reduce production cycle as more variety of goods are produced. These, among many other factors result in less certainty in production planning.

1.1.1 Decision Approaches

Decision-making is a process of picking specific choices from among several alternatives in the endeavor to reach certain goals or outcomes (McFall, 2015). Various scholars have studied decision-making approaches in diverse disciplines ranging from economics to psychology to government among others, in pursuit of understanding contextual differences in how choices

are made. (McFall, 2015). Earlier decision-making approaches only focused on decision-makers' aim of processing each and every relevant information available to them to make desirable choices (Groeneveld et al., 2017), while in the later decision-making approaches, scholars have gained interest in examining the processes from a cognitive point of view. Understanding the cognitive dimension of decision making presents us with important information on pattern identification in the continual choice-making process as well as work place interactions (Rizun & Taranenko, 2014). The current study introduces and focuses on intuitive, rational and recognition primed decision approaches as follows.

Rational decision-making model is premised on the ability of a decision maker to systematically make a choice based on previous and present-day information while considering the diverse probable end results (Simon, 1956). In the context of an organization it is mostly used when rules and guidelines are very clear and decision makers are presented with substantial time for making choices (Rehak, Adams, & Belanger, 2010). Conversely, intuition decision making model is based on subconscious choices made swiftly without having to consume a lot of time for a desirable outcome from among various alternatives (Klein, 2015). Intuition is used by decision makers to identify learned patterns and develop theme for speedy and effective decision-making process (Klein, 2008, 2015). Finally, Recognition Primed Decision Model (RPD) came about as a result of the decision maker desire to make choices without necessarily evaluating every viable alternative mentally (Klein et al., 1993; Klein, 2008). It was first used to improve choice making of experienced personnel who were required to make effective decisions fast.

1.1.2 Operational Performance

Operational performance refers to the extent to which a firm function within some predetermined standard measures of productivity, compliance with statutory and regulatory dictates as well as efficiency in resource utilization among others. Through exemplary performance regarding customer satisfaction and innovative practices, organizations can achieve a competitive advantage (Han, Saba, Lee, Mohamed, & Peña-Mora, 2014). It is therefore imperative that organizations measure their performance in the present-day operating environment since it has a direct impact on the growth indicators of the organization.

The studies that paid attention to manufacturing systems showed that operational performance within manufacturing context can be operationalized by four metrics of performance, namely speed, cost, quality and flexibility (Liker, 2004). Another important dimension is dependability

that can be defined by “all the capabilities of an entity allowing it to have specified functional performance, at the desired time, for the expected duration, without damage to itself and to its environment (Chevance, 2001). Accordingly, it is important to have an operational performance measurement system as it guides an organization on priority areas for improvement and thus realizing the goals of an organization (Kirkendal, 2008).

Other measures of operational performance according to De Toni and Tochia (2001) include innovation, customer satisfaction and creativity. Manufacturing plans are usually hinged on four important components of quality, cost, flexibility, and speed which perfectly correspond to the four measures that operationalize the dependent variable in this study. Many times, businesses seek competitive advantage on the fronts of “place”, “price”, and “product” which are determined by the four dimensions of operational performance. Therefore, study adopted the four measures as articulated by Liker (2004) as well as dependability as operationalized by (Chevance, 2001).

1.1.3 Manufacturing Firms in Kenya

According to Britannica (2021), manufacturing refers to the process of turning raw material into final products using heavy-duty industrial production. World over, manufacturing is considered a vital aspect and a measure of an economy’s vibrancy and health. Bolo (2011) asserts that the manufacturing sector contributes substantially to the economic development in Kenya. Manufactured goods leaving the country to markets abroad have the potential of earning the country foreign exchange as well as creating jobs. Kenya Association of Manufacturers (KAM) (2018) affirms that the sector has registered the highest employment multiplier in the economy. In an analysis by Biven (2013) 100 jobs in the sector gave force to 291 jobs in other sectors of the economy. In the United States of America for example, a manufactured product worth \$1 produces \$1.34 in the other sectors of the economy (Manufacturing Institute Report, 2018). With the high unemployment rate in Kenya – 11.5% in 2017 (International Labour Organization Report 2017), the Kenyan government developed Vision 2030 that among other things purposes to increase the manufacturing sector’s GDP from 9% to 15% by the year 2022.

Manufacturing firms in Kenya are presented and organized under KAM, which was established in 1959. The association provides linkages to enhance cooperation, negotiates and enhances dialogue and cooperation between its manufacturing members and the relevant government agencies. Additionally, KAM facilitates for a conducive business environment by encouraging the formulation enactment and administration of progressive policies. KAM categorizes its

members into 14 sub-sectors; 2 offer essential services while 12 are processors of raw material and value addition. The sub-sectors are characterized by the product they manufacture and type of raw materials consumed. Among its membership, KAM comprises of 40% manufacturing firms that are involved in value-addition ranging from small, medium to large scale. A majority – 80% are headquartered in Nairobi while the rest are based in other regions like Nyanza, Western and Coast and major towns such Eldoret, Nakuru, Nyeri, Athi River, and Thika. The current study focused on manufacturing enterprises in Nairobi since they represent most of the sector.

1.2 Research Problem

There exists a wide array of decision making approaches which have left industry players more confounded than at ease regarding how best to analyze and implement both strategic and operational decisions yet its choice making is critical to managers at all levels from line managers, to functional managers, business unit managers, to corporate headquarters executives (Hall, 1999). Though there exists formal analytical approaches in operations research, most are based on an assumption that all actors, including customers, modellers, problem solvers, decision makers among others, behave rationally. Therefore, decision makers' cognitive biases must be brought to focus from extra careful and conservative to reckless and daring when making decisions with risky operational performance outcomes (Gino & Pisano, 2008)

The large manufacturing sector in Kenya is faced with such risky and complex situations as exhibited by the amount and interrelatedness of various constituents that are available in choice-making domains such as, product type and of what quality to manufacture, what supplier to source raw materials and components from, how to counter competitors pricing, among others (Mischen and Jackson, 2008). These and other challenges coming from multiple directions can produce overwhelming uncertainty, and require managers to utilize a combination of effective decision making approaches amidst the inevitable pressure.

While in the global scene, many researchers have studied different decision making approaches in manufacturing context, locally it is still lacking. Gemser and Wijnberg (2017) investigated the reciprocation between rationality and intuition whenever executives sought to make decisions at the strategic level. Rajagopal et al., (2017) research presented a detailed analysis by way of systematic literature review of the types of choice-making approaches employed in mitigation of risk in supply chain while Flores-Garcia, Bruch, Wiktorsson and Jackson (2021) interrogated how decision-making approaches are selected in process innovation implementation in a manufacturing context. To complement on how to make selection of

decision approaches, Yang, Lin, Liu, and Zhou (2021) studied behavioural and psychological factors that cause bullwhip effect in real-world supply chains.

Locally, Oketch (2013) studied decision making approaches and Kenya's foreign policy and found out a contrasting application of rational, groupthink, organizational and bureaucratic decision making approaches in the Moi and Kenyatta administrations. Awich (2014) researched to determine the extent of application of mathematical programming techniques in the decision making in manufacturing sector in Kenya. Ikiao (2016) studied on how data-driven decisions affect operational performance of large manufacturers in Nairobi and found out that there was a consensus on adoption of data-driven decision among manufacturing firms. Mwangi (2018) explored what decision making approaches insurance companies use and concluded that the rational decision making model is preferred to the administrative model. The intuition model was the least preferred amongst the three approaches tested.

The aforementioned global studies were conducted in developed countries and some focused on complex decision making approaches, which are informed by fundamental approaches that are yet to be studied in Kenya. Moreover, decision making approaches that are grounded on cognitive biases were only studied in government administration and not manufacturing, a context which is considered complex in nature. It is against this background that this research seeks to identify some of the alternative decision making approaches that may be in use by manufacturers in making operational decisions, thus, attempt to answer the following research questions: what decision making approaches are used by large manufacturing firms while making operational decisions in Nairobi, Kenya? Do the decision making approaches lead to superior operational performance in large manufacturing firms in Nairobi, Kenya?

1.3 Research Objectives

This study was guided by the following study objectives:

- i. To establish the decision making approaches used by large manufacturing firms in Nairobi County.
- ii. To determine the effect of decision making approaches on the operational performance of manufacturing firms in Nairobi County.

1.4 Value of the Study

This study is important to manufacturers in that it provides them with valuable information so that they can utilize superior decision making approaches for operational efficiency and competitive advantage. Managers will draw from the findings and conclusions of this study and

apply the most impactful decision making approaches on operations within the context of manufacturing.

Academicians and researchers will get valuable insights from this study with regard to operations decision making as a body of knowledge. They can seek to apply contextual findings from large manufacturers and in other industries in an attempt to develop universal application. Researchers may undertake further research to interrogate the findings and develop more insights that may be relevant to operational efficiency in decision making.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter looks at what has been recommended by different academicians and researchers with respect to decision-making approaches. In this manner, the chapter envelops the concepts of decision making of manufacturers. The chapter is concluded by looking at evidential review and the conceptual model.

2.2 Theoretical Literature Review

This section examines the framework in which the theories relevant to the inquiry are based. The study is centered on two most significant theories, to be specific; Research Based Theory and Behavioral Decision Theory. These are examined next.

2.2.1 Behavioural Decision Theory

BDT proponent is Nutt (1976) who contends that before a choice is made one must follow a certain sequence of behavior; firstly, they carefully characterize the issue and clarify their inclinations; secondly, assembles as much data as conceivable (given time imperatives) about available options for action as well as their gravity and chances of happening. Thirdly, conduct analysis guided by their preferential priorities and decides in a manner that will exhibit trade-off between the ranked preferences (Luce & Raiffa, 1957; von Neumann & Morgenstern, 1944). Likewise, the theory is conditional and highly dependent on other issues such as, the decision makers expertise, complexity of the decision, amount of time available, the architecture of the information, sensitivity of processing among others (Beach & Mitchell, 1978). The theory suggests that in the process of making decision, not only behavioural patterns are considered but also the context within which it is made.

The theory is applicable to this study from Aristotles (trans 1971) perspective in the Nicomachean Ethics where it is argued that managers will always select the highest good among all the alternatives available to them. Manufacturers therefore will seek to attain the highest possible levels of quality for the lowest cost possible and take the least time of production.

2.2.2 Resource Based Theory

The resource-based theory (RBT) underscores that for a firm to realize competitive advantage, it intensely relies on the resources/assets it possesses. Two of its presumptions that the proponents of RBT Barney and Peteraf (2012) bring forth is that competitive advantage is

assessed from the following assumptions: firms operating in a similar industry may have a varied array of resources under their control, and also, the dissimilarity of resources continues to prevail in the execution of key operations so long as these resources cannot be moved from one form to the other in the short run. Internal operational processes are recognized by the propositions of this theory as being one of the vital elements and that comprise a firm's assets that could be used to aid efficient decision modeling hence reaching sound decisions for controlling cost.

In this study, the decision-making approaches that are adopted by managers in making decisions are considered an important asset/resource in enhancing and achieving superior operational productivity. With the right choice of the decision model, manufacturing firms, therefore, achieve competitive advantage as may be exhibited by quality, efficiency in operation, and low operational cost. Moreover, decision approaches such as intuitive decision making are not easily imitable.

2.3 Decision-Making Approaches

Decision-making approaches are the learned, routine reaction trends shown by a person when presented with a choice circumstance (Scott & Bruce, 1995). Vroom and Jago (1988) pioneered the Vroom-Jago model which contends that choice making needs thought of choice quality anticipated, group commitment, and time limitations. The model summarizes choice-making into five forms i.e. Dictatorial A1; Dictatorial A2; Consultative C1; Consultative C2 and lastly Group G2. The six thinking hats is another prominent decision-making model proposed by (De Bono,1985). These thinking hats are blue, green, yellow, black, red, and white which are used as tools for evaluating personal thinking in group undertakings. Health and Heath (2013) presented the WRAP choice-making model that demonstrates four key steps: These are widening/extending the alternatives, reality checks on conjectures, attaining some reservations, and planning/preparing to be off-target or accepting that one can be off-target within the choices made. This research embraced the approaches proposed by Scott and Bruce (1995), to be specific: avoidant decision-making approaches, rational, intuitive and defendant.

The four decision-making approaches Scott and Bruce (1995) proposed are (a) the rational decision-making model, which is characterized by thorough investigation of and logical evaluation of alternatives, (b) the intuitive decision-making model, which is characterized by a reliance on hunches, (c) the dependent decision-making model, which is characterized by seeking advice and direction from others, and (d) the avoidant decision-making model, which is

characterized by att (1995; Scott & Bruce). Russ, McNeilly, and Comer (1996) agree that rational decision making is analytical, deliberate and logical. Managers who are deemed rational make decisions based on facts and will always consider the long-term consequences of their decisions (p. 5).

On the other hand, the intuitive decision-making model brings into play decision-makers' feelings as directed by internal processing of information which leads to hunches (Russ, McNeilly, & Comer, 1996). The argument around intuitive decision-making is that, when faced with a decision-making situation, a manager would first scrutinize the environment for prompts to identify patterns (Breen, 2000; Klein, 2003; Salas & Klein, 2001). After recognition of a pattern, the expert uses prior experience to select a course of action for an intended outcome. The expert usually has some confidence on how the effects of the solution as based on their knowledge, training and experience. These decision model facilitates a relatively swift decision making though with minimal data but changed in case the instinct was in blunder (Russ, McNeilly, & Comer, 1996). Russ et al propose, that this model stands a risk of producing inconsistent and erroneous decisions which may lead to managers and subordinates to lose confidence in the decision maker. (p. 5). In a high-stake environment, this sort of choice making may be very hazardous.

Russ, McNeilly, and Comer (1996) posit that dependent decision making is typified by reliance on support and advice from other personnel when making decision while the avoidant decision model according to the authors is exemplified by denial and dilly-dallying in a manner to project indecisiveness. Janis and Mann (1977) opined that a few people to decrease the uneasiness related with decision-making might utilize the avoidant decision-making model. The unconstrained fashion agreeing to Russ, McNeilly, and Comer (1996) "is characterized by a solid sense of quickness and a desire in getting the choice made in the shortest time possible"

2.4 Empirical Literature Review

In this section, a review of relevant studies is discussed.

Uzonwanne (2016) conducted a study in Texas, United States of America that sought to examine how leadership styles, decision making and executives demographics are related. Quantitative approach was taken by using correlation and ANOVA where findings revealed that rational decision making was more common in older and experienced managers as opposed to the younger counterparts. Though this study had its construct of decision-making approaches similar to the current study, it failed to analyse the direct effect of decision-making approaches

on the dependent variable. The current study seeks to fill that gap by investigating the direct relationship between decision making approaches and operations efficiency.

Rajagopal et al. (2017) performed a systematic literature review (SLR) comprehensive investigation of the decision-making approaches as relates to risk mitigation in supply chain management. The SLR shortlisted 126 articles from a total of 538 articles relevant to the topic published in high ranking journals. One of the objectives of the SLR was to establish modelling techniques used in mitigation strategies. Findings revealed that mixed integer programming and stochastic programming were the most used modelling techniques in determining supply chain risk mitigation. The research only explored every possible decision making approaches utilized for SCR and did not examine the effects of specific decision making approaches as constructed in the current research on operational performance.

Ugoani (2017) assessed the factors for successful choice making on operational performance in Nigeria. Though there exists various approaches of decision making, the author argues that most revolve around, identification of the problem, gathering of data, communication, maintaining certain standards of ethical behavior, commitment of top management, and finally, implementation. In the scholars exploratory study, both secondary and primary data were utilized and results indicated that operational effectiveness is positively affected by effective management decision making. The findings resulted in a recommendation that management must always receive communication of data used to make critical decisions.

Flores-Garcia et al. (2021) conducted a case study at a global manufacturer where they investigated criteria for the selection of decision-making approaches in the implementation of process innovation. The results indicated that there was a correspondence between normative, intuitive and combined intuitive and normative decision-making approaches depending on the shifting degrees of equivocality and analyzability. In like manner, the conditions for deciding a decision-making model when implementing processes innovation were uncovered. The study made a significant contribution and greater understanding of how the combination of normative and intuitive decision-making approaches affect production system designing.

Yang et al. (2021) performed a SLR with the aim of establishing how behavioral operations give rise to bullwhip effect. The researchers utilized renowned databases such as Google Scholar, Willey Online Library, Scopus and Science Direct. Out of numerous articles, 53 were selected, summarized and analysed. The SLR found out that most scholar analysed approaches at the individual level thought simulations and approaches building were largely based on 'beer

distribution game'. One of the major findings point to the importance utilizing Sterman's double-loop learning model in studying how human factors cause bullwhip effect. The scholars made concrete conclusions on psychological and behavioral factors that come into play causing bullwhip effect in the actual supply chains

Ikiao (2016) researched the degree to which large manufacturing firms in Nairobi applied data-based decisions in impacting performance. The research utilized a mix of causal and descriptive research design. It targeted 455 manufacturing firms located in Nairobi, Kenya. Sampling was done using stratified sampling and 46 manufacturing firms were identified and selected. Data was analysed using multivariate regression model that involved primary data collected from the manufacturing firms by way of questionnaire. The predictor variables were quality, marketing and procurement decisions while the response variable was operational performance as measured by cost and quality. The findings of the study reveal that data-based management decisions primarily have a positive effect on the cost dimension of operational performance. The researcher investigated the impact of data-based decision making and not the selected approaches for this study

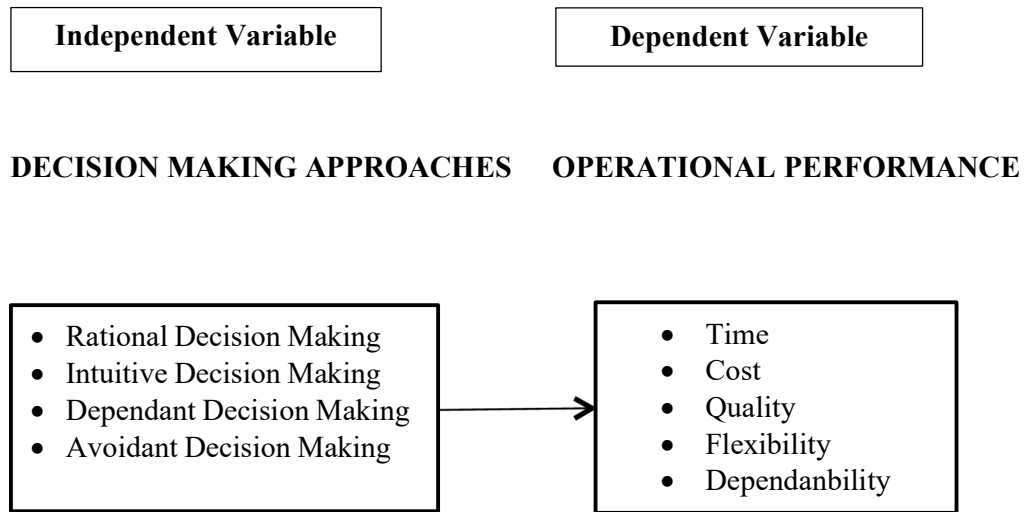
Mwangi (2018) carried out an inquiry that intended to examine the level of efficiency in decision-making insurance firms in Kenya. Particularly, the research sought to establish the key variables that impact insurance firms in making operational choices and the approaches of decision-making utilized by the firms when making critical business decisions. A descriptive research design was employed where data was collected using questionnaires from 52 insurance firms with operational managers as respondents. The findings indicate that significant factors affecting operational decision-making efficiency include: desire for operational efficiency, leadership style adopted by top organizational leaders, cost of running the organizational structure, customer focus in decision making, the necessity of third party reports in decision making, appreciation of ideas and abilities of management and support staff, frequent changes in organizational design and amount of money involved, and delegation of power and responsibility to management and support staff. Though the study examined operations decision-making efficiency, it focused on factors that influenced decision-making and not the approaches of decision-making and how they affect operations.

2.5 Conceptual Framework

The conceptual framework presents the independent variable which is decision-making approaches that vary as follows: rational, intuitive, dependent, and avoidant decision-making approaches whereas the

response variable is operational performance which is operationalized by: time, cost quality, flexibility and dependability. A schematic chart of the theorized relationship is given in figure 2.1 below

Figure 2.1: Conceptual Model



Source: Researcher (2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This segment presents the research approach for this study. The section looks into the design of the research, target populace, the choice of data collection instruments, data collection strategies and analysis procedures.

3.2 Research Design

The study employed a descriptive cross-sectional research design. A cross-sectional study enables the researcher to observe phenomena about the studies' objectives at a particular point in time without any frame of control (Kothari, 2004). The design is reasonable for this study because it helps the gathering of noteworthy data on decision-making approaches in manufacturing firms.

3.3 Target Population

This research targeted large manufacturing firms in Nairobi, Kenya. Kenya Manufacturing Association puts the number of large manufacturing firms in Nairobi at 455. According to KAM, a manufacturing firm is classified as large if it has more than 100 employees.

3.4 Sampling Method

The study employed stratified sampling methods informed by the fact that manufacturing firms are diverse in nature of operations and are thus grouped into sub categories depending on the area they are involved i.e. processing, manufacturing or service. A sample size of 10% of the 455 companies in Nairobi was chosen. This is informed by Mugenda and Mugenda (2008) who argues that a sample of 10-30% is sufficient to make conclusion of an entire population, thus, a sample of 46 firms was utilized as shown in table 3.1 below.

Table 3.1

Determination of Sample Size

Category	Population	% of Industry	10% sample
Food and beverage	108	23.73%	10
Chemical	59	12.96%	6
Metal and allied	55	12.08%	4
Plastic	48	10.54%	5
Paper products	44	9.67%	5

Building	16	3.51%	1
Textile	36	7.91%	4
Energy	34	7.47%	4
Pharmaceuticals	18	3.95%	2
Wood and furniture	17	3.73%	2
Motor vehicle	14	3.07%	2
Leather	6	1.31%	1
Totals	455	100	46

Source: Researcher Compilation (2022)

3.5 Data Collection

Questionnaires was used to collect primary data for this study. Questionnaire is preferable as it is economical and grants latitude to the researcher to a huge group of the target population. Moreover, Bryman, and Bell (2018) and Saunders and Buckingham (2019) contend that a questionnaire enables the collection of responses that are nearly comparable if collected repeatedly provided that the questionnaire bares enough level of reliability.

The questionnaires had three parts; A, B, and C with each section corresponding to the various research objectives. Part A; focused on gathering demographics of respondents and characteristics of the firm. Part B; sought data on the decision-making approaches used by large manufacturing firms in Nairobi, Kenya while making operational decisions and, Part C; focused on operations efficiency. Data was collected by questions framed using the 5-point Likert scale approach to collect respondents' extent of concurrence with the posed questions. The respondents were operations managers, production managers or their equivalents.

Web-based questionnaires were sent to the appropriate managers and follow up made through phone calls and email reminders. Web-based questionnaires are preferred since they are economical and efficient.

3.6 Data Analysis

Background information, objective one; information on the decision making approaches used by large manufacturing firms in Nairobi, Kenya while making operational decisions was analyzed using descriptive statistics. To establish how decision making approaches affect operational efficiency, a regression analysis was used. The regression model is as follows: -

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where:

Y = Represents the composite measure of dependent variable, the effect of decision making approaches on operational efficiency of large manufacturers;

α = the Y intercept when x is zero or the constant

β_{ij} = Regression Coefficients

X₁ = Rational Decision Making Approach

X₂ = Intuitive Decision Making Approach

X₃ = Dependent Decision Making Approach

X₄ = Avoidant Decision Making Approach

ε = the error term

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

This chapter starts with data analysis, findings then finally discussion. This section represents results on the data sought on decision making approaches and operational performance of large manufacturing firms in Nairobi, Kenya. The research had two objectives: to establish the decision making approaches used by large manufacturing firms in Nairobi County while making operational decisions; and, to determine the effect of decision making approaches on the operational performance of manufacturing firms in Nairobi County. The target study population for the study was operations and production managers or their equivalents.

4.1.1. Response Rate

In this study, 46 questionnaires were given out, and 40 of them were entirely completed and hence useful for the research. This equals a response rate of 87%. According to Mugenda & Mugenda (2003), a response of >60% is required for thorough data analysis.

4.2 Demographic Information

The study aimed to look at the respondents' backgrounds in terms of job title, gender, work history, educational attainment, and the age of the Kenyan company. Discovering the connection between the information provided and the overall profile of the responders was the information's intended use.

4.2.1 Gender

The researcher wanted to determine how the respondents' gender was distributed among the companies. The findings are summarized in Table 4.2.1 below.

Table 4.2.1

Gender composition

Gender	Frequency	Percent
Male	32	80
Female	8	20
Total	40	100.0

Source: Research Data (2022)

The results from table 4.2.1 above indicate that there was a gender gap between male and female employees because there were 80% male respondents and 20% female respondents. This suggests that more men than women work in large industrial companies' operations, production, and related positions.

4.2.2 Education

Respondents were asked to specify their highest degree of schooling as part of the study.

Table 4.2.2 provides a summary of the findings as shown below.

Table 4.2.2

Level of education

Education	Frequency	Percent
College Level	4	10
Graduate Level	23	57
Post Graduate Level	13	33
Total	40	100.0

Source: Research Data (2022)

As observed in table 4.2.2, 10% of the research participants held certificates and diplomas, while 33% of respondents held postgraduate degrees, and 57% of respondents held doctoral degrees. As a result, the respondents were deemed to be in a good position to provide the researcher with accurate information because they possessed relevant educational backgrounds and adequate training.

4.2.3 Experience

Table 4.2.3 lists the responses that were given in response to the researcher's question on the respondents' work history at their individual companies.

Table 4.2.3

Work Experience

Experience	Frequency	Percent
Less than 1 year	4	10
1 to 5 years	26	65

6 to 10 years	6	15
Over 10 years	4	10
Total	40	100.0

Source: Research Data (2022)

The findings showed that 10% of research participants had less than a year of experience in their respective firms, 65% had experience ranging from one to five years, 15% had experience ranging from six to ten years, and 10% had experience spanning more than ten years. This demonstrates that the majority of respondents had enough expertise and were therefore thought to have a sufficient comprehension of their particular organizations in relation to the researcher's objectives.

4.2.3.1 Discussion

According to the report, 75% of managers have up to 5 years of experience working for their individual companies. According to studies by Mwilita (2017) and Ambula (2015), a combined 72 percent of workers have been with their present employer for less than five years. Given that most employees have been with the organization for less than five years, there must be high levels of mobility among them. Employees are more likely to leave their jobs whenever a better opportunity arises, and this tendency is growing. Their considerable mobility may prevent them from fully knowing the business, which would put them in a less advantageous position to make the best decisions. As a result, they might base their selections on managers with more experience.

4.3 Decision Making Approaches

Establishing the decision-making processes employed by large industrial companies in Nairobi County while making operational decisions was the study's first objective. On a scale of 1 to 5, with 1 being the smallest extent possible and 5 being the greatest extent possible, descriptive statistics were performed on each of the decision-making strategies examined by the study. The results are presented in Table 4.3 below.

Table 4.3

Decision making approaches used by large manufacturers

Decision making approaches	Mean	Std. Deviation
Dependent decision making	3.72	0.73
Intuitive decision making	3.70	0.88

Rational decision making	3.69	0.87
Avoidant decision making	3.47	0.70

Source: Research Data (2022)

From the results of descriptive statistics on the decision making approaches used, the results indicate that all the approaches investigated have been used by large manufacturing firms in Nairobi Kenya as indicated above. Dependent decision making approach indicated a mean of value of 3.72, intuitive decision making approach indicated a mean value of 3.70, rational decision making approach indicated a mean value of 3.69, while avoidant decision making approach indicated a mean value of 3.47. Hence, dependent, intuitive and rational decision making approaches have been adopted to a great extent while avoidant is used moderately for operational decisions.

4.3.1 Discussion

The study's findings indicate that large manufacturing companies in Nairobi, Kenya, have used the investigated decision-making processes to a moderate to significant amount for operational success. This was supported by the findings, which showed that all four predetermined decision-making approaches had mean values larger than 3 on a scale of 1–5, where 0 indicates not implemented and 5 indicates fully implemented. Descriptive analysis was performed on each and every variable.

This is in line with a study by Khatri and Alvin (2000), who discovered that, with high mean score values and low standard deviation values on a seven-point scale, respectively, intuitive synthesis was used in decision making in the computer, banking, and utilities to a large amount. The General Decision-making Styles questionnaire (Scott & Bruce, 1995), which has five subscales that examine the five decision-making styles—rational, intuitive, reliant, avoidant, and spontaneous—was used to evaluate decision-making styles in a study similar to that of Bavoár and Orosová (2015). The assessment consists of 25 questions, five for each subscale, and is scored from strongly disagree (1) to strongly agree (3). (5). More frequently utilized styles have higher subscale scores (the total of the items).

Their findings showed that these decision-making processes were used in a different order from the current study. The previous study discovered that the following types were most prevalent among Slovak university and high school students: rational, intuitive, reliant, avoidant, and spontaneous. Although the avoidant decision making approach is the least used of the four decision making approaches conceptualized in this study, the current study concurs with the previous study in this regard.

4.4 Relationship between decision making approaches and operational performance

The study's second objective was to determine the effect of decision making approaches on the operational performance of manufacturing firms in Nairobi County. The study used multiple regression on all the proposed decision making approaches. Table 4.4.1 summarizes the regression analysis model summary:

Table 4.4.1

Model Summary on Operational Performance

<i>Regression Statistics</i>	
Multiple R	0.781
R Square	0.611
Adjusted R Square	0.555
Standard Error	0.527
Observations	40

Table 4.4.1 of the research findings demonstrates that R squared is 0.611, indicating that differences in the predictor variables can account for 61.1% of the variation in operational performance in major manufacturing enterprises. Other factors that make up the remaining 38.9% of the model's unexplained variation may potentially contribute to changes in operational performance.

Table 4.4.2

ANOVA Table on Service Delivery

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	12.186	3.047	10.974	0.000
Residual	35	7.773	0.278		
Total	39	19.960			

Results of whether the model was a good fit are shown in Table 4.4.2. The independent factors are effective predictors of operational performance, as shown in the table. The total model is statistically significant at a 95% confidence level, as shown by the p-value of $0.000 < 0.05$.

Table 4.4.3

Regression Coefficients on Operational Performance

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0.812	0.530	2.131	0.037
RDMA	0.624	0.644	2.068	0.041
IDMA	-0.610	0.580	-2.751	0.002
DDMA	0.908	0.444	2.047	0.050
ADMA	-0.160	0.214	-0.747	0.461

- a. Dependent Variable: Operational Performance
- b. Predictors: Rational Decision Making Approach (RDMA), Intuitive Decision Making Approach (IDMA), Dependent Decision Making Approach (DDMA), Avoidant Decision Making Approach (ADMA)

$$Y = 0.812 + 0.624X_1 - 0.610X_2 + 0.908X_3 - 0.160X_4$$

From the above table it can be noted that, RDMA and DDMA were found to be positively related to operational performance and are statistically significant at 95% confidence level as ($p = 0.041 < 0.05$) and ($p = 0.050 \leq 0.05$) respectively. Further, IDMA and ADMA indicated a negative relationship with IDMA being statistically significant ($p = 0.002 < 0.05$) while ADMA was not statistically significant ($p = 0.461 > 0.05$). The constant 0.812 indicates that holding all the independent variables at 0, operational performance in large manufacturing firms would still perform at 0.812 units. The positive beta values β_1 and β_3 indicates that a unit increase in RDMA and DDMA will result increase in operational performance while the negative beta values β_2 and β_4 implies that an increase in IDMA and ADMA by one unit will cause a decrease in operational performance.

4.4.1 Discussion

The second objective of the study was to establish the effect of decision making approaches on operational performance of large manufacturing firms in Nairobi Kenya. The study used multiple regression analysis to analyze the effects of the various predetermined decision making approaches on operational performance. The multiple regression analysis established that 61.1% of operational performance was affected by decision making approaches. This is an indication that, decision making approaches play a very important role in determining the level of operational performance. The models used was statistically significant at 95% confidence level.

The operational performance of manufacturing enterprises was found to be negatively impacted by intuitive and avoidant decision-making strategies. This result is consistent with McMackin and Slovic's (2000) conclusion that the effectiveness of an advertising campaign was negatively impacted by intuitive decision-making. Furthermore, insight that develops intuitively without the use of conscious reasoning is what is meant by intuition. Intuitive decision-making, according to Kahneman (1960), who received the Nobel Prize in economics for his research on human judgment and decision-making, is more susceptible to mistakes. Regarding avoidant decision-making, the strategy was discovered to be adversely associated to the wellbeing of Swedish military commanders (Salo & Alwood, 2011). Findings revealed that the avoidant strategy was associated with distress not just after but also before making a choice, pointing to a general increase in buckpassing, procrastination, and hypervigilance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The section begins with an overview of the research, then moves on to conclusions, suggestions, and limitations. Establishing the decision-making processes utilized by significant industrial companies in Nairobi County when making operational decisions was one of the study's goals. The other goal is to ascertain how decision-making processes affect the operational effectiveness of manufacturing companies in Nairobi County.

5.2 Summary

This study focused on decision making approaches and operational performance of large manufacturing firms in Nairobi County. The objectives of the study were: to establish the decision making approaches used by large manufacturing firms in Nairobi County while making operational decisions and, to determine the effect of decision making approaches on the operational performance of manufacturing firms in Nairobi County.

The study employed a descriptive cross-sectional research approach and conducted a survey. Data were gathered from operations managers, production managers, or their equivalents in significant manufacturing companies in Nairobi County using web-based google form surveys. To individual managers, all of the surveys were distributed by email and WhatsApp. 40 responses in total were received, and it was decided that they could be analyzed. According to the respondents' background data, we had more men than women working in the targeted departments. The respondents were in a good position to provide the information the researcher was looking for because they had a sufficient level of education and had worked for the respective companies for long periods of time.

As relates to the extent to which large manufacturing firms in Nairobi City County use the identified decision-making approaches, findings reveal it is to a moderate to a large extent as indicated by means of three and above. The most adopted is dependent decision-making models while avoidant decision-making model is used the least. The second objective sought to examine the relationship that exists between the decision-making approaches and the operational performance of large manufacturers. Results reveal that dependent and rational decision making approaches and operational performance are positively related as indicated by positive coefficients produced by the study's multiple regression model. However, intuitive and avoidant decision-making approaches were found to have a negative relationship with

operational performance though the latter was not statistically significant. The decision making approaches had a 61.1% composite impact on operational performance.

5.3 Conclusion

The study concluded that the most used approach in making decisions is dependent decision making approach followed by rational decision making approach with intuitive and avoidant decision making approach being the least used by manufacturing firms in Nairobi, Kenya. Of the four decision making approaches, dependent and rational decision making were found to have a positive effect on operational performance.

According to the study's findings, intuitive decision-making should be employed with caution and less frequently (perhaps in conjunction with rational analysis) because it is less accurate and has a detrimental impact on performance. The use of avoidance in decision-making was also found to be negatively correlated, probably as a result of the tendency to defer responsibility and put off making judgments, which prevents timely decisions for superior operational performance.

The large manufacturing industry is dominated by managers with less than five years of professional experience within their current employment. The industry's high levels of dependent decision-making appear to be caused by the newly recruited managers within the respective establishments. Among the study's variables, intuitive decision-making is the second-least favoured method due to a lack of extensive firm-specific expertise. Furthermore, the researcher asserts that because there is a high rate of mobility in big industrial companies in Nairobi, Kenya, intuitive decision-making which highly depends on specialized experience, is found to be negatively correlated with operational performance.

5.4 Recommendations for Policy and Practice

To prevent making intuitive decisions, manufacturing companies should have a predetermined plan of action rather than simply react to opportunities. Instead, they should use multi-criteria decision making expressly because there are numerous techniques and instruments that can help management decisions result in successful outcomes. Businesses should transition to holistic decision-making based on the right techniques and resources.

But given the general trend of rising complexity and dynamism in most commercial environments, decision-making is expected to rely more and more on intuition. This prompts a number of significant queries. Can intuition be developed, first? In that case, how? It is believed that exposure to the intricacy of real-world problems repeatedly is the best way to build intuition

quickly. Manufacturing companies should have programs that are designed to improve the intuition of their managers to lower the likelihood of expensive errors in decision making (Quinn et al., 1996). Managers who undergo intensive experience, under the guidance of mentors, become noticeably more capable and valuable (Quinn et al., 1996).

The research recommends that manufacturing firms improve group decision support systems (GDSS), an interactive computer-based tool that aids a number of decision-makers in finding answers to situations that are inherently unstructured. Given that operational success was found to have a considerable positive link with the dependent decision-making method. They are designed so that they aggregate data from a variety of people interacting with the systems simultaneously to draw a conclusion.

5.5 Limitations of the Study

Despite the valuable information this study has provided, there are some drawbacks. For example, the association between decision-making strategies and operational success was established using a simple multiple regression model. Other factors also have an impact on this relationship and must be considered in the investigation. Similar to the previous point, the model presupposed a linear link between decision-making strategies and operational performance, which may not be the case. The model is unable to identify the factors that lead to the impacts of decision-making processes. This study also employed a survey methodology. It is a valid methodological technique, but it can limit the depth of the revelations.

5.6 Suggestions for Further Research

Decision-making in the future study should take into account other variables such as environment dynamism as mediating, mediated, or intervening variables as part of the analysis model. This would strengthen the explanatory power of the model and constitute an improvement. Dynamism in the environment has an impact on decision-makers' judgment, hence it should be included in the model. Future study may employ a combined technique approach, such as combining both a survey and a semi-structured questionnaire, in order to establish deeper insights on the relationship between decision making processes and operational performance. Researchers could also investigate why executives' extensive practical expertise was typically used in intuitive decision-making, despite the approach's unfavorable association with operational performance.

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APPENDICES

Appendix : Research Questionnaire

This questionnaire intends to gather data on the influence of decision making approaches on the operations efficiency of manufacturing firms in Nairobi. Kindly fill in the questionnaire. The purpose of this survey is strictly academics and any information availed shall be treated with the highest level confidentiality. You shall remain anonymous as far as your identity is concerned.

PART 1:GENERAL INFORMATION

1. What is your gender?

Male Female

2. What is your highest level of education?

- O-Level A-Level
 College Level Graduate Level
 Post Graduate Level Any other (Specify)

3. What position do you hold in this organization?

- Production Manager Assistant Production Manager
 Operations Manager Assistant Operations Manager
 Other (Please Specify).....

4. How long have you been in this position?

- Less than 1 year 1 - 5 years
 6 – 10 years Above 10 years

5. What is the size of your organization?

- 100-199 Employees 200-299 Employees
 300-399 Employees 400-499 Employees Above 500 Employees

6. How many years has your organization been operating in Kenya?

- 1 - 5 Years 6 – 10 Years
 10-20 Years Above 20 Years

PART II: DECISION MAKING APPROACHES

To what extent has your firm implemented the following decision making practices when running operations? Tick as appropriate using the following Likert scale of 1-5 where: 1= Very Small Extent; 2= Little Extent; 3= Moderate Extent; 4= Great Extent; 5=Very Great Extent

	DECISION MAKING APPROACHES	Respondents Rating				
		1	2	3	4	5
	Rational Decision Making					
7.	All information sources is double-checked to be sure that facts are right before making decisions					
8.	Decisions are made in logical and systematic way					
9.	When making a decision various options are considered in terms of a specific goal					
10.	Decision makers monitor consequences of decisions continually and objectively to determine success of chosen course of action with respect to objectives					
	Intuitive Decision Making					
11.	Decision makers rely on their experience to make operations decisions					
12.	Decisions are made using personal judgement					
13.	Decision makers rely on their instinct in making decisions					
14.	Decision makers generally make decisions that feel right to them					
	Dependent Decision Making					
15.	Decision makers rarely make important decisions without consulting other people					
16.	Decision makers use advice of other people in making important decision					
17.	Decision makers often need the assistance of other people when making important decisions					

18.	Decision makers prefer having someone to steer them in the right direction when faced with important decision					
	Avoidant Decision Making					
19.	Decision makers avoid making important decisions until the pressure is on					
20.	Decision making is postponed whenever possible					
21.	Decision makers often procrastinate when it comes to making important decisions					
22.	Important decisions are made at the last minute					

PART III: OPERATIONAL PERFORMANCE

Please indicate your best estimate of your company's position, on average, relative to that of close competitors over the past two years (1 – much worse; 2 – somewhat worse; 3 – about the same; 4 – somewhat better; 5 – much better)

Indicator	Much worse than competitors	Somewhat worse	About the same	Somewhat better	Much better than competitors
Time to market					
Response to the changes in the market					
Lead times					
Cost of production					
Wastage of materials					
Defect levels					
Employee performance					

Ability to successfully diagnose the cause of system failure quickly					
Timely restoration of systems back to operating status					

Thank you for your participation!

Appendix I: List of Large Manufacturers in Nairobi