

**OUTSOURCED LOGISTICS AND OPERATIONAL  
PERFORMANCE OF MANUFACTURING SMES IN KENYA**

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**A RESEARCH SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF  
MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF  
BUSINESS, UNIVERSITY OF NAIROBI**

**DECEMBER, 2018**

## **DECLARATION**

I declare that this research is my original work and has never been submitted to any other university for assessment or award of a degree.

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## **ACKNOWLEDGEMENT**

My foremost appreciation is to the Almighty God. He has been good to me. My cup overflows.

I am also thankful for the support of my supervisor Dr. Wainaina Githii. I now hold better insight and understanding of the subject matter and beyond. This also goes for the entire Department of Management Science with a special mention to Dr. Magutu, Josephine Wanza and Mr. Michael Chirchir for making my coursework a wholesome experience. You have inspired my journey into being a scholar.

I further acknowledge the support of my friends and colleagues John Mwangi, Teve Kunjo and Wilson Nyaga. I appreciate them for the motivation and material support that led to the completion of my coursework and project.

A special acknowledgement also goes to my classmates (MBA - 2015/2016) for the friendships and networks outside class that kept learning fun. I specifically recognize Faith Njeri and Purity Kimotho for their constant support.

And lastly many thanks to my love, Abigael. She has been a much needed listening ear.

## **DEDICATION**

This research is dedicated to my parents Mr. & Mrs. Waithaka the strongest believers I know. For the constant prayers and motivation.

I also dedicate this work to my siblings Martha, Anne and Daniel. I honor you for having my back through the years.

You all deserve to win in life.

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## **ABBREVIATIONS AND ACRONYMS**

<b>ANOVA</b>	-	Analysis of Variance
<b>EU</b>	-	European Commission
<b>FTL</b>	-	Full Truck Load
<b>GDP</b>	-	Gross Domestic product
<b>KAM</b>	-	Kenya Association of Manufacturers
<b>KCC</b>	-	Kenya Creameries Corporation
<b>KNBS</b>	-	Kenya National Bureau of Statistics
<b>LTL</b>	-	Less Truck Load
<b>RBV</b>	-	Resource-Based View
<b>SME</b>	-	Small and Medium Enterprise
<b>SPSS</b>	-	Statistical Packages for Social Sciences
<b>TCA</b>	-	Transaction Cost Approach

## **ABSTRACT**

Outsourced logistics have become a popular approach for improving operational performance in the manufacturing sector. The ideal scenario is that a firm will focus only on its core activities and contract non-core activities to third parties thereby improving operational performance. This research aimed to find out the effect of outsourced logistics on operational performance among Kenya's manufacturing SMEs. The study used a survey design. Survey questionnaires were issued to 50 firms in Industrial Area, Nairobi through purposive sampling. A response rate of 82% was achieved from the 'drop and pick' method used to administer questionnaires. This primary data was analysed using Statistical Packages for Social Sciences (SPSS) software. The data was presented in the form of tables and figures. The findings revealed that SMEs in Kenya's manufacturing sector have low adoption rates for logistics outsourcing practices, which include transport and distribution, inventory management, packaging activities, warehousing activities and information management services. This is except for information management services, which are outsourced at a high level. There is also high variation on the extent to which each practice is outsourced by the different firms. The study also established no significant relationship between outsourced logistics and operational performance of manufacturing SMEs in Kenya. This leads to a recommendation against fully outsourcing logistics as a way of improving level of innovation and operational flexibility. Further, the study recommends SMEs should take the alternative approach of improving both core and non-core activities internally.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

The nature of change unfolding in various business sectors is that technological innovation and the integration caused by this new technology is affecting business relationships and structures. More effective business models have thus emerged and increased levels of competition in business (Hill, Schilling & Jones, 2016). As a result, firms are adjusting strategies based on these changes in the environment. In this view of external changes, businesses need to reassess operational strategies by putting emphasis on their proposed value to the target markets. In the manufacturing industry, effective operational processes are important in driving value proposition to the market. This case extends to the manufacturing sector in Kenya.

The government of Kenya has set an agenda to spark industrial transformation and creating jobs. Kenya Association of Manufacturers (KAM) indicates the short-term goal of this agenda has been to increase the share that manufacturing contributes to Kenya's Gross Domestic Product (GDP) to at least 15% by year 2022 (KAM, 2018). This figure was 9.2% in year 2016. Among the set pillars for this transformation is government supported Small and Medium Scale enterprises (SMEs) development. This underscores the imperative nature of manufacturing SMEs in economic growth in Kenya. To enhance the part SMEs play in the economy, the government has set to protect infant manufacturing firms and incentivize them towards competitiveness (KAM, 2018).

SMEs constitute 98% of all businesses in Kenya and their performance has ripple effects on the GDP and on economic factors such as innovation, quality of consumer goods and

services and employment. The challenges that hamper the growth of these SMEs as per KAM (2016) range from product development, access to markets, access to affordable finance, management of supply chains and raw material procurement, quality standards, certifications, access to technology, patenting to the business regulations. Kenya National Bureau of Statistics (KNBS) found that at least 500,000 SMEs fail in Kenya due to operational challenges (KNBS, 2016). The challenges are mainly related to operational performance. Improving the operational performance of manufacturing SMEs will therefore support their role in the economy and enhance their relevance to the stakeholders who depend on SMEs' growth.

One emergent approach for SMEs in Kenya to improve operational performance is through logistics outsourcing, a practice where firms contract non-core activities to external parties. Research theory suggests that effective logistics management practices including outsourcing improve the performance of a firm (Yang, 2014). This is through improvements in the operations because of logistics outsourcing benefits such as cost reduction, flexibility, risk reduction and innovativeness. In Kenya, a study by Muiruri (2015) found that logistics outsourcing improves operational performance for the case of large manufacturers but the case for SMEs in manufacturing remains unexplored.

### **1.1.1 Logistics Outsourcing**

Logistics outsourcing entails contracting logistics activities that a firm would otherwise perform in-house to external parties (Farahani, 2011). A firm will outsource logistics in circumstances where the resultant benefit is higher than when it performs the same service in-house or when there is no internal capacity to perform such a service. The ideal scenario

is that an organisation will focus on its core activities by outsourcing logistics non-core activities. Other reasons for outsourcing logistics are to access expertise and knowledge, upgrade information systems and processes, improve productivity, cope with rapid growth and limited resources (van Damme & van Amstel, 1996), and reduce costs (Yang, 2014; Adebambo, Omolola & Victor, 2015).

In the Kenyan context, logistics functions that are commonly outsourced include transportation and distribution, information management, material handling, facility location, and clearing and forwarding (Mulama, 2012; Kyusya, 2015; Githinji, 2012; Mugo, 2013). Outsourcing is common for large companies and public institutions and as the studies above in the local context show, the common incentives for outsourcing are cost reduction, gaining capacity, leveraging infrastructural support, and competitiveness. The knowledge among SMEs on outsourcing is not as extensive as for large firms (Wausi, Mgendi, & Ngwenyi, 2013). This is due to ignorance about the benefits of outsourcing or the lack of service providers directly matching the needs of SMEs (Solakivi et al, 2013).

### **1.1.2 Operational Performance**

Operational performance is the degree to which an organization effectively utilizes its capacity to achieve desired goals. Literature on metrics of operational performance indicates the vastness of measures. Common elements measured include cost reduction, profitability, growth, level of innovation, and the level of operational flexibility. Studies done in the Kenya's logistics outsourcing context have measured productivity, cost reduction, profitability, customer satisfaction, capacity utilization, adaptability, agility,

lead time, and timeliness (Mulama, 2012; Kyusya, 2015; Muiruri, 2015). Studies on innovation and flexibility (volume and mix flexibilities) are therefore not extensive.

Operational flexibility is the measure of how quickly a firm can adapt when faced with changing circumstances (Espino-Rodríguez and Padrón-Robaina, 2004). The changing business environment requires flexible business structures that support performance optimization regardless of the operational environment. Study on how to improve operational flexibility is therefore relevant to the contemporary business environment. On the other hand, Lee, Cha and Park (2016) found that technology-exploration, results in more novel products from SMEs. Through outsourcing, the Italian SMEs in manufacturing improved their processes, achieved innovation and this reflected in their final outputs and their competitiveness. A research focus on how manufacturing SMEs can achieve innovation in the contemporary market contexts is therefore crucial. This study through inquiry of the relationship between outsourced logistics and operational performance achieves this objective.

### **1.1.3 Logistics Outsourcing and Operational Performance**

Mwichigi (2015) found that 75% increase in profitability of Kenya Power between year 2008 and 2009 was due to outsourcing. The organisation reached more customers and improved on its operational cost reduction schemes through contracting third parties to perform services related to connection to the national power grid. This relationship between operational performance and outsourcing is in many empirical researches. Nazeri (2012) established that outsourcing contributes positively to cost reduction, level of quality, extent of flexibility, financial performance, and also non-financial performance. In Nazeri's

(2012) study, cost reduction was the most significant contribution of outsourcing. Outsourcing in production processes achieves reduced customer order lead times, reduces the manufacturing cycle time, increases the on-time delivery rates and leads to effective usage of operational equipment (Kenyon, Meixell, & Westfall, 2016).

Companies also use outsourcing of activities as a way of accessing superior technology and production systems (Mohiuddin & Su, 2013). Such practices assists in keeping up with market and industry trends and competitive pressures. Another reason is to gain access to new markets through larger distribution channels. This is the concept behind offshoring outsourcing to locations with advantages in terms of manufacturing capacity (Schmeisser, 2013; Mohiuddin & Su 2013). Outsourcing also allows spreading of risk by investing only in core activities (Espino-Rodríguez & Padrón-Robaina, 2004). This leaves a firm with capacity to adapt to changes in the market and focus on improving service and technology.

#### **1.1.4 Manufacturing SMEs in Kenya**

Kenya's manufacturing industry is second in Africa in terms of the volume of exports resulting from manufacturing activities (Were, 2016). This trend has been persistent over the past five years but there is an expectation that the growth rate will reduce. Statistics by Kenya Association of Manufacturers (KAM) show a reduction in growth rate from 3.3% to 1.9% in the period between the final quarter of year 2015 and final quarter of year 2016 (Obulutsa, 2017).

Soft drinks, liquor, cement, sugar and galvanized sheets are some of the sectors that have contributed significantly to the performance of manufacturing according to year 2016 report by KNBS. The manufacturing sector accounts for a 14% stake input to the GDP



(KNBS, 2017). Further, manufacturing is the second largest source of export products after agricultural produce. Manufacturing constitutes about 10.88% of Kenya's exports (KPMG, 2016).

Kenya leads in industrialization in the East African region. The contribution of manufacturing to the GDP -14%- is therefore less than expected. This is however explained by dominance of agricultural outputs which require little processing. The government has however invested in increasing the contribution of manufacturing to the GDP and to exports (Deloitte, 2017). In year 2016, there was an allocation of Kshs. 7.7 billion to the development of industrial parks for leather, textile, to reduce the complexity of conducting business, to modernize Rivatex and modernize Kenya Creameries Corporation (KCC). This is besides the efforts to establish three special economic zones that are tax-favored and structured to improve industrial productivity (Deloitte, 2017).

The government invests in research and development, training and direct capital injections to enable growth in the informal manufacturing sector (World Bank, 2015). These investments are also part of the Kenya Vision 2030. Under this vision, the government intends to drive manufacturing from taking a share of 7% of the regional market to a share of 15%. Technology is one aspect that the government seeks to leverage the performance of the industrial economy by providing five industrial parks for SMEs to incubate, grow and compete against manufactured imports from other countries.

Empowered SMEs are therefore in the larger government's vision 2030 framework. This is particularly on manufacturing SMEs as indicated by the statistics above. In terms of the nature of SMEs, there is lack of comprehensive data. However, based on Were (2016), Nyagah (2013), reports by KAM and KNBS, most the SMEs in manufacturing are located

in Nairobi. KAM specifically points out the 80% of these SMEs are in Nairobi. Those dealing with furniture also make the majority and have a significant contribution in manufacturing than others as per Were's (2016) study. In this study, an SME will be considered as a business with staff ranging between 11 and 99 and a revenue cap below KES 250 million (KNBS, 2016; European Commission, 2017).

## **1.2 Research Problem**

Currently, market dynamics including effects of globalization and technology have made competition tougher than before. Firms are therefore facing pressure to change and fit in the new business environments by creating unique value propositions at sustainable costs. In the manufacturing industry, the operations determine the final value that the firm passes to the customer. Therefore, operational excellence and innovativeness are important for short-term competitiveness and long-term sustainability.

Contrastingly, outsourcing has remained a sustainable solution in business practice. Firms are focusing more on their core processes while non-core processes are relegated to third party logistics companies. Using the perspectives offered by Kyusya (2015) and Tezuka (2011) on outsourced logistics and firm operational performance, it is evident that outsourced logistic is imperative to firms. Businesses, by outsourcing logistics, gain access to better technology, new markets, reduce costs, are flexible, increase productivity, and allow for effective allocation of limited resources.

Based on direction from empirical literature, the discussion on outsourcing logistics and its positive effect on operational performance applies to SMEs in Kenya in the manufacturing industry. SMEs play an essential part in the Kenyan economy. Statistics by KNBS (2017),

KAM (2018), Were (2016) and Deloitte (2017) show that the manufacturing sector in Kenya has grown but continues to experience challenges. The sector has grown by a 4% margin value to GDP between year 2000 and year 2016. The target is to contribute at least 15% to the GDP by year 2022. SMEs are expected to contribute to this growth since they make up 98% of the businesses in Kenya. The perspective of the Kenyan manufacturing sector is that of a developing country (Voeten, 2015). This implies that approaches that are more robust will positively change performance in the manufacturing sector. The Kenya Vision 2030 plan shows efforts from the government to attain this through the investment in training and education, industrial parks, and special economic zones among other activities. According to KAM (2018), the government plans to incentivize manufacturing SMEs in Kenya towards achieving short-terms national economic goals the long-term Vision 2030 plan. This creates a gap on the need to understand how performance of manufacturing SMEs can be effectively improved.

Additionally, the efforts to improve the larger manufacturing sector place manufacturing SMEs in line with emergent opportunities for growth. However, there is an expectation that these firms will encounter competition from both domestic and international manufacturers (KAM, 2018). Further, in order to be sustainable, manufacturing SMEs will need robust strategies to driver their manufacturing activities. These firms therefore need reformulation of strategies on costs versus value addition. This entails changing to efficient systems of operations, which reduce wastage, costs and improve productivity. The overall benefit is low prices and better value to the consumer. Furthermore, it is important to note that such pressure to perform comes at a time when there is difficulty in SME's access to credit facilities (Payaro & Papa, 2017).

Basing on the state of SMEs outlined above, particularly the need for efficiency in a very competitive market, it is necessary to assess ways that such firms can improve operational performance. This study thus fills this research gap by establishing the effect of outsourced logistics on operational performance.

### **1.3 Research Objectives**

The following are the objectives of this research:

- i. To establish the logistics outsourcing practices of manufacturing SMEs in Kenya.
- ii. To find out the effect of outsourcing logistics activities on operational performance of SMEs in Kenya's manufacturing sector.

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

The benefits of this research accrue to all the stakeholders that support the growth and performance of SMEs in Kenya. These include the entrepreneurs, private sector investors, government, international institutions, communities and shareholders. This list of beneficiaries include the institutions that are tasked with improving the manufacturing sector in Kenya. Therefore, the findings in this research will offer value to parties interested in solving economic issues by empowering SMEs in Kenya.

A benefit to entrepreneurs is the new information on performance improvement. This is considering that among the challenges facing stakeholders in the local manufacturing sectors is the lack of comprehensive information and statistics and overall knowledge among players in the informal sector. While this study will not offer multi-faceted information on the nature of the sector, it will add information available on the ways to

driver performance and growth to manufacturing SMEs. This information will include effective logistics outsourcing practices that entrepreneurs can apply in future.

The government will also benefit from this study since it plays a lead role in empowering SMEs through laws and policy frameworks. Currently, manufacturing is a major pillar towards achievement of vision 2030 and thus information on how manufacturing SMEs can be assisted towards better performance is critical. As such, deductions from this study can be used for specific government-based action strategies in manufacturing and SME performance improvement.

This research will also improve on the current literature on logistics outsourcing and operational performance. The extant literature on outsourcing and firm performance in different study contexts is extensive. The unique addition by this research is a narrowed focus to specific functions under logistics outsourcing and specific measures of operational performance. The logistics functions under study are packaging, warehousing, inventory management, and transport and distribution. The attributes of performance under study are level of innovation and operational flexibility. The aspect of innovation as a measure of performance in logistics outsourcing has not been extensively explored. Further, given the focus on Kenyan manufacturing SMEs, the study also mirrors existing literature against a new sectoral focus.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter reviews literature on outsourced logistics and firm operational performance. The chapter explores the scholarly overview of concepts of outsourced logistics and operational performance, theories of outsourcing relevant to the research, and the effect of outsourced logistics on operational performance. By reviewing literature, the chapter also identifies the gap in research and establishes a conceptual framework.

### **2.2 Theoretical Framework**

This research uses the transaction cost approach (TCA), core competencies and resource-based view (RBV) as the guiding theoretical frameworks for understanding the logistics outsourcing practices.

#### **2.2.1 Transaction Cost Approach**

Under the transaction cost approach, organizations are viewed as economic actors that use the most efficient approaches for transactions. The model is used to analyse and select contracts from service suppliers which are often complex. In logistics outsourcing, Ivanaj and Franzil (2006) identify three perspectives to analyse transaction cost economics; specificity of assets, uncertainty, and frequency. Asset specificity measures site assets, human skill assets, physical assets and dedicated assets. These measures are imperative in logistics because they assess the possibility that such assets could apply to alternative uses without compromising their productive value. Uncertainty of transactions results when the environment, both internal and external, does not support stability in building contracts,

enforcing them and claiming the benefits. Such uncertainty limits the extent to which a firm can outsource a process. Frequency, the third perspective, refers to the repetitiveness of transactions. In recurring transactions, the element of economies of scale applies where the involved parties should find the lowest costs of performing the engagement. In non-frequent transactions, the focus should be on non-costly transactions. Assessing asset specificity alongside frequency and uncertainty of operational process makes it possible to determine the cost of decisions related to logistics outsourcing.

### **2.2.2 Resource-Based Theory**

Olavarrieta & Ellinger (1997) argue that firms can be perceived as bundles of resources. The RBV theory bases on the fact that resources can differ between organisations (Olavarrieta & Ellinger, 1997). These authors use Porter's model on resource bases of a firm to explain how businesses operating in a similar industry and market location can have differing performance. A company can possess three dimensions of resources; input resources, assets, and capabilities. Input resources are elements such as forklifts, warehouse racking, and raw skills. Assets include capital investments, patents, and codified knowledge. Assets accumulate over time and align to frequent and repetitive operations. Capabilities, according to Olavarrieta and Ellinger (1997) include complex combinations of human expertise, knowledge and assets that allow the firm to co-ordinate its activities in a more effective way than its competitors do. The principle of the RBV theory is that the firm with access to an exclusive resource will perform better.

### **2.2.3 Core Competencies Theory**

Core competencies refers to the combination of knowledge, resources and other capabilities that a firm can deploy accurately and which therefore form the functions that the business can execute better than other firms (Vaxevanou & Konstantopoulos, 2015). In order to determine the core competencies Xu (2009) recommends a test for the extent to which an activity can be imitated by competitors, the benefit of the activity to a product and how a customer perceives this benefit and potential the activity gives the firm to access a wide variety of markets. When an activity scores highly on these measures then it qualifies as a core activity and must be performed internally.

The core competence theory implies there are activities that a firm performs better in-house due to its competencies while there are activities that perform well through contracting third party who perform such activities as part of their core competencies. Ivanaj and Franzil (2006), in view of outsourcing logistics and firm capabilities, note that the common practice is that firms will avoid outsourcing their core competencies to avoid leaking valuable trade secrets to competitors or other industry players; instead, firms will outsource activities that are not primary to their operations.

### **2.3 Logistics Outsourcing**

Logistics outsourcing is the act of contracting out logistics processes that a firm otherwise performance in-house to external parties (Farahani, 2011). The logistics functions outsourced are based on the main logistics functions; inventory control, information, material handling and storage, order processing, logistical packaging, warehousing and transportation. This study focuses on transport and distribution, warehousing, inventory



management and logistical packaging. These are the commonly outsourced logistics functions in Kenya based on previous studies (Mulama, 2012; Kyusya, 2015; Githinji, 2012; Mugo, 2013).

Bardi and Tracey (1991) found that transportation is a strategic function and can be leveraged for competitive advantage. 3PLs specialized in transport and distribution connect sections of the mode under a transport system and freight operations. They can therefore optimize the transport function. Caputo, Fratocchi and Pelagagge (2005) found that transport expenditure could reduce with appropriate decisions of motor freights. Instead of using less truck load (LTL) mode, goods headed to the same geographic location can be pooled together at a pool distribution facility hence ferried as full truck loads (FTL). Other options include aggregation where small shipments from the same origin to the same destination are released as one shipment instead of separate one. In addition, shipment consolidation can be used to combine LTL with FTL in case where FTL is not at capacity and the LTL is a stopover on course to the final FTL destination (Parsa, Rossetti & Zhang, 2017).

Warehousing and inventory management involves storage, inspection and receiving, sortation and accumulation, packing and shipping of raw materials and finished goods (Ramaa, Subramanya & Rangaswamy, 2012). These are among other similar activities. Notably, technology integration is significant in how warehouses add value to firms. On the other hand, packaging in logistics involves creating and implementing a coordinated packaging system that ensures goods are safe and secure for both transport and storage (Palsson & Hellstrom, 2016). Other needs for packaging in logistics include handling, distribution, retail, final use, reuse and disposal. Packaging serves an important function

since size, cubic utilization and number of packages that can be handled at the same time affect the efficiency material and product handling.

## **2.4 Operational Performance**

There are several measures of operational performance such as cost, profitability, growth etc. The measures adopted by this research are the level of innovation (Lee et al., 2016), and the level of operational flexibility (Bernardo & Mohamed, 1992; Peláez-Ibarrondo & Ruiz-Mercader, 2001). Few studies focus on these two measures and due to their critical nature in performance of manufacturing firms justifies the need to fill this gap.

Measuring innovation is considered difficult due to its non-linear, fuzzy, and ill-defined perception (Saunila & Saunila, 2017). Despite the challenge in measuring innovation, literature shows alternatives to developing scales of measure. Saunila and Saunila (2017) who categorise measures as inputs, process and outputs. Input measures consist of resources committed towards innovation such as equipment and funds. Process measures that indicate how innovation occurs such as time and quality. Output measures show direct results of innovation activities such as new products.

In order to remain responsive and adapt to changes, a company needs to assess its flexibility. In reference to measuring flexibility of SMEs, Peláez-Ibarrondo and Ruiz-Mercader (2001) recommend the combination of volume flexibility and mix flexibility (operational flexibility). Their framework divides flexibility into volume flexibility (changes in volume), mix flexibility (variety of products), expansion flexibility, modification flexibility (heterogeneity), and new product flexibility (variety of new

products). These metrics as per Peláez-Ibarrondo and Ruiz-Mercader (2001) cover all the flexibility facets of the firm.

## **2.5 Empirical Literature on Logistics Outsourcing and Operational Performance.**

Commonly outsourced logistics activities are transportation and distribution, logistical packaging and warehousing and inventory management. Outsourcing these activities affects the performance of the firm, which includes operational flexibility and level of innovation.

Jarzemskis (2006) found that a large portion of firms outsource transportation and warehousing activities in a comparative analysis of small, medium and large enterprises. The findings on this study showed that about 40% of small businesses and 60% of medium sized businesses purchase transport services. This supports the view on prevalence of outsourcing for transport. Among the effect on performance as per Jarzemskis (2006) is increase operational flexibility. Szuster (2010) while investigating 189 manufacturing companies also found that outsourcing for transport increases operational flexibility. The specific findings show that a majority of the firms used services of 3PLs for transport in order to avoid tying up resources in assets.

Sheikh and Rana (2012) concluded that outsourcing has a direct effect on the extent of resources committed to a particular process. Similarly, Ivanaj and Franzil (2006) established that outsourcing affects the level of capital invested within the firm. The achieved operational flexibility is necessitated by dynamic market conditions. The dimensions of flexibility investigated in primary research mostly include scale flexibility,

that is, the level of output that meets customer demand and service and product flexibility, which entails the range of products and services that a firm offers to the market (Rom, 2006).

According to Adebambo et al., (2015), manufacturers outsource warehousing activities alongside transportation services. This is because 3PLs package these as a single service among other offerings. Payaro and Papa (2017) found that most SMEs are not aware of their logistical costs including warehousing costs and consequently fail to realize the benefits associated with such services. Moreover, the study indicated that a large percentage of SMEs are not convinced that outsourcing has a direct impact on their competitiveness.

Solakivi et al., (2013) investigated the motives and cost effects of outsourcing in trading and manufacturing companies in Finland. The authors found that among other aspects, outsourcing for warehousing and inventory management led to higher operational efficiency. The findings also showed that among the investigated firms, value-added services such as warehousing and in particular, inventory management was low since the firms operated under low standards of outsourcing with ignorance on the benefits related to optimisation of outsourcing decisions.

Evangelista (2002) found that ICT is an integral part of the international transport business since it allows integration of shipping lines and channels. The same ICT benefits accrue in the area of warehousing and inventory management. It is however important to note that these IT related benefits are tied to the main services outsourced i.e. warehousing and inventory management. This is because Kyusya (2015) found that outsourcing for ICT services directly had no significant relationship with operational performance.

On logistical packaging, Lady-Pokoloandrewson. (2016) found that firms outsourced for design of packaging materials, packaging of finished goods and packaging compliance. Effective packaging serves to protect the product in storage and transport and can support information needs. In addition, correct design of packaging reduces the complexity in delivery. Hellström and Nilsson (2011), on the other hand, links packaging in logistics, innovation and competitive advantage. The argument is that legal frameworks, consumption trends, distribution trends and business dynamics of the logistics industry influence packaging. The analysis of innovation and packaging in logistics by Hellström and Nilsson (2011) shows that it is possible to achieve operational flexibility for partners; distributors, wholesalers, retailers and transporters with innovative packages.

In regard to regional state of logistics outsourcing, developed countries such as the US, Canada and EU region, logistics outsourcing practices are advanced in nature with third party service providers seeking to add relationship value to customers (Min 2013; Roy and Landry 2018; Wilding and Juriado, 2004). Contrastingly studies by Hofer, Knemeyer and Murphy (2015) in Brazil and Arroyo, Gaytan and de Boer (2006) in Mexico, show that developing countries have previously adopted logistics outsourcing at its basic level. For example, Arroyo, Gaytan and de Boer (2006) explain that though Mexican firms used logistics outsourcing to be focused on core activities and improve services delivery, firms in the US and Europe focus on tactical, integrated functions and cost reduction. In developing countries, logistics outsourcing can be used to improve productivity of small firms albeit the restrictions due to market conditions. There are few third party logistics providers and their packages are tailored for large institutions hence limiting the access of

SMEs to outsourcing and the scope of outsourcing that can be achieved (Arroyo, Gaytan and de Boer, 2006).

In summary, having outsourcing service providers take part in operational activities within the value allows for innovation through accessing the capacity, technology and information networks of third parties. In some cases, such activities occur across borders under the concept of offshoring. In such decisions, as per a review by Schmeisser (2013) a firm will opt for host countries with superior technology and wider frameworks of knowledge on the concept. The same author argues that in resource-intensive industries, firms will tend to seek input from other parties in form of resource efficiency.

## **2.6 Research Gap**

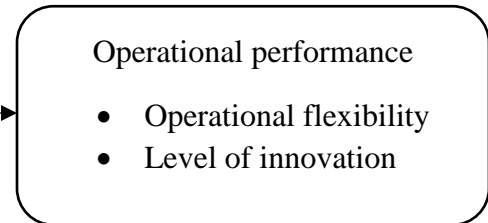
Literature on logistics outsourcing is extensive. In particular, researchers have focused largely on the impact of outsourced logistics on supply chain networks. However, a gap exists as to the establishment of the effect of outsourced logistics and the operational performance of a firm. This relates to the direct relationship between outsourcing for packaging, transport and distribution, warehousing, and inventory management activities and their effect on operational performance. It also entails the effect of outsourcing of these functions on the level of innovation within a firm. There is thus need for research in this area noting the significance of innovation and operational flexibility in performance of manufacturing firms. Moreover, literature regarding the logistics outsourcing and manufacturing SMEs in Kenya is scarce and thus hence the need for empirical investigation in this area. Notably, researches in this area in the context of Kenya are on service firms, individual manufacturing firms and large manufacturing firms.

## 2.7 Conceptual Model

### Independent variables



### Dependent variables



**Figure 2.1: Conceptual Model**

**Author (2018).**

## **CHAPTER THREE: METHODOLOGY**

### **3.1 Introduction**

This chapter discusses the methodology. The chapter contains a discussion on research design, population and sampling, data collection procedures and data analysis techniques.

### **3.2 Research Design**

Survey design was used to determine the state of logistics outsourcing and the effect of outsourced logistics activities and the operational performance of SMEs in Kenya's manufacturing sector. Survey design as per Mark, Philip and Adrian (2009) involves collection of primary data from a sample. In this study, the survey design used a sample of the SMEs in Kenya's manufacturing sector to depict the relationship between outsourced logistics and operational performance.

### **3.3 Population and Sampling**

The population of the study was SMEs in Kenya's manufacturing sector. KNBS (2016) estimates there are approximately 5,000 licensed manufacturing SMEs in Kenya. Manufacturing SMEs were qualified based on the definition of SMEs by both KAM and KNBS: a small enterprise has a staff population of between 10 and 49; a medium enterprise has a staff population of between 50 and 99. Manufacturing SMEs selected also had an annual turnover of less than KES 250 million. Purposive sampling method was used based on the researcher's judgement that the selected firms would offer the necessary data to address the study objectives. Therefore, the characteristics of the firms including their accessibility and willingness to share information related to the study was considered. A



sample of 50 manufacturing SMEs was used. The standard statistical normal distribution is 30 hence validating this sample size.

### **3.4 Data Collection**

Survey questionnaires were used in the collection of primary data. Data was collected from Industrial Area, Nairobi due to the high concentration of manufacturing firms in the region. Questionnaires were issued to personnel in charge of operations and other individuals heading operational processes in the firms. Questions used the Likert scale coding system to facilitate generation of numerical data. The questionnaire had four sections that clearly marked and separated. Section A captured personal data on individual respondents. Section B captured data on the companies' profiles. Section C captured data on logistics outsourcing practices and section D captured data on operational performance.

### **3.5 Data Analysis**

Filled-in questionnaires were inspected for errors, omissions and completeness. The data was tabulated systematically for the purpose of analysis. IBM SPSS version 20 (statistical packages for social sciences) software was used to conduct analysis. In line with the descriptive nature of the study, descriptive statistics were used in analysing the data. Measures of central tendency including frequency, mean and standard deviation were tested. In addition, correlation analysis and regression analysis were used to test the relationship between outsourced logistics outsourcing and operational performance.

To establish this relationship, the study used the following regression equation:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where;

$Y$  – Operational performance (Dependent variable)

$X_1$ - $X_4$  – Independent variables

$X_1$  – Logistical packaging practices

$X_2$  – Transportation and distribution activities

$X_3$  – Warehousing activities

$X_4$  – Inventory management activities

$X_5$  – Information management systems

$\beta_0$  – Constant term

$\beta_1$ -  $\beta_5$  – Coefficients of regression

$\varepsilon$  – The error term

## CHAPTER FOUR: FINDINGS AND ANALYSIS

### 4.1 Introduction

This chapter contains a presentation and analysis of the data collected. In total, 50 questionnaires were administered and among these 41 were returned in completed form. Completed questionnaires were edited for errors and omissions before being keyed into the statistical tool used in the analysis – SPSS version 20. The findings are offered in the sections below.

### 4.2 Response Rate

In total, 50 questionnaires were administered to different manufacturing SMEs in Nairobi. 41 filled in questionnaires were collected thereafter. This constituted a response rate of 82%. Rubin and Barbie (2016) state that a response rate of at least 50% is needed to report findings of a research without suffering a non-response bias.

**Table 4.1: Response Rate**

<b>Response rate</b>	<b>Frequency</b>	<b>Percentage</b>
Filled-in and returned	41	82
Not returned	9	18
<b>Total</b>	<b>50</b>	<b>100</b>

**Source: Research Data (2018)**

## 4.3 Data Presentation

### 4.3.1 Data Validity

A study pre-test was done on manufacturing SMEs in Kenya with the aim of ensuring the data collected by the questionnaires was fit for the study. The researcher issued five questionnaires and checked on the interpretations of the questions by the respondents in each firm. The questionnaires were checked and corrected of grammatical and wording errors that could lead to ambiguity and misinterpretations.

### 4.3.2 Data Reliability

The internal consistency of the questionnaires was checked using the Cronbach's Alpha test. A co-efficient of  $\alpha \geq 0.7$  was considered the desired requirement and  $\alpha \geq 0.6$  the minimum requirement.

**Table 4.2: Cronbach's Alpha Test**

Cronbach's Alpha	Cronbach's Alpha based on the Standardized items	N of Items
0.619	0.614	23

**Source: Research Data (2018)**

The reliability test gave a co-efficient of 0.619 indicating internal consistency of the likert scale in the research instrument. Although the desired level for  $\alpha$  was 0.7, the researcher found this could not be achieved since the sample of 41 responses affected the alpha output given the N value was 23. A larger sample is bound to generate a higher Alpha value. In

addition, Johnson and Christensen (2008) note that the common 0.7 value for Cronbach Alpha is arbitrary as it can vary based on contexts as in the case of this research.

#### **4.4 Personal and Company Profile**

General information regarding the respondents and the firms they represented was studied. Data collected was on position held in the firm, years worked in the firm, regional coverage of the firm, sub-sector of manufacturing, years of firm existence and number of employees.

##### **4.4.1 Job Position in the Company**

Job positions the respondents held in their respective firms were analysed and findings are as in table 4.3 below.

**Table 4.3: Job Position Held**

<b>Job Position</b>	<b>Frequency</b>	<b>Percent</b>
Director	3	7.3
Manager	12	29.3
Supervisor	18	43.9
Others	8	19.5
Total	41	100

**Source: Research Data (2018)**

On job positions, the results indicated that 43.9% of the respondents were supervisors, 29.27% were managers, 19.51% were in the ‘Others’ category while 7.32% were directors of the companies. This distribution of respondents showed that they were in a position to understand logistics outsourcing practices investigated by the researcher about the firms.

#### 4.4.2 Years Worked in the Firm

Data analysed on the number of years respondents had been with their respective firms is shown in table 4.4 below.

**Table 4.4: Years Worked in the Firm**

<b>Years of work</b>	<b>Frequency</b>	<b>Percent</b>
Less than 1	2	4.9
1-5 years	14	34.1
5-10 years	9	22.0
Over 10 years	16	39.0
Total	41	100

**Source: Research Data (2018)**

The results indicated that 4.9% of the employees worked less than one year in their respective company, 34.1% worked for between 1-5 years, 22% worked for 5-10 years while 39% worked for more than 10 years. The larger proportion of respondents had been working with their respective firms for a period of more than a year. This implies that respondent had significant work experience to understand the logistics issues of the companies and hence provide accurate information to the researcher.

#### 4.4.3 Regional Coverage of the Firm

Regional coverage was analysed among the measures of firm characteristics. The findings are presented in table 4.5 below.

**Table 4.5: Regional Coverage of the Firm**

<b>Regional Coverage</b>	<b>Frequency</b>	<b>Percent</b>
Domestic	33	80.5
International	8	19.5
Total	41	100

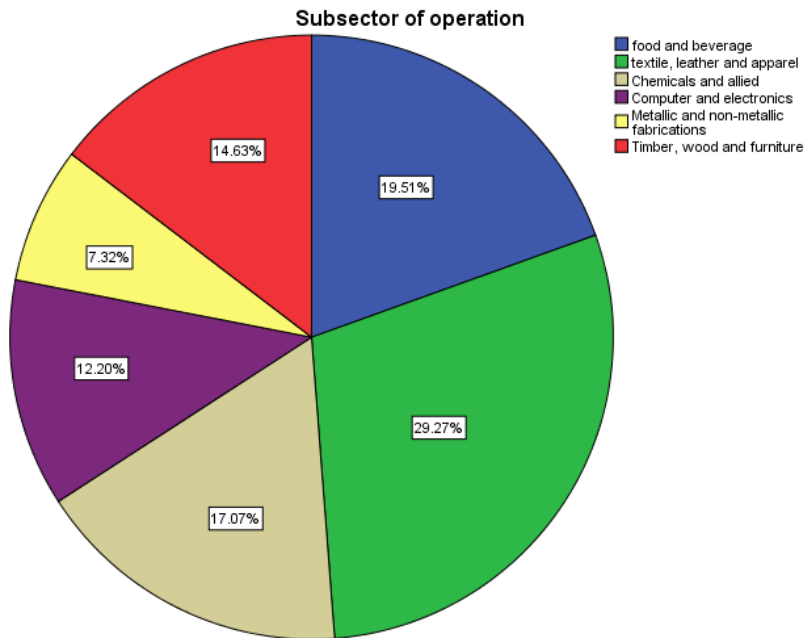
**Source: Research Data (2018)**

The analysed data points out that 80.5% of the firms have their operations within Kenya's borders. This implies that manufacturing SMEs have little penetration in the international markets. The reason could be due KAM (2016) range of reasons for SME failures which include poor product development, lack of access to markets, lack of access to affordable finance, poor management of supply chains and raw material procurement, issues with quality standards, lack of certifications, lack of access to technology, poor patenting practices and unfavorable business regulations.

#### **4.4.4 Sub-sector of Manufacturing Operations**

Data was collected on the sub-sector of manufacturing for each firm. This indicates the concentration of manufacturing SMEs in Kenya on a sectoral basis. Figure 4.1 below shows the results.

**Figure 4.1: Sub-sector of Manufacturing**



**Source: Research Data (2018)**

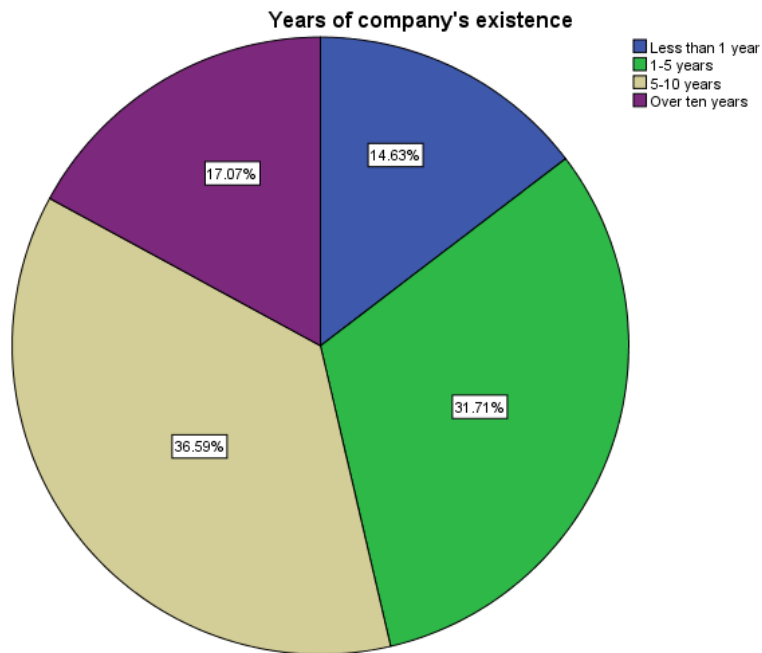
Sub-sector results revealed that 29.27% of the firms were in textile, leather and apparel, 19.51% were in food and beverage, 17.07% were in chemicals and allied products, 14.63% were in timber, wood and furniture, 12.20% were in computer and electronics while 7.32% were in metal and non-metallic fabrications. These results imply that the questionnaires were fairly distributed across firms in the different sub-sectors in manufacturing. The findings are representative of issues on logistics outsourcing across the SME manufacturing industry in Kenya. Notably, Were (2016) found that SMEs dealing with furniture and timber works are the majority in Kenya.



#### 4.4.5 Years of Firm Operation

The study inquired on the number of years each firm included in the study has been in operation. The findings on firm's years of operation are in figure 4.2 below.

**Figure 4.2: Years in Operation**



**Source: Research Data (2018)**

Analysis on years of operation revealed that a large portion of the firms in the study – 36.59% - were in operation for between 5 and 10 years. Similarly, 31.71% of the firms were in operation for a period between 1 and 5 years. For the period of less than 1 year, these were 14.63% of the firms and for the period beyond 10 years were 17.07% of the firms. Although most of the firms were in operation for the periods between 1 and 10 years, the representation of each period of operation is fair and thus avoiding bias.

#### 4.4.6 Number of Employees

The number of employees on each of the firms was studied. Table 4.6 below shows the results.

**Table 4.6: Number of Employees**

<b>Number of Employees</b>	<b>Frequency</b>	<b>Percent</b>
10-49	30	73.2
50-99	11	26.8
Total	41	100

**Source: Research Data (2018)**

Findings on number of employees show that the larger proportion of firms – 63.4% - had between 10 to 49 years and 26.8% of the firms had between 50 and 99 employees. The study focuses on SMEs and thus the distribution of firms according to number of employees is representative of all firm categories as defined by the research and thus avoids bias. The findings also show that a larger portion of SMEs in Kenya have between 10 and 49 employees.

#### 4.4.7 Organization of Logistics

The organization of logistics within the manufacturing SMEs in Kenya was studied. Table 4.7 below shows the results on existence of a logistics department.

**Table 4.7: Organization of Logistics**

<b>Logistics Department</b>	<b>Frequency</b>	<b>Percent</b>
Yes	16	39
No	25	61
Total	41	100

**Source: Research Data (2018)**

Most of the firms had a logistics department. The results show that 61% of the firms had a logistics department. The follow-up question on a 'No' response was on how logistics activities are coordinated. 29.3% noted they completely outsource to third parties, 24.4% noted they create temporary teams to hand logistical needs while 4% noted that logistical activities are tied to other firm activities. The study also sought to understand how often logistics were outsourced. 61% of the firms outsourced on a weekly basis, 22% outsourced on a daily basis and 17% outsourced on a monthly basis. Payaro & Papa (2017) and Arroyo, Gaytan and de Boer (2006) established that SMEs have unique logistics outsourcing needs that are not well served by 3PL companies

## **4.5 Logistics Outsourcing Practices**

This section contains an analysis of the extent to which manufacturing SMEs in Kenya outsourced logistics practices.

### **4.5.1 Outsourcing Packaging Activities**

Data on outsourced packaging activities was analysed as part of determining the extent of outsourcing packaging activities. Table 4.8 below shows the results.

**Table 4.8: Outsourcing Packaging Practices**

<b>Packaging practices</b>	<b>Mean</b>	<b>Std. Deviation</b>
Designing packaging materials	2.56	1.26
Packaging finished goods	2.58	1.30
Packaging compliance services	2.03	1.35
<b>Aggregate</b>	<b>2.39</b>	<b>1.30</b>

**Source: Research Data (2018)**

An aggregate of mean of ( $M=2.39$ ,  $SD=1.30$ ) was found and this indicates that manufacturing SMEs outsource packaging practices to a small extent. The firms outsource designing of packaging materials ( $M=2.56$ ,  $SD=1.23$ ), packaging finished goods ( $M=2.58$ ,  $SD=1.30$ ) and packing compliance services ( $M=2.03$ ,  $SD=1.35$ ). All the packaging services were outsourced to a moderate extent except packaging compliance services with a mean of 2.03 hence falling under the ‘to a small extent’ category. Further analysis showed that 97.6% of the firms did not outsource any other packaging practices. One firm outsourced bulk packaging of products beyond the practices included in the questionnaire.

These findings thus point out that manufacturing SMEs barely outsource any packaging practices. The effect on such practices on their operational performance would thus be minimal. A previous study by Hellström and Nilsson (2011) found that outsourced packaging practices enable the possibility to achieve operational flexibility for partners; distributors, wholesalers, retailers and transporters with innovative packages. However, the study by Hellström and Nilsson (2011) focused on a large firm – IKEA. This can explain the difference in conclusion compared to this study. Hsiao et. al, (2010) also found that firms outsource packaging as part of logistics outsourcing and this increases flexibility,

reduced lead times and increase services levels. Hsiao et. al's (2010) study focused on the food processing industry. This study shows that their findings are not replicated in the case of manufacturing SMEs.

#### 4.5.2 Outsourcing Transport and Distribution Services

The extent to which manufacturing SMEs outsource transport and distribution services was studied. Table 4.9 below shows the results.

**Table 4.9: Outsourcing Transport and Distribution**

<b>Transport and Distribution Services</b>	<b>Mean</b>	<b>Std. Deviation</b>
Fleet, route and network optimization	2.41	1.39
Inbound transport	3.19	1.29
Outbound transport	3.12	1.29
International freight management	2.32	1.17
<b>Aggregate</b>	<b>2.76</b>	<b>1.29</b>

**Source: Research Data (2018)**

An aggregate mean of ( $M=2.76$ ,  $SD=1.29$ ) was obtained indicating that SMEs in manufacturing outsource transport and distribution services to a moderate extent. Inbound transport had the highest rating for transport and distribution outsourcing with a mean of ( $M=3.19$ ,  $SD=1.29$ ). Outbound transport also had a rating of ( $M=3.12$ ,  $SD=1.29$ ) showing it was outsourced at the same frequency level as inbound transport. However, all the dimensions of transport and distribution were moderately outsourced including fleet, route and network optimization ( $M=2.41$ ,  $SD=1.39$ ) and international freight management ( $M=2.32$ ,  $SD=1.17$ ). A larger percentage of the firms (97.6%) did not outsource any other

transport and distribution services. The other services outsourced were special transportation services.

These findings indicate that manufacturing SMEs do not outsource transportation and distribution to a significant extent. The findings align with the deductions by Szuster (2010) that firms outsource transport and distribution services. However, in this case this may not lead to operational efficiency as found by Szuster (2010). In addition, these findings are in line with results by Jarzemskis (2006) that a large number of SMEs outsource for transportation only when it is beyond their capacity to invest resources in in-house transport departments or when the manufacturers does not deliver supplies.

### 4.5.3 Outsourcing Warehousing Activities

The study sought to understand the practice of outsourcing warehousing activities among manufacturing SMEs in Kenya. The results are as indicated in table 4.10 below.

**Table 4.10: Outsourcing Warehousing Activities**

<b>Warehousing activities</b>	<b>Mean</b>	<b>Std. Deviation</b>
Storage of raw materials	2.43	1.22
Storage of finished goods	3.26	1.22
Specialized storage	2.43	1.32
Order dispatch is from outsourced warehouses	2.60	1.18
Order processing is from outsourced warehouses	1.90	1.02
<b>Aggregate</b>	<b>2.53</b>	<b>1.19</b>

**Source: Research Data (2018)**

The manufacturing SMEs outsource warehousing activities to a moderate extent as shown by the aggregate mean of ( $M=2.53$ ,  $SD=1.19$ ). The storage of finished goods had the highest rating under mean ( $M=3.26$ ,  $SD=1.22$ ) followed by order dispatch from outsourced warehouses ( $M=2.60$ ,  $SD=1.18$ ). These two attributes were outsourced to a moderate extent. Storage of raw materials ( $M=2.43$ ,  $SD=1.22$ ), specialized storage ( $M=2.43$ ,  $SD=1.32$ ) and order processing from outsourced warehouses were outsourced to a small extent. The findings also indicate that the firms did not outsource any other warehousing and inventory management services.

The mean results show low adoption of warehousing and inventory management practices by SMEs. In a previous study, Payaro and Papa (2017) found that SMEs tend to ignore the costs associated with logistics and therefore do not outsource due to lacking awareness of the benefits. These observations align with the results of moderate and low extent outsourcing in this study. Solakivi et al., (2013) found indicate that firms outsource warehousing activities and this leads to higher operational efficiency. However, their focus was on large manufacturing and trading companies in Finland. The findings above on manufacturing SMEs contradict the results by Solakivi et. al., (2013).

#### **4.5.4 Outsourcing Inventory Management**

Data on inventory management outsourcing was analysed to determine the extent to which manufacturing SMEs outsource inventory management activities. The findings are show in table 4.11 below.

**Table 4.11: Outsourcing Inventory Management Activities**

<b>Inventory management activities</b>	<b>Mean</b>	<b>Std. Deviation</b>
Inventory tracking	2.26	1.00
Order management	2.14	1.06
Volume and mix management	2.36	0.99
<b>Aggregate</b>	<b>2.25</b>	<b>1.02</b>

**Source: Research Data (2018)**

The study found out that manufacturing SMEs outsource inventory management activities to a small extent as indicated by the aggregate mean of ( $M=2.25$ ,  $SD=1.00$ ). Inventory tracking ( $M=2.26$ ,  $SD=1.06$ ), Order management ( $M=2.14$ ,  $SD=1.06$ ) and volume and mix management ( $M=2.36$ ,  $SD=0.99$ ) are outsourced by these firms to a small extent. Further analysis indicated that the firms did not outsource any other inventory management activities.

The findings show that manufacturing SMEs have very low adoption rates for outsourcing inventory management activities. In a previous study, Solakivi et al., (2013) found that warehousing and inventory management are often bundled together when outsourcing and their overall result is increased efficiency. Solakivi et. al., (2013) also found lack of knowledge among SMEs on importance of outsourcing, which reduces the extent to which such activities are outsourced as evidenced in the results in this section.



### 4.5.5 Outsourcing Information Management Services

To understand the extent to which manufacturing SMEs outsourced information management services, data on information management services outsourcing was analysed. Table 4.12 below shows the findings.

**Table 4.12: Outsourcing Information Management Services**

<b>Information Management Services</b>	<b>Mean</b>	<b>Std. Deviation</b>
ERP Systems	3.92	0.88
Payment management system	4.00	0.81
IT installation and maintenance services	3.92	1.03
<b>Aggregate</b>	<b>3.95</b>	<b>0.91</b>

**Source: Research Data (2018)**

The study found that information management services have were outsourced to a large extent as shown by the aggregate mean of ( $M=3.95$ ,  $SD=0.91$ ). ERP systems ( $M=3.92$ ,  $SD=0.88$ ), payment management system ( $M=4.00$ ,  $SD=0.81$ ) and IT installation and maintenance services ( $M=3.92$ ,  $SD=1.03$ ) are all outsourced to a large extent. In addition, the results indicate that there were no other information management services that were outsourced by the firms.

In summary, the mean results indicate that manufacturing SMEs have significantly adopted outsourcing of information management services. These findings are in line with results by Kyusya (2015) who found that ICT services outsourced alongside other logistics functions contributed to operational efficiency. However, the contribution of information management services to performance of manufacturing SMEs can be limited since Kyusa

(2015) found this effect on performance to be a cumulative weight of all logistics outsourced. As the findings on outsourcing practices in this section 4.5 shows, only information management is outsourced at a significant level by manufacturing SMEs.

#### 4.5.6 Summary of Variable Means

Table 4.13 below shows the summary of the means of means of the dimensions above used to understand logistics outsourcing.

**Table 4.13: Summary of Variable Means**

<b>Variable</b>	<b>Mean</b>
Packaging activities	2.39
Transport and Distribution	2.76
Warehousing activities	2.53
Inventory Management	2.25
Information management services	3.95
<b>Aggregate</b>	<b>2.78</b>

**Source: Research Data (2018)**

The findings in table 4.13 indicate that Information Services are the most outsourced ( $M = 3.95$ ), followed by Transport and Distribution ( $M = 2.76$ ), followed by Warehousing Activities ( $M = 2.53$ ), followed by Packaging Activities ( $M = 2.39$ ) and the least outsourced services are under Inventory Management ( $M = 2.25$ ). Manufacturing SMEs therefore, have not adopted logistics outsourcing widely. This may be explained by the findings of Solakivi et. al., (2013) and Payaro and Papa (2017). Solakivi et. al., (2013) finding that SMEs lack knowledge on outsourcing opportunities. In addition, Payaro and Papa (2017)

also found that in some cases SMEs are not aware of their logistical costs and thus may not believe that outsourcing logistics can improve their performance and competitiveness.

## 4.6 Operational Performance

The study measured the level of operational performance of manufacturing SMEs in Kenya based on level of innovation and operational flexibility. Operational performance was measure over the period of time the firms had outsourced logistics. The results are shown in table 4.14 below.

**Table 4.14: Operational Performance**

<b>Operational performance</b>	<b>Mean</b>	<b>Std. Deviation</b>
Access to better technology	2.78	1.17
Access to specialized knowledge and skill	2.80	1.16
Improved product quality	3.04	1.20
Introduction of new products	2.65	1.33
Freed resources for alternative investment	2.36	1.17
Ability to adapt to changes in the market	3.02	1.38
Shorter lead times	3.10	1.07
Increased market coverage	2.90	1.30
<b>Aggregate</b>	<b>2.83</b>	<b>1.22</b>

**Source: Research Data (2018)**

The study results indicate that manufacturing SMEs had an operational performance level of a moderate extent as indicated by the aggregate mean of ( $M=2.83$ ,  $SD=1.22$ ). The highest rate measure of operational performance under innovation was improved product

quality ( $M=3.04$ ,  $SD=1.20$ ). Better technology ( $M=2.78$ ,  $SD=1.17$ ), specialized knowledge and skills ( $M=2.80$ ,  $SD=1.16$ ) and introduction of new products ( $M=2.65$ ,  $SD=1.33$ ) had moderate performance. On operational performance under flexibility, short lead times was rated the highest ( $M=3.10$ ,  $SD=1.07$ ). The other measures of flexibilities, freed resources for alternative investment ( $M=2.36$ ,  $SD=1.17$ ), ability to adapt to market changes ( $M=3.02$ ,  $SD=1.38$ ) and increase market coverage ( $M=2.90$ ,  $SD=1.30$ ) scored moderate performance. The results therefore show that during the period of outsourcing, the performance of manufacturing SMEs was average.

#### **4.7 The Effect of Outsourced Logistics on Operational Performance**

The study performed a regression test to explain the relationship between outsourced logistics and operational performance of SMEs in Kenya's manufacturing sector. The results of the regression analysis are discussed below.

##### **4.7.1 Regression Coefficients**

The regression coefficients indicated that outsourced logistics have a weak effect on operational performance amongst manufacturing SMEs in Kenya. At a confidence level of 95%, only transport and distribution has a significant effect on operational performance with a p-value of 0.001. The high p-values for the rest of the dimensions of logistics outsourcing leads to acceptance of the null hypothesis hence the dimensions used in this research, except transport and distribution, have no reliable relationship with operational performance. The result on transport and distribution is also considered misleading due to the unreliability of the model from which it is derived. The operational performance

measures used are level of innovation and operational flexibility. Table 4.15 below shows the regression results.

**Table 4.15: Regression Coefficients**

Operational performance	Unstandardized		Standardized		
	Coefficients		Coefficients		
Model	B	Std. Error	Beta	t	(p-value) Sig
1 (Constant)	1.985	.767		2.586	.014
Packaging	-.194	.134	-.250	-1.446	.157
Transport and Distribution	.436	.126	.550	3.454	.001
Warehousing	.151	.154	.156	.978	.335
Inventory Management	-.138	.143	-.156	-.966	.340
Information Services	.010	.156	.010	.066	.974

a. Dependent Variable: Operational Performance

**Source: Research Data (2018)**

The resulting regression equation is;

$$Y = 1.985 + -0.194X_1 + 0.436X_2 + 0.151X_3 + -1.38X_4 + 0.10X_5$$

Where;

Y – Operational performance (Dependent variable),  $X_1$ - $X_5$  – Independent variables;  $X_1$  – Logistical packaging practices,  $X_2$  – Transportation and distribution activities,  $X_3$  – Warehousing activities,  $X_4$  – Inventory management activities,  $X_5$  – Information

management systems,  $\beta_0$  – Constant term,  $\beta_1$ -  $\beta_5$  – Coefficients of regression and  $\varepsilon$  – The error term

The regression equation cannot however be a reliable predictor of operational performance. Based on table 4.15 above, there is a chance that of 15.7% of packaging practices effect, 33.5% of warehousing activities effect, 34% of inventory management services effect and 97.4% of information management services effect on operational performance are due to random distribution. These percentages are higher than the acceptable significance value of 5%.

The unreliable nature of the regression results above makes these results incomparable to findings in previous studies. However, there is a general consensus from previous studies that logistics outsourcing leads to higher operational performance based on the dimensions used in this study (Ivanaj and Franzil, 2006; Hellström and Nilsson 2011; Mohiuddin and Su (2013). The studies that focused on SMEs such as that by Payaro and Papa (2017) and Solakivi et. al., (2013) found weak outsourcing practices and knowledge and among SMEs. The relationship between outsourced logistics and operational performance may thus be limited in the context of SMEs as opposed to large firms.

#### **4.7.2 Model Summary**

Table 4.16 below shows the model summary of the regression analysis.

**Table 4.16: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.526	.277	.174	.54925

a. Predictors: (Constant), Information Services, Inventory Management, Transport and Distribution, Warehousing, Packaging.

**Source: Research Data (2018)**

The study aimed to determine the relationship between outsourced logistics and the operational performance of SMEs in Kenya’s manufacturing sector. The predictors used include packaging, transport and distribution, warehousing, inventory management and information services.

The coefficient of correlation indicates existence of relationship ( $R=0.526$ ) between outsourced logistics and operational performance of manufacturing SMEs. However, this relationship is unreliable since the coefficient of determination (R-Squared) value from the study was 0.277. This means that only 27.7% of variance in operational performance of manufacturing SMEs is explained by outsourced logistics.

**4.7.3 Analysis of Variance**

An analysis of variance (ANOVA) was also done to find out the goodness of fit of the regression model.

**Table 4.17: Analysis of Variance (ANOVA)**

Model	Sum of Squares	df	Mean Square	F	Sig
1 Regression	4.049	5	0.810	2.684	0.37
Residual	10.559	35	.302		
Total	14.607	40			

a. Dependent Variable: Operational Performance

b Predictors: (Constant), Information Services, Inventory Management, Transport and Distribution, Warehousing, Packaging.

The ANOVA table above shows that the regression model had a significance level of 0.37, which is higher than 0.05 hence showing the model is not a good fit. This is similarly explained by the low variation represented by an R-Squared value of 0.277 shown table 4.16, which means that only 27.7% of change in the dependent variable is due to the independent variables. Therefore, the model is not statistically significant in making predictions on the relationship between outsourcing logistics and operational performance of manufacturing SMEs in the study.



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

### **5.1 Introduction**

This chapter contains a summary of findings, the conclusions of the study, the recommendations for stakeholders and limitations of the study. The chapter then presents areas for future research.

### **5.2 Summary of Findings**

SMEs in manufacturing in the manufacturing sector have largely domesticate their products and services as the findings point out that approximately 80% of them have domestic operations. This can be attributed to the operational challenges curtailing flexibility and expansion of SMEs in Kenya as outlined by KAM (2016). They include poor product development, lack of access to markets, lack of access to affordable finance, poor management of supply chains and raw material procurement, issues with quality standards, lack of certifications, lack of access to technology, poor patenting practices and unfavorable business regulations.

On sub-sectors analysis, the main sub-sectors of operations are textile, leather and apparel, food and drinks and chemicals and allied product with a representation of 29.27%, 19.51% and 17.07% respectively. Small and medium manufacturers thus show high focus of these operational areas. Contrastingly, Were (2016) had found that furniture manufacturers were the majority of SMEs in year 2016. These shows a possible restructuring of the industry. Further findings show a large portion of the manufacturing SMEs have been in operation

for periods between 5-10 years, employ between 10-49 individuals and approximately 61% have established logistics departments. These attributes point at considerable stability in operations.

Analysis on logistics practices shows that logistics outsourcing is not a prevalent practice in SMEs in Kenya's manufacturing sector. Descriptive statistics analysis produced an aggregate mean score of 2.78 for all variables combined, which represents a moderate level of outsourcing. Lack of knowledge on logistical costs and hence the benefits of outsourcing logistics can be attributed to the low adoption of outsourcing practices among these SMEs (Payaro & Papa, 2017; Solakivi et. al., 2013). The extent to which each practices is outsourced ranks as, information services (3.95), transportation and distribution (2.76), warehousing activities (2.53), packaging activities (2.39) and inventory management (2.25). Respondents also showed divergence of views on the extent to which these logistics practices were outsourced. Therefore, there is a considerable variation on the extent to which each practice is outsourced across the firms.

The coefficient of correlation (R) value of 0.521 indicates the presence of a positive relationship between outsourced logistics and operational performance, which could be spurious. The high p-value of 0.37 showed unreliability of the model used. Further, the p-values of the regression model indicated a high chance of operational performance being due to other dimensions not covered by the study. An analysis of variance revealed a coefficient of determination (R Squared) value of 0.277, which implies that only 27.7% of logistics outsourced explain variation of operational performance as measured by level of innovation and operational flexibility. This further discredited the model's viability in explaining this relationship.

### **5.3 Conclusion**

On logistics outsourcing practices, the study concludes that manufacturing SMEs outsource packaging, transport and distribution, warehousing, inventory management and information services. However, these firms have a very weak adoption of outsourcing logistics. Only information management services are outsourced to a large extent. The rest were outsourced at significantly low levels.

The study also concludes there is no significant relationship between outsourced logistics and operational performance in manufacturing SMEs in Kenya. A test of the regression model shows that the model in this study cannot be used to effectively predict the relationship between outsourced logistics and operational performance.

### **5.4 Recommendations**

When improving their level of innovation and operational flexibility, this study recommends that manufacturing SMEs should not consider fully outsourcing of logistics practices. Similarly, outsourcing some of the logistics services may not be effective since the weighted effect on operational performance will not be justifiable. This is due to the lack of a significant relationship between outsourced logistics – as a package – and operational performance.

The alternative approach recommended is improving operational performance internally by focusing on both core and non-core activities. Fully outsourced logistics seem to benefit large organizations more than SMEs given the comparative results from previous studies and this research.

## **5.5 Limitations of the Study**

The sample used for the study covered manufacturing SMEs in the Industrial Area region in Nairobi, Kenya and therefore did not cover firms with locations distributed all over the country. However, this was done with the knowledge that KAM indicates the location of 80% of manufacturing SMEs in Kenya to be Nairobi. The researcher faced the challenge of respondent availability and cooperation. Most of the owner and employees of manufacturing SMEs were concerned the response process would affect their schedules. Further, respondents were concerned on privacy of the information requested and the likelihood that competitors would use this information against them.

## **5.6 Areas for Future Research**

This study focused on outsourced logistics and operational performance of manufacturing SMEs. The researcher recommends that future studies explore different dimensions of operational performance against the outsourced logistics functions of manufacturing SMEs in Kenya. These include cost, revenues, profitability, lead-time, capacity, productivity etc. Future studies can explore other industries for the sake of building comparative data or specific sub-sectors of manufacturing to create in-depth data on the this sector. Such studies should also seek to establish the reason for the low adoption of logistics outsourcing by manufacturing SMEs in Kenya.

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## APPENDIX

### APPENDIX 1: QUESTIONNAIRE

#### Dear respondent

This is a survey conducted courtesy of School of Business, University of Nairobi. Kindly spare your time to answer all the questions correctly and accurately. The use of any information that you provide will only be for the purposes of this study and its handling with complete confidentiality.

**NB:** Do not write your name or personal contacts on this questionnaire.

#### SECTION A: RESPONDENTS' PROFILE

1. What is your current position in this company?
  - Director
  - Manager
  - Supervisor
  - Others
2. How long have you worked under this organization?
  - Less than one year.
  - 1-5 years
  - 5-10 years
  - Over 10 years

#### SECTION B: COMPANY PROFILE

3. What is the regional coverage of your operation?
  - Domestic
  - International
4. What is the sub-sector of your manufacturing operations?
  - Food and beverage.
  - Textile, leather and apparel
  - Chemicals and allied
  - Computer and electronics
  - Metallic and non-metallic fabrications

- Timber, wood and furniture
- Other (kindly state) .....

**5. How long has your company been in operation?**

- Less than one year.
- 1-5 years
- 5-10 years
- Over 10 years

**6. How many employees do you have?**

- Less than 10.employees
- 10-49 employees
- 50 to 99 employees

**SECTION C: LOGISTICS OUTSOURCING PRACTICES**

**7. Do you have a logistics department?**

- Yes
- No

**8. If No, how do you coordinate logistics activities?**

- They are tied to other activities in the firm
- We outsource to third parties
- We create temporary teams on a need basis.
- Other (please specify)

.....  
.....

**9. What is your frequency for logistics services outsourcing?**

- Everyday (continuous)
- Weekly
- Monthly
- Quarterly

For the tabulated questions below, please tick the appropriate box depending on the extent to which you agree or disagree with the statements.

Where: 1= Not at all; 2=To a small extent; 3=Moderate extent; 4=Large extent; 5=Completely outsourced.

**10. Outsourcing packaging activities**

	Not at all	To a small extent	Moderate extent	Large extent	Completely outsourced
Designing package material					
Packaging finished goods					
Packaging compliance services					

Are there other packaging activities that you outsource?

- Yes
- No

If yes, please list them and the extent to which you outsource them

.....

.....

**11. Outsourcing transport and distribution services**

	Not at all	To a small extent	Moderate extent	Large extent	Completely outsourced
Fleet, route and network optimization					
Inbound transport (e.g. sourcing for raw materials)					
Outbound transport (e.g. Distribution of finished goods)					
International freight management.					

Are there other transport and distribution activities that you outsource?

- Yes
- No

If yes, please list them and the extent to which you outsource them

.....

.....

**12. Outsourcing warehousing activities**

	Not at all	To a small extent	Moderate extent	Large extent	Completely outsourced
Storage of raw materials					
Storage of finished goods					
Specialized storage (e.g. cold rooms) is from outsourced warehouses					
Order dispatch is from outsourced warehouses					
Order processing is from outsourced warehouses					

Are there other warehousing activities that you outsource?

- Yes
- No

If yes, please list them and the extent to which you outsource them

.....

.....



**13. Outsourcing inventory management activities**

	Not at all	To a small extent	Moderate extent	Large extent	Completely outsourced
Inventory tracking					
Order management (receiving, processing and dispatch)					
Volume and mix management (i.e. type and amount of products to manufacture)					

Are there other inventory management activities that you outsource?

- Yes
- No

If yes, please list them and the extent to which you outsource them

.....

.....

**14. Outsourcing information management services**

	Not at all	To a small extent	Moderate extent	Large extent	Completely outsourced
ERP system					
Payment management system					
IT installation and maintenance services					

Are there other information management services that you outsource?

- Yes
- No

If yes, please list them and the extent to which you outsource them

.....

.....

**SECTION D: OPERATIONAL PERFORMANCE**

15. To what extent do you agree or disagree with these statements on operational performance of your firm over the period you have outsourced logistics activities?

Where: 1= Not at all; 2=To a small extent; 3=Moderate extent; 4=Large extent; 5=Completely outsourced.

**Level of Innovation**

Performance measures	Not at all	To a small extent	Moderate extent	Large extent	Very large extent
We have gained access to better technology					
We have gained access to specialized knowledge and skill					
We have improved the quality of our products					
We have had introduction of new products					

**Operational Flexibility**

Performance measures	Not at all	To a small extent	Moderate extent	Large extent	Very large extent
We have freed up resources for alternative investments					
We have gained on ability to adapt to changes in market conditions e.g. levels of demand, customer preferences regulations etc.					
We have shortened our lead times					
We have increased market coverage					

**The End.**