

**SERVICE OPERATIONS STRATEGIES AND OPERATIONAL  
PERFORMANCE OF PETROLEUM COMPANIES IN KENYA**

**By**

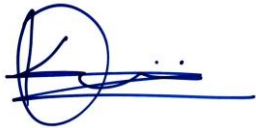
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**A PROJECT PRESENTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER  
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## DECLARATION

This project is my original work and has not been presented for a degree in any other University.



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This project has been submitted for presentation with my approval as the University Supervisor.



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## **DEDICATION**

I dedicate this project to my family and friends. Your faith and confidence in my abilities is immeasurable. I am eternally grateful to you all.

I also dedicate this project to all industry professionals, scholars, and researchers in the field of Operations Management.

## **ABSTRACT**

To have a competitive edge, petroleum companies must find the right combination of resources and strategies that enable them to stay ahead of their competitors. This study sought to investigate operation strategies and operational performance of Petroleum Companies in Kenya. The key points of focus were, first, to determine the specific operation strategies employed in these companies; and secondly, to evaluate their effect on operational performance of the organizations. A descriptive research design method was adopted where the sample population constituted major oil companies in Kenya. The mode of data collection was via questionnaires. Analysis and presentation of findings was based on the descriptive and inferential statistics computed. From the findings, it is evident that the dimensions of service operation strategies identified can positively influence operational performance if properly implemented. Consequently, my recommendations based on the findings are as follows, Petroleum firms in Kenya should establish appropriate back and front office service techniques to ensure there is more impact on operational performance. Secondly, I recommend that processes and workflow should be improved to ensure there is convenient flow of operations within petroleum companies. More resources should be devoted towards establishment of frameworks that will facilitate efficient processes and workflow in the organizations. I propose similar recommendations for information systems and customer participation. Details of all the findings and recommendations from the study are provided in this report.

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# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Organizations of today are exemplified by product and technology life cycles that are increasingly getting shorter, competitive pressures that are becoming unpredictable and company portfolios that require to be continuously adjusted to meet rapidly changing customer demands. With these changes, it has become imperative that business organizations work towards improving their operational performance with a view to making them flexible and cost effective in order to respond appropriately to the market changes (Lusch & Nambisan, 2015). This is because an organization's operational performance as characterised by its reliability, inventory turns, cost containment, service quality and production cycle time when aligned properly, is expected to influence the share market of the firms and satisfaction of customers. One of the ways expected to improve operational performance of the firm is to come up with operational strategies that it adopts (Safizadeh, Ritzman & Mallick, 2010).

Kim and Park (2008) assert that business organizations that can deliver products to the market faster than competitors and consistently usually meet customer commitments. As part of the firm's operational activity, fast and consistent delivery is expected to help organizations to register improved business performance. A firm's operational performance is further associated with high levels of customer satisfaction, positive cash flows and low production cost, and consequently, it is important that an organization identifies all factors that might influence its operational performance. According to Blomkvist and Segelström (2014), one such activity that has the potential to influence a firm's operational performance is its operation strategy. The way a business unit designs its new service design and operations strategy is expected to influence its overall firm performance (Matthias & Buckle,

2015). Indeed, it is expected that a relationship will exist between the various service operations strategies and the overall operational performance of a firm.

This research was based on three theories: Unified Service Theory (UST) (Sampson and Froehle, 2006), Theory of Performance Frontiers (TPF) (Schmenner & Swink's, 1998) and Structure-Conduct-Performance Model (SCP). The Unified Service theory expands on the service contract model by emphasizing on the unique defining characteristic of all services, that is, a contribution of the customer to the provider's operations.

The contribution of the customer should result in the required customer engagement with the service provider (Lovelock & Gummesson, 2004). The theory of performance frontiers, on the other hand, incorporates two frontier concepts: asset and operating frontiers, where the asset frontier defines how a company reorganizes its investment in fixed assets used in the firm. Conversely, the operating frontier is explained by the choices that are made by the management in operating the plant and other infrastructural choices. The structure-conduct-performance framework (SCP) which was advanced by (Mason, 1939) is of the view that structural characteristics in a market influence the behaviour of firms within that market, and the cumulative behaviour of firms within the market determines measurable market performance.

### **1.1.1 Service Operations Strategy**

A firm's strategy deals with the appreciation that the competitive environment in which a company operates in is changing. For that reason, the firm identifies what their operations have to do to ably deal with both the current and future challenges (Slack & Lewis, 2011). As such, firms develop resources and processes that form the basis for advantage (Toussaint & Berry, 2013). The traditional operations management literature as pointed out by Armistead

(1992) has been of the view that service operations strategy is concerned with matching the expectations of the customers with their perceptions to create a competitive position. The operations strategy, therefore, intends to act on changes that occur in the business environment following evolving industrial and social trends. With the establishment of the competitive priorities to be followed by a firm, what follows is the organization of its activities in a manner to create necessary capabilities for a firm to compete effectively in the marketplace (Singh et al. 2015). In service operation firms, Berry and Parasuraman (1997) highlight that the basic service operation strategies are processes, customer-oriented operations, and service. Additionally, these operations strategies aim at supporting delivery by adapting following the changing need of the market.

Fitzsimmons and Fitzsimmons (2011) suggest that over time, the service package of an organization that has been refined over time, and what is considered currently to be more representative, includes facilitating goods, implicit services, supporting facilities, information, and explicit services.

The supporting facilities function must be in place before a service can be offered and that services are required when purchasing goods from suppliers or during offering to a customer. Similarly, a service strategy adopted by a firm creates a psychological benefit that a customer senses only vaguely and determines future purchase intentions. The determinants of the service operations strategy that a firm adopts however is determined by; the service delivery process in the organization, use of information technology, back and front office activities, human resource specialization and magnitude of customer participation (Brandon-Jones, Lewis, Verma, & Walsman, 2016). Additionally, the level of service standardization, the various services offered, and development of new service designs explains the service operations strategy implemented in a firm.

### **1.1.2 Operational Performance**

An organization's performance metric assesses how well it achieves a broad variety of objectives, such as market niche creation, customer loyalty, financial and operational performance, in comparison to a previous duration or benchmark. Organizational efficiency is divided into three key dimensions, according to Florian and Constangioara (2013): organizational performance, firm performance, and financial performance. This study focuses on a firm's operational success, which is determined by its level of productivity and the firm's ability to forge and retain relationships with external stakeholders, through a variety of various uniquely structured organizational functions. In this case therefore, operational performance is described as the competitive role which a corporation chooses to play in the market by leveraging its assets and resources to achieve sufficiently optimized utilization of all its internal resources (Qi, Huo, Wang & Yeung, 2017).

Different metrics that represent the efficiency of a company's internal activities are used to evaluate the organizational performance of an organization. These indicators cover a wide range of performance indicators from product quality to inventory management (Salahuddin, 2009). While reviewing the existing literature, Ortega et al. (2012) identified the common factor of evaluating efficiency, that is; versatility, quality, delivery, and cost. Innovative performance was introduced as the fifth dimension's indicator of operational performance by Hashmi, Khan, and Haq (2015). This current research has used the same organizational performance assessment metric, which includes flexibility, efficiency, innovative performance, implementation, and cost.

### **1.1.3 Petroleum Companies in Kenya**

The petroleum industry in Kenya is one of the most competitive industries in the country. Considering that Kenya imports all of its petroleum and gas products to serve both the

country and neighbouring countries, the business opportunities present have attracted more than 60 companies, though the major oil companies control close to 80% of the Kenyan market (GoK, 2020). The major oil players include Vivo energy (18.7%), Total (K) Ltd (16.6%), Rubis (14.5%), OLA Energy (7.1%), N.O.CK (5.9%), Gulf Energy (4.7%) while the other players take up the remaining 21.5% of the market share. The list of the major petroleum and gas marketers that the research concentrated on operate in Nairobi and is provided in Appendix II.

Petroleum is an important source of energy, not only in Kenya but globally. In Kenya for example, 68% of primary energy consumption is through petroleum products and as the economy grows, it can be expected that the demand of energy will increase (Deloitte, 2016). Indeed, according to the Ministry of Energy projections, if the economic growth rate projections of 10% are attained in order to realise the Vision 2030, the demand for petroleum is projected to increase from the current 4.5 million MT to 12 million MT by 2030. Considering that at present, Kenya is a net importer of petroleum products, the sector currently accounts for 30% of Kenya's net imports.

The challenges facing the Oil and gas industry in Kenya include inadequate and aging petroleum infrastructure that currently holds only 10 days of operational stock cover, a lack of strategic petroleum stocks and the fact that the petroleum infrastructure is concentrated in the southern part of the country, a situation that leads to massive trucking of the product to the rest of the country and the neighbouring countries. As a result of these challenges, several investment opportunities exist in the Kenyan petroleum and gas industry. These opportunities include financing, logistics, construction, supply of heavy machinery and lifting equipment as well as accommodation and camp services.

## **1.2 Research Problem**

It is important that a business organization realizes that cost and efficiency are no longer a source of competitiveness but rather the effective formulation and implementation of an operation strategy forms an important source of competitive advantage (Zhang, Joglekar & Verma, 2012). An operations strategy that is supported by the top management provides a unique capability that can result in sustained competitive advantage because it facilitates the realization of targeted organizational objectives. The operation strategy, however, may not achieve its desired goal if it is not properly aligned with the available resources, information systems and customer participation. Slack et al., (2010) highlighted in their framework the need to develop an operational strategy through coordination of the available resources. This implies that unsustainable operational performance in a service firm might be attributed to improper alignment to the existing strategy. Johnston (2015) suggests that since the service industry has become a critical component in the overall economy, there is need to focus more on the service firms to identify their specific problems emanating from the unique nature of their businesses, a position that has been lacking since attention has been directed to manufacturing firms. This position has been experienced despite existence of operational strategies that are aimed at improvement of operational performance.

Petroleum companies in Kenya today are working in a highly competitive and rapidly changing work environment. The management of petroleum firms should appreciate the importance of establishing a strong operation strategy that keeps them ahead of the competition. The importance of identifying alternative sources of competitive advantage is further necessitated by the fact that pricing of oil products is fixed by the government and hence it is not a differentiating factor. The capacity to establish a proper front-office strategy, information system, process and work-flow system, customer service and new service



development by these oil companies is expected to influence their operational performance. This research, therefore, will seek to establish the effect of service design on operational performance of the major oil firms in Kenya. Indeed, different studies have sought to determine how service designs affect organizational outcomes.

Different studies have been undertaken by scholars to verify the relationship between operation strategies and performance. From the healthcare perspective, Matthias and Brown (2016) investigated the extent to which health managers have implemented operation strategies through Lean processes within the National Hospital services (NHS) in the UK, using a case study research design. The findings suggest that both are practised but operation strategy was implemented with more rigour in the process conformance to the national standards and quality being the strategic drivers of references. The study highlights the importance of behavioural and performance improvement in the operational strategy of the organizations. Lean management was applied as a means to reduce cost within the NHS system.

Szász and Seer (2018) investigated the role of sustainable pressure in the adoption of operation strategies in the service transformation of manufacturing firms in Hungary. The findings suggest that stakeholder pressures can push manufacturers towards adopting service-based operation strategies. Dixon and Verma (2013) investigated the sequence effects in service bundles with specific reference to the service design and scheduling. Through application of an econometric model on the effect of season ticketing of hotel firms in Spain, the research found that the queuing strategy adopted by a service provider influences customer repurchase of subscriptions thereby justifying the need for the adoption of a proper capacity planning and service design as a source of competitiveness. However, the study did not seek to analyse the nexus between service design and operational performance. Sangiorgi

and Prendiville (2014) sought to come up with a service design framework that is applicable from the perspective of the public, commercial and digital sectors.

Onyango (2015) sought to establish the nexus between service delivery and operation strategy of the County Government of Kisumu by focusing on alignment of services to customer needs, staff involvement in customer service and citizen involvement in service delivery. The results from 7 Sub-counties that make the county revealed that duplication of the common service delivery by the National and County governments has resulted in conflict in service delivery.

The importance of operational performance in the enhancement of an organization's output is an important task that has, indeed, charmed the interest of many scholars and management practitioners. However, investigations on the role of back and front-office, information technology, work and process flows, customer participation and development of new service operation strategies on the operational performance of oil marketers has received limited attention. This research, therefore, seeks to bridge this gap by solving the following research problem; what is the effect of operation strategies on the operational performance of petroleum companies in Kenya?

### **1.3 Research Objective**

The general objective of the study was to assess the effect of service operation strategies on the operational performance of Petroleum Companies in Kenya

#### **1.3.1 Specific Objectives**

- i. To evaluate the effect of service operation strategies on operational performance of Petroleum Companies in Kenya.
- ii. To determine the service operation strategies in Petroleum Companies in Kenya.

#### **1.4 Value of the Study**

The study is of value to the policy makers, operations management as a discipline and scholars who are now able to identify areas of further research that may pique our interest. The understanding of the importance of adopting an appropriate service operations strategy is of value to policy makers and regulators who will get to identify operation strategies that have significant effects on firm performance. Petroleum companies will be able to identify the service operations strategies where efforts in financing should be directed to and come up with ways in which the firm performance can be improved. Similarly, as a strategic entity, the operational performance of the firms has significant effects on the national economy and therefore the government can identify factors that will enhance the operational performance of each company and the country.

The management practice of the Petroleum firms and all other organizations will derive many benefits from the study. With determination of the service operations strategies that have significant effects on organizational performance, managers can direct their attention to such strategies. Similarly, managers can identify the operational performance factors that are affected by service strategies. Operational service design practices such as customer participation, information technology and back-office strategies are expected to influence performance.

This study will be a credible contribution to the previous research relating to the field of service operation strategies and operational performance. Majority of the studies have been undertaken in developed countries. This current research will add to the existing body of knowledge, specifically from a developing country's perspective. In addition, the study forms the foundation in which future research will be done on service operation strategies and its effect on performance.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter covers a discussion on the literature that has been covered about the effect of service design on operational performance of organizations in Kenya and beyond. The section covers theories of the study, empirical studies, and conceptual framework.

### **2.2 Theoretical Review**

This section delves into the theories that are pertinent to the study's goals. These are: The Unified Service Theory, Structure-Conduct-Performance Framework and The Theory of Performance Frontiers.

#### **2.2.1 Unified Service Theory**

The Unified Service Theory (UST) was advanced by Sampson and Froehle (2006) and suggests that in order to effectively define a production process, there is need to incorporate the customer input in an organization's service offering process since this is the most important difference between non-service and service processes. According to the theory, customer inputs contribute to the product transformation process and as a result, the theory is of the view that the unit of analysis of a service is by how customer input is involved. This theory suggests that within the service processes, the inputs of a customer play a key role in the production process since it is of the view that customer participation is an essential component of service delivery. Indeed, the customer input is the root cause of the service uniqueness and how its management is to be actualized. Similarly, it distinguishes between service design and non-service design where process design should be an outcome of how customer inputs have been incorporated to the service offering by an organization (Florian &

Constangioara (2013). Arguably, customer participation is vital as they play a leading role in ensuring that service delivery standards are met.

The theory identifies capacity and demand management as well as service strategy and quality as being important dimensions of operational outcomes (Wang, Wallace, Shen & Choi, 2015). In the process, it becomes imperative that customer inputs to a service design should be the basis of gaining insightful information of a process design. In this regard, the important role of customer input under the UST provides a framework that cuts across all other theories that consider customer presence as a key factor of customer service (Hawkins et al., 2015). However, though the UST provides an important basis of analysing organizational service design through the customer input prism, it has neither defined what customer input involves and what the expected outcome is to be like nor conducted strategic trade-off from the varied perspectives of the firm and customers in service delivery systems.

### **2.2.2 Theory of Performance Frontiers**

Schmenner and Swink's (1998) theory of performance borders (TPF) introduces both the commodity and the way it operates, which stems from corporate structural decisions that are dictated by the relationship between the plant and the equipment used theoretically. The asset frontier is defined by an organization's combination of equipment and facility, while the operational frontier is defined using the two properties. According to the theory, to boost service efficiency; a trade-off scheme is needed, whereas firms operating further away from the frontier would be subject to the laws of cumulative capabilities. Furthermore, if both the asset and operational frontiers operate together, an organization's efficiency would increase, as shown by better performance and lower costs. Hibbs, Jewett, and Sullivan (2009), when commenting on TPF, claim that improved organizational efficiency is achieved using the same properties, but calculated and optimized to function more effectively. Furthermore,

decisions taken in designing and construction of projects, and decisions made in operational practices build organizational frontiers. This therefore implies that if a corporation aims at improved operations, it must efficiently align and plan its operating philosophy with the potential of its physical resources by adjusting the operating boundary (Chang, 2015).

In line with the TPF theory, all projects are subject to a compromise between organizational structure, technology, and other variances that may impact the process of the organization in the environment in which it is implemented. In corporate setups, the question is finding a balance between these conflicting resources to improve one while not sacrificing on the other. For example, how can a company enhance efficiency by reducing costs or can the transition be made at the existing frontier, where quality increases based on cost incurrence, followed by cost reduction efforts, which lead to a better operating frontier. Will an organization even develop a policy for achieving all these objectives? (Ferdows, Vereecke & De Meyer, 2016).

This theory is significant in this study since companies closer to their asset frontiers are more likely than companies which operate further to benefit from structural and technological improvements. In the fast food set up for example, fast food outlets that have larger physical advantages, catering arrangements and customer proximity, as well as technical networks such as multi-channel distributions are likely to see increased results. It is also worth noting that, as King-Metters and Pullman (2013) pointed out, even though the asset and functional frontiers are perfectly aligned, the resulting gains cannot be improved forever because each organizational shift is subject to diminishing returns. As a result, even though a firm introduces new service growth, the advantages will only be realized up to a point before a new operating advantage or technical advantage is required. This is because if an enterprise has depleted much, if not all of its capabilities, there are fewer prospects for change.

### **2.2.3 Structure-Conduct-Performance Model**

The structure – conduct – performance (SCP) framework is based on the works of Mason (1939) that opine that firms gain competitive advantages by adjusting their operational capacities to the industry in which they compete. From the same background, firms should adjust their operational and technological innovations by being cognisant of the prevailing factors which alter market conditions, firm conduct, and eventually result in a positive performance (Ralston, Blackhurst, Cantor & Crum, 2015). The underlying premise of the SCP framework is that the economic performance of an industry is a product of how the customers react and therefore align organizational innovation which, in return, is a function of the industry's structure. The SCP model looks at efficient ways of improving productivity in an organization through analysis of the industry structure which guides the firm on which area it needs to improve its operations for sustained profits.

According to the structure – conduct – performance (SCP) framework, the importance of cross-firm collaboration is the pooling of resources in order to achieve certain operational efficiencies that might be difficult at individual firm level (Bierwerth, Schwens, Isidor & Kabst, 2015). This requires firms to appreciate that acting alone may not be enough due to a lack of adequate capabilities and resources such that a multi-firm approach will be a better option to be pursued. According to Flynn et al., (2010) operational processes and actions that require cross-organizational and cross-functional integration are likely to appreciate the benefits drawn from forming strategic frameworks. This is due to the benefits associated with coordinated actions which match the processes of different organizational activities. A case in point is the innovation processes that require substantial financial resources which can best be achieved through combination of different firm financial capabilities.

Porter (1991) supports the aspect of industry composition that is generated from the adoption of standard operating procedures. These come about due to the need to respond to the industry dynamics. The regulator for example might demand that certain operation standards be adopted. If an organization has the intrapreneurial culture, it can easily capture the policy shift as an opportunity to create necessary operational competitiveness. However, despite the importance that the SCP model plays in explaining the industry level phenomenon, Rumelt (1991) observes that it fails to account for the changes in the industry and associated regulatory environment, as well as the dynamic nature of competition.

### **2.3 Empirical Literature Review**

The area of service operations strategy and its effect on the operational performance has received increased attention by scholars and management practitioners following its potential effect on the overall organizational outcome. This interest is expected to increase soon because of the service sector gaining prominence over the manufacturing sector because of automation of the processes. This section discusses earlier studies undertaken in service operations strategies.

The influence of service operations on organizational performance through flexibility of engineering firms in Spain was investigated by Aranda (2013). The service operations dimension was represented by process, service, and customer-oriented operation strategies while the flexibility dimension was measured in the firm by capacity to quickly handle service offering variations, the rapid introduction of new offerings from their portfolios to the market, being able to handle adjustments in customer delivery timelines and ability to adjust capacity rapidly. The results reveal that all the independent variables (layout, PUSH orientation, offered services, back and front office, new services development, and customer participation) were found to have a direct effect on firms' financial performance ( $p < 0.01$ )



with the human resources having the greatest change measure ( $\beta = 0.42$ ). On the other hand, the results reveal that all the flexibility measures (expansion, information distribution, market, equipment, and personnel) had a negative and significant effect ( $p < 0.01$ ).

The need to develop an operations strategy model for servitization was undertaken by Szász and Seer (2018) using data collected from 735 manufacturing plants in 21 different countries. The results reveal that effective service provision requires that firms adopt an operation strategy that is service-based, aimed at reconfiguration of operations resources and processes with the aim of gaining successful provision of different types of services alongside the products. This position was arrived at earlier by different scholars (Bustinza, Bigdeli, Baines & Elliot, 2015). Their studies revealed that the overall operational performance of an organization is a function of a unified operations strategy that involves alignment of front and back-office strategies, efficient processes and workflows, information systems and customer involvement in product and service designs. These four variables will form the basis for analysis of an organization's operational performance in this study.

### **2.3.1 Back and Front Office Strategies**

Back and front office operations are a critical component of any service operation. Such operations may include sectors such as banking, healthcare, and retail businesses, among others.

A study conducted to investigate the effect of electronic banking on the banks' operation strategy, Migdadi (2011) found that e-banking allowed front office employees to do back-office jobs and helped in reduction of the customers waiting time – across the four different clusters that had been grouped together. The study suggests the re-configuration of bank services to better capture the benefits of e-banking as compared to the traditional banking system.

In banking, back-office employees are key in the banking operations and consequently require effective management through the introduction of effective human resource management strategies. While investigating human resource strategies in the management of the back-office employee operations, Newenham-Kahindi (2013) noted the impact human resource management strategies had on two investment multinational banks in Tanzania. The results suggest that some of the human resource strategies employed by the international banks in the management of the back-office employees in the quest to achieve better performance from the back-office employees include application of technology, standardization of HRM tasks, inter-organizational coordination, and consolidation of international finance centres. All these provide compelling evidence of similarities between them. For example, the application of technology in the standardization of functionality within the international set-up is demonstrated in a scenario where the HR staff are located at the head office in a different country while the back-office staff are in the subsidiary countries (Zuurmond, 2005).

### **2.3.2 Customer Participation in Product and Service Design**

Another critical dimension of an effective operation strategy is involvement of customers in an organization's value chain. Mustak, Jaakkola and Halinen (2013) investigated how customer participation resulted in value creation through a systematic review of literature. This was established through analysis of customer participation, their temporal scope, and the outcomes considered. The findings reveal that effective customer participation needs to be manifested through consideration of customers as partial employees, internal marketing customers being taken as partial employees, communicating role expectations, customers' commitment, and service design configurations (Tether & Tajar, 2008). The findings advocate that customer participation in a firm's operations strategy contributes to productive

labour because they help in modifying consumer behaviour so that services can be offered in a more economical and efficient manner. Customer participation from the literature shows that the move has been extended to cover a wider scope of activities that includes interactions with suppliers, participation in core offerings, co-design, joint production of related goods and innovation (Lusch & Vargo, 2006).

### **2.3.3 Information Systems**

Alignment of information systems to the overall operation strategy of an organization also plays a key role in operational performance. The technology employed in the organization's service offering constitutes its information systems.

Efficiency in service provision requires that customers interrelate with technology so as to limit face-to-face communication as a substitute for physical interaction. It is appreciated that the consumption experience arises from the personal encounter which customers enjoy that elicits significant emotional reactions (Mukerjee, 2012). Indeed, operational scholars such as Ruchi, Rahman and Qureshi (2014) are of the view that the customer experience is what constitutes a service since an experience is personal to individual customers and this consequently affects their emotional, rational, and sensorial levels. As a result, service providers employ technological innovations and promote their use with the intention to establish friendly and rewarding relationships with customers. However, whereas the adoption of innovation is laudable, acceptance of the same by customers is not guaranteed since this decision is dependent upon individual customer capacity and willingness (Walker et al. 2012). Similarly, the customer willingness to use technological innovation is dependent upon the complexity and risks associated with the new technology.

Bayraktar et al. (2009) sought to investigate how Turkish SMEs' operational performance is affected by their information systems and supply chain management practices. Using a

structural model, the results from the 203 firms suggest that there exists a negative relationship between supply chain management – Information system organizational inhibitors and the implementation levels of both variables. Similarly, the findings suggest that the information system practices adopted by a firm have a moderating effect on the operational performance. This finding agrees with that adopted by Ravichandran et al (2005) who also found that in agreement with the resource-based-perspective, IS resources are immutable and valuable in generating a positive effect on organizational performance. At the same time, the study opined that there is need to create compatible IT technology with the business operations that are being undertaken by an organization to create the necessary synergy.

Information systems security management has also been found to play a vital role in the service operations strategy in the banking sector. Bell, Ndje and Lele (2013) investigated the role of information systems security management through strategy and organizational operations. Information systems security in operations strategy was found to be effective in-service organizations through security culture, user training, policy relevance and subsequent enforcement. The information system of an organization is made of application systems, data, the information technology infrastructure, and personnel that employ IT to deliver information and communications services in an organization. In the process of adopting effective service management, Elmuti (2008) highlights that there is need for an organization to carry out market research with a view to discovering customers' expectations, continually monitoring changes in customer satisfaction and being able to record customer requests, transactions, and complaints for future reference. This is because customer complaints and feedbacks are useful in improving services and future products. In addition, Lemon and Verhoef (2016) highlight that by incorporating customer feedback and acting upon it, a

customer will be satisfied with a service, and this will consequently reduce the level of complaints emanating from the service offering.

#### **2.3.4 Processes and Workflows**

Reijers, et. al (2016) conducted an assessment on implementation of workflow management systems and its impact on operational performance of organizations. The findings from data collected from 10 organizations revealed that implementation of a workflow management system can substantially increase production outcomes and overall operational performance of an organization. In a service operation, a workflow management system would shorten the time required for processing orders, reduce the lead time for service delivery and enable the organization to achieve high customer satisfaction through advanced service offerings. These are key ingredients in improvement of an organization's operational performance.

#### **2.3.5 Operational Performance**

Operational performance is considered as a measure of an organization's operational success in terms of cost containment, service efficiency, reliability, and quality. In this study, the operational performance will be the independent variable, while the dependent variables are the afore mentioned strategies mentioned above.

For any organization to have a competitive edge within its business environment, the right mix of all the above-mentioned strategies, along with alignment of available resources is necessary for attainment of desirable levels of performance.

### **2.4 Summary of Literature Review**

Previous studies undertaken regarding operational performance shows that a firm's outcome is determined by various factors and not a single factor. A service operation strategy is one such factor, which is perceived to have an effect on operational performance. The literature

review reveals the existence of multiple service operation design frameworks due to the diverse nature of operations across the firms. However, what is evident from the different studies is that there have been limited studies that have investigated the influence of service operations strategy as represented by front and back-office strategies, information systems, processes, and workflow, as well as customer participations– especially in developing countries. The current research will investigate the four predictor variables and their joint and individual effect on the operational performance of the petroleum companies in Kenya.

## 2.5 Summary of Knowledge Gaps from Empirical Literature Review

Below is a detailed summary of previous studies in operational performance. This summary provides information on the researchers involved, their study topic, methodology adopted during the study, findings from the study and the current knowledge gap.

**Table 2. 1 Summary of Research Gaps from Empirical Literature Review**

<b>Researcher(s)</b>	<b>Study Topic</b>	<b>Methodology</b>	<b>Study Findings</b>	<b>Research Gap</b>
Slack et al., (2010)	Development of an operation strategy through coordination of available resources	Systematic Literature Review	Sustainable operation performance is dependent on alignment of strategies with existing resources	The study failed to identify a framework of how strategies can be aligned with resources to improve performance.
(Zhang, Joglekar & Verma, 2012)	The effect of operation strategies on operational performance	Systematic Literature Review	An effective operation strategy is a key source of competitive advantage	The study failed to identify specific strategies that can be implemented towards improvement of operational performance

<b>Researcher(s)</b>	<b>Study Topic</b>	<b>Methodology</b>	<b>Study Findings</b>	<b>Research Gap</b>
Dixon and Verma (2013)	The effect of season ticketing of hotel firms in Spain	Survey Research Design	The ticket queuing strategy adopted by a hotel influences customer repurchase of subscriptions. It identified a proper service design process as a source of competitiveness.	The study did not establish the relationship between service design and operational performance.
Sangiorgi and Prendiville (2014)	Service design framework for public, commercial, and digital sectors.	Systematic Literature Review	Sustainable operation performance is dependent on adoption of a proper operation strategy.	The study did not consider the unique nature of business in different sectors of an economy.
Johnston (2015)	Operation Strategies employed in service industries	Systematic Literature Review	Previous research has mostly been focussed on manufacturing firms	There is limited focus on the operation strategies employed in the service sector, given the unique nature of their business
Onyango (2015)	Operations strategies employed in service delivery within the County Government of Kisumu. Specific focus on alignment of services to customer needs, staff involvement in customer service and citizen involvement in service delivery	Case Study Research Design	Duplication of the common service delivery by the National and County governments has resulted in conflict in service delivery.	No relationship was established between customer involvement and service delivery in the county of Kisumu

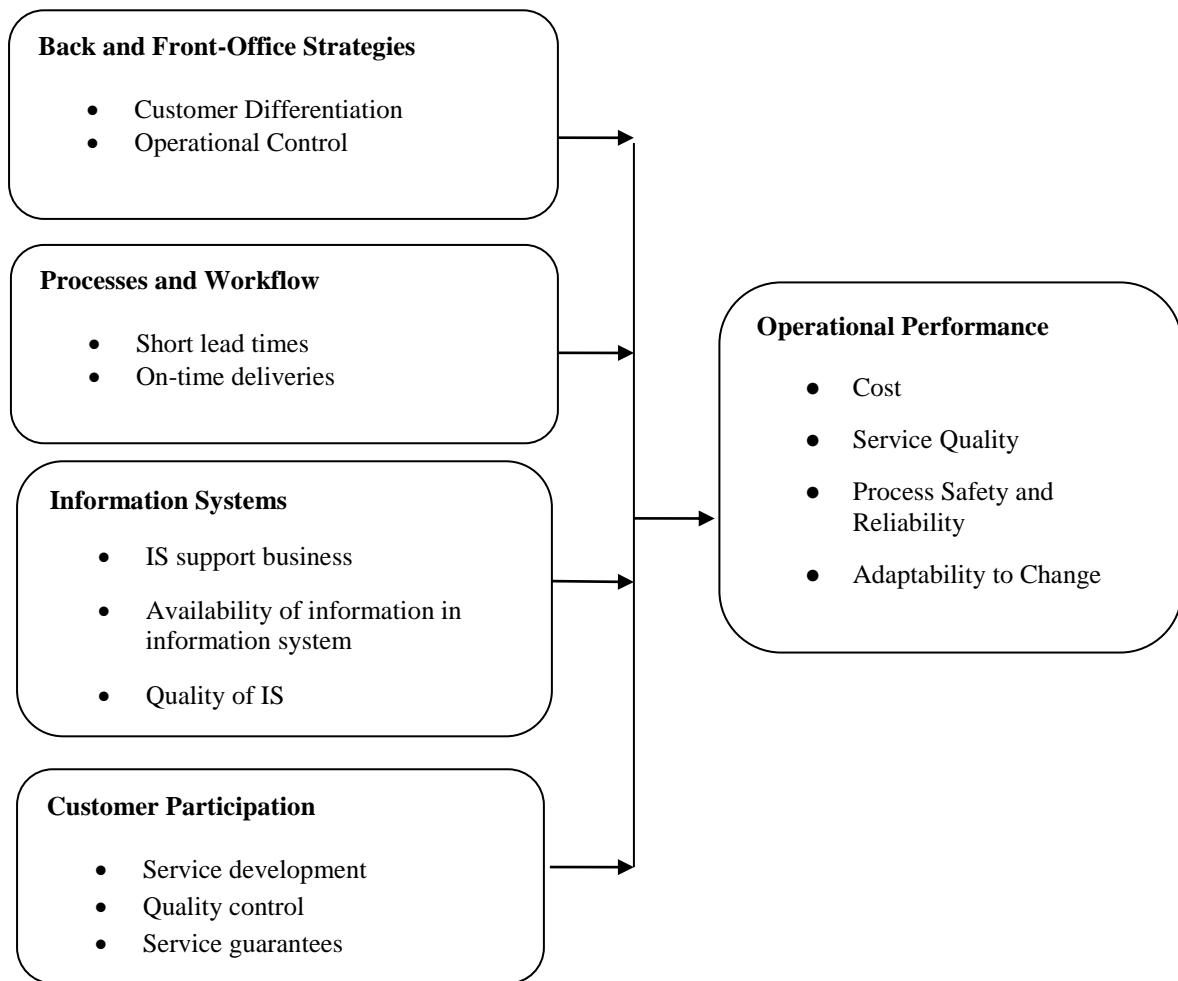
<b>Researcher(s)</b>	<b>Study Topic</b>	<b>Methodology</b>	<b>Study Findings</b>	<b>Research Gap</b>
Matthias and Brown (2016)	Operations strategies employed within the National Hospital services (NHS) in the UK.	Survey Research Design	Acceptable national standards of quality were the key drivers of adoption of lean management processes	The study focused on adoption of lean processes only in management of healthcare. There was limited attention on any other strategies.
Szász and Seer (2018)	Adoption of operations strategies in the service transformation of manufacturing firms in Hungary	Survey Research Design	The findings suggest that stakeholder pressures can push manufacturers towards adopting service-based operations strategies	The study focussed on manufacturing firms only. There was limited attention on other driving factors for adoption of such strategies in manufacturing and other sectors of the industry.

## **2.6 Conceptual Framework**

A service operation strategy and its impact on the operational performance of an organization was hypothesised to be related as in Figure 2.1. The operational performance was thought to be influenced by an organization's strategies in the back and front-office and how the work process flow is structured. In addition, the overall organization's information system and involvement of customers in designing operational matters that affect them was also thought to influence the eventual performance of a firm's operation. For this study, the operation strategies employed in a firm formed the independent variables while operational performance was the dependent variable. This relationship was presented below.



**Figure 2. 1 Conceptual Model**



Source: Research Data

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

The approach used in the analysis to achieve the study objectives is discussed in this chapter. This section covers, study design, data collection methods, sample size determination, and data analysis techniques.

### **3.2 Research Design**

This study employed descriptive design. According to Gill and Johnson (2006) “descriptive statistics is to determine the general characteristics of a given population or subjects. It also aids in the establishment of an individual's true perceptions and ideals to assess how the condition is in comparison to the corresponding target group”. Since this research draws its statistics from a descriptive data, descriptive design is efficient.

### **3.3 Population of the Study**

The sample population of the study was drawn from oil companies in Kenya. According to the Energy and Petroleum Regulatory Authority (2020), major oil companies are those firms that have 1 % or more market share in the country. Based on this criterion, there are 18 firms that meet this classification (Appendix II). Census was used due to the small volume of sample firms.

### **3.4 Data Collection**

Primary data was collected using a questionnaire, consisting of both open-ended and closed-ended questions. The open-ended questions were designed to give respondents complete freedom to respond to the questions in whichever manner they see fit depending on their

experiences. Closed ended questions allowed the respondents to rank the available options and therefore helped the respondents to respond quickly.

There were three parts of the questionnaire. The demographic details of respondents and the organization was covered in Section A, while Section B aimed to define the organization's four service operations strategy practices (front and back-office strategies, processes and workflow, information systems and customer participation). Section C ought to establish the relationship between service operations strategies and operational performance of the petroleum companies under study. The questionnaires were administered through a combination of an electronic mail while taking cognisance of the COVID-19 protocols initiated and through physical distribution of the questionnaire by the drop-and-pick latter approach. The targeted respondents were the operations managers, lead business development managers and/or persons with equivalent positions.

### **3.5 Data Analysis**

The questionnaires were precisely formed for clarity, and completeness after the data that is needed was obtained. To allow statistical analysis, the responses were coded into numerical form. Descriptive figures were used to interpret the data gathered (measures of central tendency and measures of variance). The results of the questionnaire were used to interpret the data. To quantify the responses and to display the extent of similarities and disparities, mean, standard deviations, ratios, and frequency distribution were used. Tables were used to present the findings. Table 3.1 provides a summary of how each individual objective was analysed.

**Table 3. 1 Summary Table of Objective Analysis**

<b>Independent Variables (Service Strategy)</b>	<b>Analysis</b>	<b>Direction</b>
<b>Objective 1</b> : Front and Back – Office Strategy	Regression Analysis	+/-
<b>Objective 2</b> : Information Systems Strategy	Regression Analysis	+/-
<b>Objective 3</b> : Process and Work-flow Strategy	Regression Analysis	+/-
<b>Objective 4</b> : Customer Participation Strategy	Regression Analysis	+/-

To determine the relationship between a service operation strategy and operational performance of an organization, a regression model was established. The regression took the following form : Operational Performance = f (X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>).

More specifically, the regression model is of the form :

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

Where Y = Operational Performance

$\beta_0$  = Constant

X<sub>1</sub> = Back and front-office strategies

X<sub>2</sub> = Process and work-flow

X<sub>3</sub> = Information Systems

X<sub>4</sub> = Customer Participation

$\epsilon$  = Error term

## CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

### 4.1 Introduction

The findings from this study are discussed in this chapter. Data analysis was scientifically computed as stated in the previous chapter using Statistical Package for Social Science (SPSS). Descriptive statistics was done to summarize the data into presentable and interpretable findings. Inferential statistics was also computed to establish statistical relationships between the dependent and independent variables.

### 4.2 Questionnaire Return Rate

This study's sample population comprised of 18 oil companies in Kenya. I distributed five questionnaires to each oil company targeting Operations Managers and the Business Development Managers and/or persons holding equivalent positions. The study assumed that a high response rate would give a near accurate representation of the organizations, thereby resulting in a near accurate determination when generalising the outcome across the organizations. A summary of the responses collected is tabulated below.

**Table 4. 1 Response Rate**

*Summary of Percentages for Responsive and Non-Responsive Questionnaires*

Questionnaires	Number	Percentage
Filled and collected	77	83.1
Non-Responsive	13	16.9
<b>Total</b>	<b>90</b>	<b>100</b>

Source: Research Data

The sample size of the study, N= 90 individuals who were supplied with questionnaires. I collected 77 dully filled questionnaires constituting an 83.1% return rate. According to Mugenda and Mugenda (2003), "a 50% response rate is sufficient, 60% is good, whereas

70% is very good. Similarly, Bailey (2000) suggests that a response rate of 50% is deemed sufficient, whilst greater than 70% response rate is very good". With an 83.1% return rate, I am confident in the inferences and conclusions drawn from these responses.

## 4.2 Demographic Information

The overall demographic information was obtained from respondents and organizations about; the total workforce in the respective organizations, age of the organization, working experience and current job descriptions of employees. Details of this information is provided in subsequent sections of this report.

### 4.3.1 Level of Management

An employee's level of management determines the extent to which a research participant gets involved in an organization's decision-making process. As such, the higher the level of management of a respondent, the more information one may have with regard to the research subject in question. Additionally, senior employees are usually more informed on an organization's operations because they are directly involved in the daily activities of a firm. This study targeted participants considered to be in the Top Level, Middle Level and Supervisory Levels of management for the sample size. The data collected is represented in Table 4.2

**Table 4. 2 Level of Management**

*Summary of Percentages for Management levels of respondents*

<b>Level of Management</b>	<b>Frequency</b>	<b>Percent</b>
Top level	15	19.5
Middle level	43	55.8
Supervisory	19	24.7
<b>Total</b>	<b>77</b>	<b>100</b>

Source: Research Data

From the findings, more than half of the respondents (55.8%) indicated that they held middle level management positions in their firms. 24.7% and 19.5% of the respondents were supervisors and top-level managers, respectively. The findings imply that the respondents were sufficiently informed as far as service operation strategies in petroleum firms in Kenya are concerned, hence the information provided was sufficient for generalization of the findings.

#### 4.3.2 Experience Level

The number of years that an employee has served a given firm is an important demographic characteristic from a research perspective, because it informs the researcher about a participant's level of understanding of different phenomena relating to the research objectives. Experienced respondents are better placed to evaluate the impact of introducing a change after its introduction and compare it to an initial position where it did not exist initially. In this study for example, a variation in any of the independent variables constitutes a change where an experienced respondent would do a before and after comparison of the change and evaluate its impact on the organization's service operation strategy. Information on the experience level of the responsive participants in this study is summarised below.

**Table 4. 3 Years of Experience**

*Summary of the work experience of respondents*

<b>Years of Experience</b>	<b>Frequency</b>	<b>Percent</b>
Less than 5 years	5	6.5
6-10 years	37	48.1
11-15 years	26	33.8
More than 15 years	9	11.7
<b>Total</b>	<b>77</b>	<b>100</b>

Source: Research Data

From Table 4.3, nearly half (48.1%) have been working in petroleum companies for 6-10 years, 33.8% indicated that they have served in the sector for 11-15 years, 11.7% have more than 15 years of experience in petroleum industry while 6.5 percent have worked in the sector for less than five years. Arguably, majority of the respondents have experience/have worked in the petroleum firms for a significant period and therefore they can recognize the differences realized on operational performance before and after the introduction of new service operation strategies.

### 4.3.3 Number of Employees

The findings on the number of employees are presented in Table 4.4.

**Table 4. 4 Number of Employees**

*Summary of the number of employees in the organizations under study*

<b>Number of Employees</b>	<b>Frequency</b>	<b>Percent</b>
100-500 employees	32	41.6
501-1000 employees	34	44.2
More than 1000 employees	11	14.3
<b>Total</b>	<b>77</b>	<b>100</b>

Source: Research Data

From the findings in Table 4.4, 44.2% of the respondents indicated that their organization has employed between 501 and 1000 employees. Similarly, 41.6% of the study participants stated that their petroleum firms have a human capital of 100-500 employees. 14.3% of the respondents shows that their petroleum firms have more than 1000 employees as their workforce. The findings thus imply that majority of these firms are considered “large organizations” given that they have more than 500 employees.



#### 4.3.4 Age of the Organization

The duration of time that an organization has been in operation (in years) helps in determining the experience of a firm in relation to its operating environment. It tells the extent to which an organization may have experienced different aspects of service operation strategies such as the challenges of implementation resulting from change in both internal and external environment, among others.

**Table 4. 5 Age of the Organization**

*Summary of the ages of the organizations under study*

<b>Ages of the Organizations</b>	<b>Frequency</b>	<b>Percent</b>
10-15 years	34	44.2
16-20 years	33	42.9
More than 20 years	10	13.0
<b>Total</b>	<b>77</b>	<b>100.0</b>

Source: Research Data

From the results tabulated in Table 4.5, 44.2% of the respondents indicated that their firms have been in operation for 10-15 years, 42.9% indicated that their organizations have 16-20 years in the sector while 13.0% indicated that their petroleum firms have been operating for more than 20 years. The findings thus show that majority of petroleum firms have a significant level of exposure to their operating environments and related challenges regarding operational performance. These firms are believed to have introduced changes in their service operations strategies over that period, to enhance their operational performance.

#### 4.4 Service Operation Strategies

According to Blomkvist and Segelström (2014), service operations can be measured based on effectiveness of an organization to accomplish required tasks using available resources. These routine operational tasks range from distinctive dimensions which in this study were

categorized as back and front office strategy, process and workflow, information systems and customer participation. The study aimed to determine the extent to which these dimensions of service operation strategies have influenced operational performance of petroleum companies in Kenya. To achieve this, I structured statements that were to be rated on a five-point Likert scale. The respondents gave their opinion from 1-strongly disagree to 5 -strongly agree. On interpretation of the results, a mean response of below 2.5 indicated disagreement with the statement,  $2.5 \leq \text{mean} \leq 3.5$  indicated neutral response while  $3.5 \leq \text{mean} \leq 5$  indicated agreement to the statement regarding the specific dimension. The study also assumed that standard deviations greater than 1 showed huge response variations while standard deviations less than 1 showed an insignificant response variation.

#### 4.4.1 Back and Front-Office Strategies

**Table 4. 6: Back and Front-Office Strategies**

*Summary of the statements formulated to investigate Back and Front Office Strategies*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
We initiate continuous improvement plans	77	3.4935	.55306
We are able to identify the high-net-worth customers	77	3.3377	.52841
We enter the nature of the problem into the database	77	3.3377	.52841
We have established operational control for each customer	77	3.2468	.65204
We process in-coming contracts and assign an employee to follow through	77	3.1818	.68301
We discuss the nature and cost of services	77	3.1429	.62227
We design solutions to the identified problem	77	3.1039	.75367
We receive notice of inefficiency and customer complaints	77	3.0519	.42600
<b>Valid N (listwise)</b>	<b>77</b>		

Source: Research Data

Based on Table 4.6, the respondents agreed that petroleum firms have initiated continuous improvement plans (M=3.494) while others were undecided on whether these firms are able to identify the high-net-worth customers (Mean=3.338) courtesy of the back and front office strategies implemented. In addition, majority of the study participants were undecided on whether their specific firms always enter the nature of the problem into the database (mean=3.338) or whether their firms have established operational control for each customer (mean=3.247). According to the findings, it is yet to be determined whether petroleum companies process in-coming contracts and assign an employee to follow through (mean=3.182), neither do the companies discuss the nature and cost of services (mean=3.143). Similarly, the respondents were neutral on whether their companies design solutions to the identified problems (mean=3.104) or whether they receive notifications of inefficiency and customer complaints (mean=3.052). It can be seen from the findings that the standard deviations were less than 1 indicating an insignificant deviation in responses. The findings imply that as far as back and front office strategies are concerned, it is not clear whether petroleum firms have effectively implemented back and front office strategies under the umbrella of service operation strategies with an aim to enhance operational performance.

#### 4.4.2 Processes and Workflow

**Table 4. 7: Processes and Workflow**

*Summary of Statements formulated to investigate processes and workflow in the organizations under study.*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
The organization process is adaptive to change	77	3.50649	.553063
All procedures are documented	77	3.33766	.528413
The organization lead-time for delivery is short	77	3.33766	.528413
All procedures are automated	77	3.18182	.531316
We mostly achieve on-time deliveries	77	3.16883	.767816
Valid N (listwise)	77		

Source: Research Data

From the findings (Table 4.7), majority of the respondents agreed that petroleum companies' processes are adaptive to change (mean=3.506) and that all procedures are documented (mean=3.338) though some respondents were undecided on this. Majority of research participants were neutral regarding their respective organization's lead-time for delivery (mean=3.338) and automation of procedures (mean=3.182). Similar findings were also established when respondents were asked whether their organizations achieve on-time deliveries (mean=3.169) as a result of process and workflow strategies. The study findings imply that process and workflow strategy, as a dimension of service operation, is yet to be fully operationalized in petroleum companies operating in Kenya.

#### 4.4.3 Information Systems

The results in relation to the petroleum firms' information systems are presented in Table 4.8.

**Table 4. 8 Information Systems**

*Summary of Statements formulated to interrogate information systems in the organizations under study.*

Statements	N	Mean	Std. Deviation
The information system adopted links the company with its suppliers	77	3.494	.5531
The company's IS helps in facilitating customer relationship management	77	3.338	.5284
Customers have been trained on the usage of the information technology infrastructure used by the organization	77	3.338	.5284
The scheduling of tasks within the organization is facilitated courtesy of the existing management information system	77	3.247	.6520
The organization uses its information system to actively participate in the social media	77	3.182	.6830
The customer queuing system is managed automatically	77	3.143	.6223
The organization employs information systems in material requirements planning	77	3.104	.7537
Valid N (listwise)	77		

**Source: Research Data**

The study findings in relation to information systems, as presented in Table 4.8, reveal that majority of the respondents agree with the fact that information systems adopted in their organizations link the company with its suppliers (mean=3.494), while others were undecided on whether their respective companies' information systems help in facilitating customer relationship management (mean=3.338). Similarly, majority of the respondents gave a neutral response on whether customers of petroleum companies have been trained on the usage of the information technology infrastructure used by the organization (mean=3.338). In addition, most respondents were not decided on whether scheduling of tasks within the firms under study is facilitated by the existing management information system (mean=3.247) or whether these firms use their information system to actively participate in the social media (mean=3.182).

Majority of the respondents also, according to the findings, were undecided on whether customer queuing systems in petroleum firms are managed automatically (mean=3.143) or whether the organizations in question employ information systems in material requirements planning (mean=3.104). Thus, the implication drawn from the findings is that employees are not conversant with information systems and their implementation in their respective organizations. This implication was arrived at due to the neutral responses by majority of the research participants. The findings also imply that Information Systems are yet to be fully implemented as a service operation strategy for improvement of operational performance across petroleum companies in Kenya.

#### 4.4.4 Customer Participation

**Table 4. 9 Customer Participation**

*Summary of Statements formulated to interrogate customer participation in the organizations under study.*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Customers perform tasks for the organization's employees	77	3.494	.6203
Customers are involved in product innovation process	77	3.468	.5521
Customers behave in a proper manner even under system failure	77	3.338	.5284
Our customers are engaged in information sharing	77	3.338	.5284
Our customers support each other	77	3.156	.7791
Our customers are engaged in self-service operations	77	3.143	.5310
Our customers participate in the development of core product offerings	77	3.117	.7604
<b>Valid N (listwise)</b>	<b>77</b>		

Source: Research Data

Regarding customer participation, the study established that most of the respondents agreed with the fact that customers perform tasks for the organization's employees (mean=3.494) while others were undecided on whether customers are involved in product innovation processes (3.468). In addition, most respondents were undecided on whether customers behave in a proper manner even under system failure (mean=3.338) or are even engaged in information sharing (mean=3.338). Respondents were also undecided on whether customers support each other (mean=3.156), engage in self-service operations (mean=3.143) or whether they participate in the development of core product offerings (mean=3.117). The implication drawn from the findings is that the influence of customer participation is still unclear in the service operations in petroleum companies in Kenya since majority of the respondents were undecided on this.

## 4.5 Effect of Service Operation Strategy on Operational Performance

Notably, the influence of service operation strategies on operational performance has four major aspects; Cost, Process Quality, Process Safety and Reliability as well as Adaptability to Change. Responses were scaled from very poor (1) to very good (5).

### 4.5.1 Cost

**Table 4. 10 Cost**

*Summary of statements formulated to interrogate the effect of service operation strategies on cost as a measure of operational performance*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Increase in Turnover	77	4.039	1.1859
Increase in the profits declared by the organization	77	3.779	1.0211
Price Competitiveness using discounts on prices of products offered by the organization	77	3.351	.5323
Savings realized from adoption of operation strategies	77	3.130	.6560
Reduction in Costs incurred during service delivery e.g transportation costs	77	3.104	.6195
<b>Valid N (listwise)</b>	<b>77</b>		

Source: Research Data

From the findings, majority of the respondents opined that to a good extent, there has been an increase in turnover (mean=4.039) and that there has been an increase in the profits declared by the various petroleum companies (mean=3.779). To an average extent, the findings show that price competitiveness using discounts on prices of products offered by the organization has been realized (mean=3.351) and also, savings have been realized from adoption of operation strategies (mean=3.130). Furthermore, on average, there is a reduction in costs incurred during service delivery for instance transportation costs (mean=3.104). From the findings, it can be said that the cost of operations has reduced averagely as a result of service operation strategy hence showing convenience in operational performance.

#### 4.5.2 Service Quality

**Table 4. 11 Service Quality**

*Summary of statements formulated to investigate the effect of service operation strategies on service quality as a measure of operational performance*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Customer Satisfaction based on Customer feedback	77	4.273	.8052
Time taken to complete each customer order	77	4.260	.8014
Staff interaction with customers during service delivery	77	4.104	1.0077
Referrals of new customers to the organization	77	4.039	1.1521
Responsiveness to Customer needs	77	4.026	.7604
<b>Valid N (listwise)</b>	<b>77</b>		

Source: Research Data

As shown from the findings, service quality resulting from implementation of service operation strategies has led to good customer satisfaction based on customer feedback (mean=4.273) as well as an improvement on time taken to complete each customer orders (mean=4.260). Similarly, the findings shows that service operation strategies implemented by petroleum companies have led to commendable staff interaction with customers during service delivery (mean=4.104) and an increment in referrals of new customers to the firm (mean=4.039). The implemented service operation strategies have enhanced responsiveness to customer needs (mean=4.026). These findings imply that the service operation strategies implemented across major petroleum companies in Kenya have played a significant role in improving service quality.



### 4.5.3 Process Safety and Reliability

**Table 4. 12 Process Safety and Reliability**

*Summary of statements formulated to investigate the effect of service operation strategies on process safety and reliability as a measure of operational performance*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Overall safety of the workplace measured using the number of Safe working days per year	77	4.221	.8212
Employee awareness on safety hazards in the workplace	77	3.987	.7344
Regular Emergency Drills, at least 1 per quarter	77	3.961	1.0935
Safety measured using the number of Spillage incidents reported per year	77	3.844	.9876
Mandatory Safety Training for all staff, at least once annually	77	3.584	1.0557
<b>Valid N (listwise)</b>	<b>77</b>		

Source: Research Data

Regarding process safety and reliability, the study established that there is good overall safety of the workplace measured using the number of safe working days per year (mean=4.221) as well as good employee awareness on safety hazards in the workplace (mean=3.987). Similarly, in petroleum companies operating in Kenya, regular emergency drills are conducted, at least 1 per quarter (mean=3.961). Respondents also feel that their organizations are generally safe based on records of spillage incidents. Safety measured using the number of spillage incidents reported per year (mean=3.844) indicates that respondents generally agree on a high standard of safety in their organizations. Additionally, the respondents agreed that mandatory safety training for all staff, at least once annually, is good for effective operational performance (mean=3.584). From these findings, one may conclude that the service operation strategies employed by major petroleum companies in Kenya have significantly enhanced process safety and reliability in the said companies.

#### 4.5.4 Adaptability to Change

**Table 4. 13 Adaptability to Change**

*Summary of Statements formulated to investigate the effect of service operations strategies on adaptability to change as a measure of operational performance*

<b>Statements</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>
Implementation of energy efficiency measures	77	4.169	.9921
Staff training on emerging trends in customer service	77	4.104	.8520
Innovations within the organization that are aimed at improving service delivery.	77	4.039	.9793
Adoption of policy regulations in the petroleum industry	77	4.026	.9864
Adaptation to varying customer needs in the market	77	3.740	1.0183
Adoption of new technologies for improved service delivery	77	3.636	1.0248
<b>Valid N (listwise)</b>	<b>77</b>		

Source: Research Data

Regarding organizations' adaptability to change as a result of service operation strategies, the findings established that there is effective implementation of energy efficiency measures (mean=4.169), improved staff training on emerging trends in customer service (mean=4.104) as well as increment in innovations within the organization that are aimed at improving service delivery (mean=4.039). Similarly, the study established that due to effective implementation of service operation strategies in petroleum firms, there is improvement in adoption of policy regulations in the petroleum industry (mean=4.026). Organizations have done well on adaptation to varying customer needs in the market (mean=3.740) and also adoption of new technologies for improved service delivery (mean=3.636). The findings therefore imply that major petroleum companies in Kenya are highly adaptable to change courtesy of the service operation strategies implemented.

#### 4.6 Relationship Between Service Operation Strategies and Operational Performance

The relationship between depended and independent variables was achieved through regression analysis. The study aimed to establish the influence of service operation strategies on operational performance of petroleum companies in Kenya. The independent variables selected for this study comprised specific dimensions of service operations namely, Back and Front Office Strategies, Process and Workflow, Information Systems and Customer Participation. Operational performance was considered as the dependent variable.

Regression analysis creates three tables for interpretation. Summary model, Analysis of variance (ANOVA) table and the coefficient table. The study discussed each table as a subsection of regression analysis based on scientific interpretation criterion.

##### 4.6.3 Summary of the Regression Model

The summary of a regression analysis presents the R, the R square, adjusted R square and the standard error of the estimate. The R coefficient is referred to as the coefficient of correlation which shows the degree of correlation between the dependent and independent variable. The R-square is the coefficient of determination that shows the extent of variation in the dependent variable explained by independent variables considered in the study.

**Table 4. 14 Summary of the Regression Model**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.879 <sup>a</sup>	.772	.760	.53140

a. Predictors: (Constant), Customer Participation, Process and Workflow, Information Systems, Back and Front Office Strategies

Source: Research Data

From the findings tabulated above, the coefficient of determination is 0.772. These findings imply that the service operation strategies studied in this research constitute a variance of 77.2% in the operational performance of petroleum companies in Kenya, while other independent variables not included in this study would account for 22.8% variance in operational performance.

#### 4.6.3 Significance of the Regression Model

Analysis of Variance was done to determine the significance of the regression model, and the results are tabulated below.

**Table 4. 15 ANOVA**

<b>Model</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
1	Regression	68.915	4	17.229	61.010	.000 <sup>b</sup>
	Residual	20.332	72	.282		
	Total	89.247	76			

a. Dependent Variable: Operational performance

b. Predictors: (Constant), Customer Participation, Process and Workflow, Information Systems, Back and Front Office Strategies

From the ANOVA results tabulated above, the regression model was found to be statistically significant, ( $F(4,72) = 61.010, p < 0.01$ ). A statistically significant model implies that the independent variables chosen for this study are suitable predictors for determining variations in operational performance.

#### 4.6.3 Significance of Regression Coefficients

Regression coefficients provide information concerning a unit effect realized on the dependent variable because of change in individual independent variables. Table 4.16 presents the coefficients of the variables in the regression model, the t-values, and the degree of significance level.

**Table 4. 16 Coefficients of Regression Analysis**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.068	0.291		-0.234	0.816
Back and Front Office Strategies	0.207	0.09	0.207	2.304	0.024
Process and Workflow	0.230	0.096	0.223	2.406	0.019
Information Systems	0.589	0.089	0.552	6.646	0.000
Customer Participation	0.041	0.058	0.042	0.714	0.478

a. Dependent Variable: Operational Performance

Source: Research Data

A multiple linear regression was computed to predict Operational Performance based on Back and Front Office Strategies, Processes and Workflow, Information Systems and Customer Participation. From the afore-mentioned ANOVA, a significant regression equation was obtained, ( $F(4, 72) = 61.010, p < .01$ ), with ( $R^2=0.772$ ).

Participants predicted that Operational Performance is equal to  $-0.068 + 0.207$  (Back and Front Office Strategies)  $+ 0.230$  (Process and Workflow)  $+ 0.589$  (Information Systems). It was found that Back and Front Office Strategies significantly predicted Operational Performance, ( $\beta = 0.207, p = 0.024$ ). Process and Workflow ( $\beta = 0.230, p = 0.019$ ) and Information Systems ( $\beta = 0.589, p = 0.000$ ) also significantly predicted Operational Performance. Their results may be interpreted to mean that Operational Performance is predicted to increase by 0.207 units for each unit increase of Back and Front Office Strategies, and 0.230 units for each unit increase in Process and Workflow. Similarly, Operational Performance is predicted to increase by 0.589 units for each unit increase in Information Systems. Of the independent variables chosen for this study, Back and Front Office Strategies, Process and Workflow, as well as Information Systems were all found to be

significant predictors for the regression model. Customer Participation was found to be an insignificant predictor,  $p = 0.478$ .

#### **4.7 Discussion of the Findings**

The aim of the study was to identify service operation strategies and evaluate their relationship with operational performance of petroleum firms in Kenya. The study conducted inferential and descriptive statistics on the primary data. First, the study sought to establish how front and back-office strategies affect operational performance in organizations. From the inferential statistics, the study showed a positive ( $\beta = 0.207$ ) and significant ( $p = 0.024$ ) relationship between back and front office strategies, a dimension of service operation, and operational performance of the petroleum companies studied. These findings are in tandem with Migdadi (2011) who found that e-banking allowed front office employees to do back-office jobs and helped in reduction of the customers waiting time – across the four different clusters that had been grouped together thus enhancing operational performance of commercial banks.

Secondly, the study aimed at evaluating the relationship between process and workflow and operational performance of petroleum companies. The study found a positive ( $\beta = 0.230$ ) and a significant ( $p = 0.019$ ) relationship between organizational processes and workflow, and operational performance of the firms. Effective implementation of convenient processes and workflow ensures greater operational performance. The findings laud previous findings by Reijers, et. al (2016) which found that implementation of a workflow management system can substantially increase production outcomes and overall operational performance of an organization. In a service operation, a workflow management system would shorten the time required for processing orders, reduce the lead time for service delivery and enable the organization to achieve high customer satisfaction through advanced service offerings.

Thirdly, the study aimed to evaluate the relationship between information systems, another construct of service operation strategies, and operational performance of petroleum companies. From the findings, there exists a positive and significant relationship between organizational information system frameworks and operational performance ( $\beta = 0.589$ ,  $p = 0.000$ ). The study established that improvement in information system frameworks causes a positive change in operational performance. In comparison with findings from previous studies, there is similarity between the current findings and Ravichandran et al (2005) who also found that in line with the resource-based-perspective, IS resources are immutable and valuable in generating a positive effect on organizational performance.

The final construct of service operation strategies considered in this study was customer participation. The study aimed at evaluating the relationship between customer participation and operational performance in petroleum firms. According to the findings, and as displayed by the regression model, there is a positive linear relationship between customer participation and operational performance. Further, the study revealed that although effective implementation of customer participation strategies has a positive influence on operational performance, the impact might be insignificant ( $\beta = 0.041$ ;  $p = 0.478$ ). These findings contradict a previous study by Mustak, Jaakkola and Halinen (2013) who noted that effective customer participation needs to be manifested through consideration of customers as partial employees, internal marketing customers being taken as partial employees, customers' commitment, communicating role expectations, and varying service design configurations. The findings from their study suggest that customer participation in a firm's operations strategy contributes to productive labour because it helps in modifying consumer behaviour so that services can be offered in a more economical and efficient manner. The direct effect on operational performance may however be insignificant in the short term.

Based on the regression model adopted, the study established that the four dimensions of service operation strategies identified have a joint positive and strong correlation with operational performance. ( $R = 0.879$ ). Similarly, the study found that customer participation, process and workflow, information systems, as well as back and front office strategies accounts for 77.2% ( $R^2 = 0.772$ ) variance on the overall operational performance of petroleum companies in Kenya. Operational Performance was measured by Cost, Process Quality, Process Safety and Reliability as well as Adaptability to Change. The findings revealed that Operational Performance can greatly be improved through successful implementation of the service operation strategies studied.



## **CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents a summary of the key findings, conclusions, recommendations, and study limitations, both for policy and research implications.

### **5.2 Summary**

The findings of this study established that on average, respondents were unable to clearly define the extent to which petroleum companies have implemented measures that enhance service operations through back and front office strategies, process and workflow, information systems and customer participation. Majority of responses had a mean ranging between 3.00 and 3.50 meaning there was indecisiveness among the respondents regarding the extent to which measures of service operation strategies have been achieved in the organizations of interest. The standard deviations attached to each item of measure was less than 1 implying a small deviation in responses.

Based on the inferential statistics, the study concluded that there is a positive and significant relationship between back and front office strategies and operational performance. The results therefore imply that with proper implementation of appropriate back and front office strategies, there will be an appreciable improvement in operational performance of the major petroleum companies' operating in Kenya. Furthermore, the study established that in attempts to facilitate back and front office operations, the companies have initiated continuous improvement plans and are able to identify the high net-worth of customers which helps in customer segmentation strategies. These companies always enter the emerging operational

challenges into a database to ensure there is follow-up and ultimately a solution at the end thus improving service operations and operational performance in general.

Regarding processes and workflow, the study findings imply that effectiveness of process and workflow significantly enhances operational performance. The study also established that petroleum firms, while attempting to improve processes and workflow, have ensured that organizational processes are adaptive to change and that all organizational procedures are documented. The petroleum companies have also put-up measures that ensure the lead-time for service delivery is short by automating processes for effective flow of operations.

Regarding information systems, the study found that petroleum firms have already implemented a substantial number of information systems that connect the companies with its suppliers as well as an IS framework that facilitates good customer relationship management.

Regarding customer participation, the study revealed that there is a positive linear relationship between customer participation and operational performance within the organizations of interest. As part of their customer participation implementation process, the petroleum companies studied allow employees to perform tasks on behalf of employees and get involved in product innovation processes.

Overall, there is a strong combined correlation between the dimensions of service operation studied and operational performance. Firms intending to improve their performance may do so by adopting appropriate implementation frameworks for all the dimensions identified in this study.

### **5.3 Conclusion**

To this end, it is evident that the dimensions of service operation strategies can positively influence operational performance if properly implemented. Specifically, the back and front

office strategies have a significant positive relationship with operational performance. In this regard, advancement in these strategies improves operational performance.

Process and workflow strategies also have a capacity of facilitating service operations which in turn enhances operational performance. From the findings, it can be concluded that organizations are adaptive to change, and that all process are documented for easy retrieval by newly recruited employees. Additionally, effective processes and workflow has ensured that the lead-time for service delivery is short due to automation of majority of processes.

The study established that if properly operationalized, information systems can be used to significantly improve operational performance. The management of petroleum firms may focus on adoption of Information Systems that link the firm with different stakeholders including suppliers, to improve their performance. Firms can also leverage on existing information systems to improve customer relationship management, scheduling of tasks within the companies, and overall automation of services for improved performance.

Further, the study concludes that customer participation may not have a great impact on operational performance despite having a positive relationship with operational performance. Although petroleum companies allowed customers to take up some of the tasks on behalf of employees, as well as being involved in product innovation processes, the impact on operational performance was still insignificant. Further studies may be required in this area to better understand how customer participation frameworks may be implemented to achieve improved operational performance in Kenya's petroleum industry.

#### **5.4 Recommendations**

Regarding the findings, I propose the following recommendations. First, petroleum firms should improve back and front office service operation techniques to ensure there is more

impact on operational performance. There should be more a more aggressive approach to development of continuous improvement plans. Market segmentation should be done to enable the companies to identify high net-worth customers. Strict enforcement of recording procedures to ensure emerging problems are always recorded into the database for follow-up and for development of solutions.

Secondly, I recommend that processes and workflow should be improved to ensure there is convenient flow of operations within the companies. More resources should be devoted towards the laydown of frameworks that will facilitate establishment of efficient processes and workflow. Convenient processes will ensure the organizations have sufficient capacity to respond to external changes. Documentation and automation of various processes may also be improved for greater operational performance.

Thirdly, I recommend that the management of petroleum companies should consider information systems as critical resources for improved operational performance. Among the dimensions of service operation strategies studied, information systems play the most significant role in facilitating effective service operations which leads to enhanced operational performance. Information systems ensure a firm/organization is linked to its stakeholders such as suppliers and also facilitates good customer relationship management. As a result, appropriate frameworks for information systems should be established for improved service offerings.

With the insignificant relationship between customer participation and operational performance, I recommend that the management of petroleum companies should research on the best approaches to get customers involved in service operations to ensure there is significant impact on operational performance. More resources may be committed to further

research in this area to establish how best this dimension may influence operational performance in organizations.

### **5.5 Limitations**

The study was limited by a few factors. First, the study was confined within petroleum companies in Kenya. Secondly, the study was limited to a descriptive research design and not any other design methodology. Thirdly, the study was limited to primary data as the main source of data for analysis and interpretation. However, the limitations registered were not sufficient to hinder the achievement of the study objective. Given the outcome of the study, the study findings may be considered as credible enough for generalization.

### **5.6 Suggestions for Future Studies**

The current study aimed to evaluate the relationship between service operation strategies and operational performance of operational performance. Since the study was limited to four constructs of service operation strategies, future studies should be done with more dimensions of service operation strategies. Future studies should also consider using other design methodologies other than descriptive research design using different sources of data.

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## APPENDICES

### Appendix I : Letter to the Respondents



**UNIVERSITY OF NAIROBI**  
**FACULTY OF BUSINESS AND MANAGEMENT SCIENCES**  
**OFFICE OF THE DEAN**

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Our Ref: **D61/6743/2017**

April 8, 2022

#### **TO WHOM IT MAY CONCERN**

#### **RE: INTRODUCTION LETTER: KEVIN NYAMONGO ONDARI**

The above named is a registered Master of Business Administration Student at the Faculty of Business and Management Sciences, University of Nairobi. He is conducting research on "***Service Operation Strategies and Operational Performance of Petroleum Companies in Kenya.***"

The purpose of this letter is to kindly request you to assist and facilitate the student with necessary data which forms an integral part of the Project.

The information and data required is needed for academic purposes only and will be treated in **Strict-Confidence**.

A handwritten signature in blue ink, appearing to read 'James Njihia'.

Your co-operation will be highly appreciated.

**PROF. JAMES NJIHIA**  
**ASSOCIATE DEAN,**  
**FACULTY OF BUSINESS AND MANAGEMENT**

JN/fmi

## Appendix II: Questionnaire

1. Name of the Petroleum company (Optional).....

2. What level of management are you?

- |                      |     |                     |     |
|----------------------|-----|---------------------|-----|
| a) Top Level         | ( ) | b) Middle level     | ( ) |
| c) Supervisory Level | ( ) | d) Others (Specify) | ( ) |

3. For how long have you worked in the Petroleum Industry?

- |                      |     |                       |     |
|----------------------|-----|-----------------------|-----|
| a) Less than 5 years | ( ) | b) 6 -10 years        | ( ) |
| c) 11 – 15 years     | ( ) | d) More than 15 years | ( ) |

4. How many employees are there in your organization?

- |                  |     |              |     |
|------------------|-----|--------------|-----|
| a) Less than 100 | ( ) | b) 101 – 500 | ( ) |
| c) 501 - 1000    | ( ) | d) Over 1001 | ( ) |

5. For how long has the petroleum company operated in Kenya?

- |                      |     |                  |     |
|----------------------|-----|------------------|-----|
| a) Less than 10 year | ( ) | b) 11 – 15       | ( ) |
| c) 16 - 20           | ( ) | d) Over 21 Years | ( ) |

## SECTION B: Service Operation Strategy

Below are different service operation strategies employed in your organization. Please indicate the extent to which you agree or disagree with the statement by ticking (√) in the box that is the most appropriate according to your view. In reference to these, a five-point Likert-scale is used:

**Key;** 5) Strongly agree; 4) Agree; 3) Neutral; 2) Disagree; 1) Strongly disagree

Statement	1	2	3	4	5
<b>a) Back and Front-Office Strategies</b>					
We receive notice of inefficiency and customer complaints					
We enter the nature of the problem into the database					
We design solutions to the identified problem					
We initiate continuous improvement plans					
We are able to identify the high net worth customers					
We discuss the nature and cost of services					
We process in-coming contracts and assign an employee to follow through					
We have established operational control for each customer					
<b>b) Processes and Workflow</b>					
The organization lead-time for delivery is short					
We mostly achieve on-time deliveries					
The organization process is adaptive to change					
All procedures are documented					
All procedures are automated					
<b>c) Information Systems</b>					
Customers have been trained on the usage of the information technology infrastructure used by the organization					
The organization employs information systems in material					

requirements planning					
The information system adopted links the company with its suppliers					
The company's IS helps in facilitating customer relationship management					
The customer queuing system is managed automatically					
The organization uses its information system to actively participate in the social media					
The scheduling of tasks within the organization is facilitated courtesy of the existing management information system					
<b>Customer Participation</b>					
Our customers participate in the development of core product offerings					
Customers are involved in product innovation process					
Our customers are engaged in information sharing					
Our customers are engaged in self-service operations					
Customers behave in a proper manner even under system failure					
Our customers support each other					
Customers perform tasks for the organization's employees					

### SECTION C: Effect of Service Operation Strategy on Operational Performance

Below are the dimensions used to measure the operational performance of your organization. Please rate the performance of your organization by indicating how well or how poorly you think your organization is doing with regards to each dimension. Tick (√) in the box that is the most appropriate according to your view. Responses for the above questions range on a five-point Likert Scale (1= Very Poor, 2=Poor, 3=Average, 4 = Good, 5=Very Good)

Dimension	Statement	1	2	3	4	5
Cost	Price Competitiveness using discounts on prices of products offered by the organization					
	Reduction in Costs incurred during service delivery e.g transportation costs					

	Savings realised from adoption of operation strategies					
	Increase in the profits declared by the organization					
	Increase in Turnover					
<b>Service Quality</b>	Responsiveness to Customer needs					
	Time taken to complete each customer order					
	Staff interaction with customers during service delivery					
	Customer Satisfaction based on Customer feedback					
	Referrals of new customers to the organization					
<b>Process Safety and Reliability</b>	Employee awareness on safety hazards in the workplace					
	Overall safety of the workplace measured using the number of Safe working days per year					
	Regular Emergency Drills, at least 1 per quarter					
	Mandatory Safety Training for all staff, at least once annually					
	Safety measured using the number of Spillage incidents reported per year					
<b>Adaptability to Change</b>	Adoption of policy regulations in the petroleum industry					
	Adoption of new technologies for improved service delivery					
	Adaptation to varying customer needs in the market					
	Staff training on emerging trends in customer service					
	Implementation of energy efficiency measures					
	Innovations within the organization that are aimed at improving service delivery.					

**THANK YOU SO MUCH**

### Appendix III: Major Petroleum Companies in Kenya

No	Oil Marketing Company	Market Share (%)
1	Vivo	18.7
2	Total	16.6
3	Kenol Kobil	14.9
4	OLA Energy	7.10
5	N.O.C.K	5.90
6	Gulf Energy	4.70
7	Petro Energy	3.6
8	BE Energy	2.7
9	GAPCO	2.3
10	HASS	2.0
11	GALANA	1.7
12	ENGEN KENYA	1.4
13	TOSHA ENERGY	1.3
14	DELBIT	1.2
15	ONE PETROLEUM	1.1
16	TEXAS	1.1
17	ORYX	1.0
18	RH DEVANI	1.0

**Source: Energy and Petroleum Regulatory Authority (2020)**