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Understanding the Effect of Subcontracting Practices among Manufacturing Firms in a Developing Economy: Lessons from Kenya

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ABSTRACT

Purpose: The current paper seeks to understand the effect of subcontracting practices among manufacturing firms in Kenya.

Methodology: In a correlational survey design of 596 firms, the paper employs Kreycie & Morgan sample tables to select a sample of 234 firms. Primary data were collected sing a structured questionnaire from the heads of procurement departments who make up the unit of analysis. Descriptive statistics and linear regressions guide analysis process.

Findings: Results indicate that subcontracting practices has a positive significant effect among manufacturing firms and accounts for 39% variance in performance (R^2 =.390, β=.625, p<.05), providing evidence that unit adoption use of the practices improves performance by 0.625 units.

Unique Contribution to Theory, Policy and Practice: Study supports knowledge in the systems theory, that subcontracting is an important sub system for alleviating firm performance. The study concludes that improvements in adoption-use of subcontracting practices improves performance in the manufacturing firms. The paper provides interesting discussions that supply chains in business firms can be agents of value creation through there sub-contracting practices, but then recognize that such efforts can only bear fruits if such firms effectively and religiously implement such practices.

Keywords: *Subcontracting Practices, Manufacturing Firms, Performance, Systems Theory*

1.0 INTRODUCTION

Manufacturing industries provide a market for raw materials, and by offering quality products at competitive prices through accessible retail outlets. Organizations dealing in manufacturing have started to incorporate the aspect of sustainable sourcing strategies in their production planning that is strategic with the aim of boosting capacity production as well as performance. This starts with the purchase of raw materials from suppliers and continues through the entire supply chain, both upstream and downstream, with the movement of information, processes, and money to the end product and ultimately to consumers (Almelhem, Buics & Süle, 2025). However, a business must leverage technology and a lot of data throughout its supply chain in order to integrate its supply chain successfully (Buyukozkan & Gocer., 2018). Businesses often implement a mapped supply chain approach to increase supply chain efficiency.

In the year 2023, the Kenya Association of Manufacturers (KAM) rolled out its Manufacturing Priority Agenda (MPA) centered around the framework "Resetting Manufacturing to Achieve Agenda 20BY30." This agenda embedded within the Kenya Manufacturing 20BY30 Strategy, presents strategic proposals aimed at transforming the sector to increase its GDP contribution from 7.2% in 2022 to 20% by 2030. If successfully implemented, this growth trajectory could generate a significant rise in employment, with direct manufacturing jobs potentially expanding from approximately 348,000 to around 980,000. A focal area within the MPA is the manufacturing s sector, a vital component of Kenya's manufacturing industry. The manufacturing industry, accounting for a substantial portion of Kenya's economy, is set to play a leading role in achieving the Agenda 20BY30 targets. Given Kenya's favorable agricultural conditions and growing domestic demand, this sector presents immense growth opportunities and is a key driver of value addition in agriculture (KAM, 2023).

Subcontracting refers to the practice where a principal contractor engages the responsibilities of another contractor to perform on behalf of a purchasing company. Zimmer et al. (2015) lists the due advantages of this practice as enabling the contractor access highly specialized equipment and expertise, reduction of costs of operations, improvement in efficiency and effectiveness of the project as well as increase in price worthiness. Beske & Seuring (2014) argues that there are three main categories of subcontracting; where the borrower cooperates with all bids, where bidders are designated to provide highly specialized equipment and services, where bidders are designated for any other reason whatsoever. In this, Hartmann and Moeller (2014) reports that purchasing firms are being held accountable for their environmental or social externalities of their suppliers, thereby positioning sustainability in supply chain management as a prominent management practices (Walker & Salt, 2012).

Empirical discussions on subcontracting in diverse contexts is not seldom. Lew, Lai, Toh, Tan & Yow (2020) study dwelled on multilayered subcontracting practices using a questionnaire survey of employees in the construction in Malaysia. This study had two specific objectives:

to determine the difficulties associated with subcontracting practices in Malaysia construction industry and in addition to that investigate the various types of subcontracting practices engaged in at the same industry. The analysis units consisted main contractors and subcontractors, given that the two parties are involved in subcontracting practices in the Malaysian construction industry, to make a sample total of 123 participants. The researchers adopted descriptive statistics involving independent t test to generate means and frequencies. According to the findings, subcontracting strategies that are adopted and used in construction firms result in subpar performance, including poor time management, subpar quality, higher costs, and longer interactions between parties.

The reviewed works on subcontracting practices and performance is not seldom in literature. Majority of the works were carried out in diverse context, e.g. the construction industry (Lew et al., 2020: multilayered subcontracting practices in the construction sector in Malaysia; Soekov & Lill, 2016; subcontracting practices on scheduling of construction works in Estonia; Adinyira, et al., 2020 the impact of risk management in subcontracting on building construction projects' performance in Ghana; Okon, 2023: Nigerian bottling businesses' performance and subcontracting practices; Mambwe et al., 2020: Zambian domestic contractors' subcontracting policy framework; Mbuvi, 2021: Nairobi City County's subcontracting practices on project execution; Salome, 2018: contract management procedures and housing project performance), ignoring manufacturing companies. In addition, the reviewed studies utilized differing designs and methodologies, such as (Lew et al., 2020: descriptive design; Soekov & Lill, 2016: narrative review methodology; Adinyira, et al., 2020: quantitative methodology), ignoring multiple & stepwise regressions and EFA and PCA. Yet some works measured subcontracting practices diversely, ignoring important subcontracting elements such as training & support, adoption- use of technology, mutual trust & cooperation, open communication (Mbuvi, 2021; Salome, 2018). Information on role of subcontracting practices on performance of manufacturing firms when all this is considered is thus not present in literature. From this backdrop, current study sought to achieve this objective.

1.2 Objective of the study

The main objective of the study was to establish the effect of the adoption of subcontracting practices on performance of manufacturing firms in a developing economy, Kenya

1.3 Hypothesis

H_{01}: Adoption of subcontracting practices has no significant effect on performance of manufacturing firms in Kenya

1.4 Conceptual framework

In order to achieve the objective of study and confirm the hypothesis set, we derived a model framework encompassing the main variables of study alongside their measures a represented in figure 1:

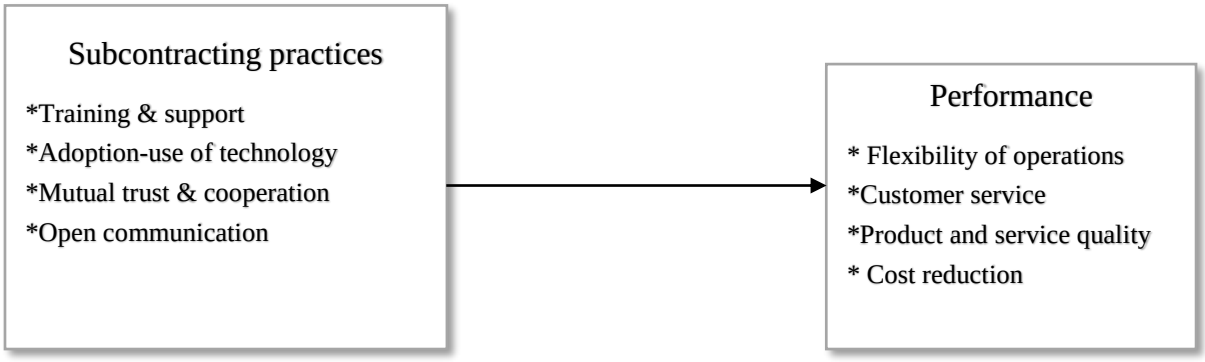

Figure 1: Model Framework of adoption of subcontracting practices on the performance of manufacturing firms in Kenya **Source: (Adopted from: Teece, Pisano & Shuen, 1997)**

The conceptual model framework of the study shows an association between subcontracting practices and performance which exhibits a cause and effect relationship. The independent variable is subcontracting practices. Aspects of subcontracting practices in place (Training & support, Adoption-use of technology, Mutual trust & cooperation, Open communication) may affect performance of manufacturing firms. With this therefore, it is expected that performance indicators (modelled here as Flexibility of operations, Customer service, Product and service quality, Cost reduction) may be achieved by manufacturing firms. Therefore, the study is composed of two main variables; independent variable (subcontracting practices) and the dependent variable (performance) as shown in the figure 1.

2.0 LITERATURE REVIEW

2.1 Systems theory of Supply Chain Management

Systems theory was first proposed by Ludwig Von. Bertalanffy in 1928. It is a widely recognized concept in contemporary management, emphasizing the view of organizations as either open or closed systems. While many approaches focus on organizations as open systems, systems theory allows for both closed and open system perspectives. Organizational tools and structures work in unexpected ways and impact the goods and services produced by a supply chain firm. Furthermore, the writers suggest that in certain contexts, the accounts of outcomes reveal the considerable impact organizations have on individual behavior. Managers and students of organizations may benefit from the knowledge and explanations of how a firm operates using the systems theory of management.

The idea has mostly been applied as a framework for organisational study and managerial behave or. Ever since the computer was first used as a tool for business, the role of computers has grown more complicated. The study by Chua (2009) however claims that the concept of connecting trading partners through the use of technologies in supply chain management enabling, such as electronic data interchange (EDI), is not new. The business environment has changed in tandem

with the revolution in business computers brought about by telecommunications advancements (Chua, 2009). The key tenets of systems theory include: holism (the whole is greater than the sum of its parts), interconnectedness of components, feedback loops, hierarchy, openness to the environment, self-regulation, adaptability, and the concept of emergent properties where a system exhibits behaviors that cannot be understood by analyzing its individual parts alone; essentially viewing systems as complex entities where all parts interact and influence each other to maintain a dynamic balance.

Vendor management inventory (VMI) systems can be used to effectively manage customers and vendors. In an effort to reduce inventory levels, VMI assigns service providers such as suppliers, producers responsibility to control the flow of goods and raw materials into an organization's supply chain (factories, warehouses or retail locations) (Saxena & Gupta, 2015). The main benefit of implementing VMI in a company's manufacturing process is that it removes the requirement for substantial storage and warehouse space for incoming goods. Van den Bogaert & Van Jaarsveld, (2022) records that VMI promotes practices of lean supply chain by reducing wastes in the production of goods and services. The systems theory of supply chain is a subsequent of the general system theory, created by scientist Ludwig Von Bertalanffy. The scientist viewed general system theory as a way to address the increasingly complex problems fa cing the world in a broader perspective. The general system theory began as a complement of the reductionist analysis, the dominant research andconceptual approach that was criticised for n eglecting to consider complexity, interconnection, and gaps. Reductionism is predicated on the idea that knowledge of the pieces can explain the whole, and that methodology based explanations of intricate aspects should be in terms of their component, smaller occurrences. The basic example of reductionism, according to general system theorists, is the identification of specimens in a laboratory test, which separates a subject from its surroundings. By examining an element, a fresh method for researching life or living systems.

In a more detailed view, Von Bertalanffy explained that the general system theory may be used to address the increasingly complex problems facing the globe. The prevailing approach to research and cognition, reductionist analysis, was challenged for neglecting to consider complexity, connectivity, and gaps. In response, general system theory emerged. The premise behind reductionism is that universal and emerging aspects, that is the way relationships and associations shape the organization of life, cannot be explained by reductionism alone which is a scientific explanation of complex parts of a bigger whole. A novel approach to thinking that enables the investigation of relationships between systems and takes into consideration the characteristics of "open systems," which engage with their surroundings (Mullins, 2005).

Systems theory is anchored on the principles of undistorted information, analysis-synthesis interdependence, and management of risks. The use of accurate and reliable information is essential for understanding systems and their components, ensuring effective management. The

analysis-synthesis interdependence method facilitates the creation of models that simulate systems, promoting efficient management and decision-making. Risk management is an integral part of systems theory, as systems must navigate the constantly changing environment and assume a particular level of risk. Additionally, systems theory recognizes the need for a scientifically profound understanding of systems, which can be achieved through the discovery of scientific systems principles. These principles serve as the foundation for a general systems theory that can be applied to various domains, including science, design, and management.

The advantages of using systems theory is that it facilitates holistic views of customers' lives, promotes comprehensive assessments, and encourages multifaceted problem-solving. Another advantage is the on interdisciplinary collaboration, facilitating solution effectiveness through different expert input. Systems theory has been observed to be limited in varied areas. Its application on "one-size-fits-all" manner to families ignoring the unique demands of every family has been viewed as a limitation in therapy. In situations where the processes in a system are similar and correlated, the notion that each activity is quasi-random could not be accurate. Furthermore, systems theory has come under fire for posing moral dilemmas in a culture that values people's rights and welfare. The critical application of systems thinking in pedagogy has also drawn criticism for failing to encourage thinking autonomy and avoid knowledge imposition. These objections draw attention to the necessity of using systems theory in a more sophisticated and situation-specific manner (Von Bertalanffy, 1968).

Systems theory permeates every aspect of our reality. It has been used in medicine and research to better understand the human body. It is used in the business sector to improve the output and productivity of companies. This is also how a business is viewed under the systems approach to management. One way to conceptualize an organization is as a group of smaller systems and subsystems that combine to form the bigger organizational system. In the business world, a system is a logical collection of resources, activities, and information. Workers who adhere to the systems approach to management are more focused on achieving the organization's overarching goal than on operational outcomes. The idea marked a substantial departure from conventional management theory, which holds that firms are readily comprehended, simple machinery. According to the systems theory of management, a firm is an individual cohesive system of interrelated parts or subsystems that work in harmony. All of the system's parts are interdependent and cannot function properly without one another. As a result, it is likely that factors that adversely affect one organizational subsystem would also adversely affect other subsystems. This could impact the system as a whole to a certain extent

An organization is portrayed by the framework as a natural ecosystem in which all of its components are interrelated. This methodology is also known as the systems approach. Although this can occur in a variety of ways, it is also true that distinct parts of a system regularly interact with one another in a contemporary organization such as a business. For instance, an organization's

human resources department is a part of a wider system, a that most likely interacts with all of its other parts. While the marketing department's interfaces can take different forms, the same idea holds true there. To coordinate hardware use, for instance, the marketing department may communicate with the IT department; to handle payroll, it may coordinate with the accounting department; and to create press releases, it may coordinate with the public relations department.

We adopt the systems theory in aid of chosen constructs in the sense that the performance of manufacturing firms in this instance is the system. The independent variable is subcontracting practice (subsystems) which support the main system (Performance) as explained by the systems theory. While there are many thoughts of knowledge, the theoretical scope of the study paper is limited to the systems theory. In this, the supply chain function or rather the procurement department is deemed as a service sub system that sources for materials on behalf of other functions (Mullins, 2005).

2.2 What is subcontracting?

In the words of Ahokangas, Haapanen, Golgeci, Arslan, Khan & Kontkanen (2022), subcontracting involves engaging an external company or individual to carry out specific tasks within a project or contract. Companies often turn to subcontracting for tasks that cannot be handled in-house. The writers list benefits for subcontracting as the opportunity to work with a company while retaining the autonomy of self-employment, providing opportunity for subcontractors to work on a huge variety of projects thus enabling them to build a broad skill sets as well as widening their experience scope among others. Despite the mentioned due benefits that subcontracting presents, Ahokangas et al., (2022) further opines that the practice may present various challenges. Firstly, contractors and subcontractors are often considered self-employed therefore they must manage their own business even while working for someone else and on other projects. Secondly, contractors and subcontractors need to have their own business insurance policy covers such that in the case of emergence of risks, the main contractor won't be liable for their insurance. Furthermore, contractors ideally are paid directly by client yet the subcontractors' payment solely depends on the contractors' cash flow. In case of tight finances; a subcontractor can face delays in getting their payments.

2.3 The empirical lens of subcontracting practices and performance in the manufacturing sector of Kenya

Subcontracting associations in business firms face numerus challenges including difficulty in monitoring and management, ineffective communication which jeopardizes smooth operations, the delve in none compliance to quality issues, but majority of empirical literature such as the reviewed works in this study paper have paid little attention on the effect of subcontracting practices on performance in the manufacturing sector of a developing economy like Kenya.

For instance, Lew et al. (2020) study dwelled on multilayered subcontracting practices using a questionnaire survey of employees in the construction in Malaysia. This study had two specific objectives: to categorize the challenges of subcontracting in Malaysia construction industry and to investigate the types of subcontracting practices engaged in at the same industry. The analysis units consisted main contractors and subcontractors, given that the two parties are involved in subcontracting practices in the Malaysian construction industry, to make a sample total of 123 participants. The researchers adopted descriptive statistics involving independent t test to generate means and frequencies. Results showed that implementing use of subcontracting systems results into poor performance, e.g. poor time management, poor quality, increased costs, and lengthened communications among parties in construction firms.

The study by Soekov & Lill (2016) looked at subcontracting practices on scheduling of construction works in Estonia. Based on a narrative review methodology, the researchers argue that sequencing construction works and scheduling them on time are important elements in guaranteeing the success of a construction project. Further, it is pointed out that due serious challenges accrue to construction work projects, especially related to the sequence of technologies adopted, the order of technology adopted and flexibility of the construction project to dynamicity. The writers also initially argue that planning construction works beforehand is important when the stakeholders are considering entering in contractor- subcontractor relationships. Such arrangement needs to consider various prerequisites, mostly the nature, challenges and changes to the construction projects to enable correct planning.

Adinyira, Agyekum, Danku, Addison & Kukah (2020) investigated role of sub-contracting risk management on the performance construction projects of the building industry in Ghana. The study used a quantitative methodology approach to confirm five hypotheses: subcontracting financial risks has an impact on performance, subcontracting resources risks has an impact on performance, subcontracting technical risks has an impact on performance, subcontracting management risks has an impact on performance and subcontracting relationship risks has an impact on performance. The views of the study entailed obtained data from the heads of works of 3 assemblies in Ghana, Metropolitan, Assemblies and District using a structured questionnaire. In the analysis of data, confirmatory factor analysis (CFA) guided in structural equation modelling (SEM) was used employed. Results showed that four sub-contracting risk management practices, that is financial risks, resources risks, technical risks, management risks has a positive significant effect on performance of building construction projects in terms of quality. However, managing relationship risks was found to have a negative influence.

Okon (2023) in a Nigerian case carried out a study on the relationship between subcontracting practices and the performance of bottling companies. Through an exploratory design, 1500 staff of Nigeria bottling company in cities of Lagos and Ajegunle made up the target population. Writer engaged the view of managers, technical staff and clericals as analysis units to collect data. The

Krejci and Morgan sample table was employed to arrive at a sample of 205 participants who were selected purposively. In addition, primary data was obtained by a structured questionnaire to inform the study. In testing the hypothesis derived, chi square statistical test was adopted. Results of the study confirmed that subcontracting practices in Lagos, Ajegunle and associated franchised outlets is related to productivity, profitability and efficiency of the Nigeria bottling company. The writer implored Nigeria government to evolve measures meant to bottle out obstacles for small suppliers.

Discussions in Mambwe, Mwanaumo, Phiri and Chabota (2020) centered on sub-contracting policy framework for local contractors in Zambia. The writers argued that Zambia's construction industry as like many developing and underdeveloped nations shows heterogeneity in the allocation and award of works between foreign and local service provider contractors. Embedded in a mixed methods research design, the study was informed by an objective to explore the regulatory niches of Zambia's construction industry and suggest pitfalls of the 20% subcontracting requirement policy. Both interviews schedules and questionnaire were measuring instruments in collecting primary data from 40 projects flagged off in Zambia between the years 2012 and 2015. The target respondents were made up of managers of projects, clients of the projects and sub-contractors. In the analysis of collected data, descriptive statistics with the aid of Microsoft excel spreadsheets and SPP were used. Results showed that there are major challenges in the 20% subcontracting policy i.e. lack of subcontractor early involvement in procurement processes, poor guidelines on the policy implementation, obstacles in growing local contractor capacity among others.

In Kenya, research on subcontracting and performance has not been ignored. For instance, Mbuvi (2021) work was based on informal sub-contracting practices on performance of projects in Nairobi city county, specifically exploring level of health and safety necessities, investigate level of compliance of applicable acts and regulations and to examine relationship between the existing challenge of informal subcontractors and performance of construction projects. In a mixed method of both descriptive quantitative and qualitative research designs, the study targeted project managers, contractors and sub-contractors as analysis units. In the analysis of data, ANOVA (analysis of variance), correlation and content analyses were used. The results showed that the building construction industry in Nairobi city county adopted labor contractors because of flexibility, the specialist contractors mostly used nominated contractors due to the need for labor intensive. In addition, there was weak enforcement of occupation safety and health act (OSHA) by 27.4% of contractors who had safety requirement and a paltry only 2% who implemented it.

Salome (2018) studied contract management practices and the performance of housing projects in Nairobi, Kenya with 4 key objectives. These were to determine the effects of sub- contracting practices, contractor prequalification practices, regulation practices, contractor- supervision practices, there bearing on housing construction practices performance. Through a descriptive

design, the units of analysis consisted 66 participants made up managers and team members, from which a sample of 66 final respondents were chosen through a census technique. A structured questionnaire having both open ended and closed ended questions was chosen to collect field primary data from participants stratified according to the projects done. Multiple regression and Pearson correlation analysis were adopted in the analysis of data. The results indicated that subcontractors underperform in projects due to difficult work environments, the main reason for sub-contracting is to tap into skills and that supervision is important in preventing accidents.

As can be seen in the reviewed works, discussions on subcontracting practices and performance is not seldom in literature. From the review, majority of the works were carried out in diverse context, e.g. the construction industry (Lewet al., 2020: multilayered subcontracting practices in the construction sector in Malaysia; Soekov & Lill, 2016: subcontracting practices on scheduling of construction works in Estonia; Adinyira, et al., 2020: role of sub-contracting risk management and the building construction projects performance in Ghana; Okon, 2023: subcontracting practices and the performance of bottling companies in Nigeria; Mambwe et al., 2020: sub-contracting framework guidelines for contractors in Zambia; Mbuvi, 2021: sub-contracting practices and project performance of Nairobi County government; Salome, 2018: contract management practices and the performance of housing projects in Nairobi) ignoring the idealization of manufacturing firms. In addition, the reviewed studies utilized differing designs and methodologies, such as (Lew et al., 2020: descriptive design; Soekov & Lill, 2016: narrative review methodology; Adinyira, et al., 2020: quantitative methodology), ignoring correlational design. Yet some works measured subcontracting practices diversely, ignoring important subcontracting elements such as training & support, adoption-use of technology, mutual trust & cooperation, open communication (Mbuvi, 2021; Salome, 2018). Information on role of subcontracting practices on performance of manufacturing firms when all this is considered is thus not present in literature. From this backdrop, current study sought to achieve this objective.

3.0 METHODOLOGY AND DESIGN

We based our study in a quantitative paradigm following the lens of positivism. According to Ramanadhan et al. (2021), this paradigm is based on numerical measurements, statistical analysis and impartial estimation of relationships among idealized constructs. It is based on the believe that a researcher must maintain an objective stance in empirical observation of phenomena under investigation. In the same vein, the researcher employed a positivism philosophy situated in the quantitative paradigm. The positivism philosophy is a research approach that emphasizes objectivity, measurement, and the use of quantitative methods (Rehman & Alharthi, 2016). It is based on the belief that reality is objective and can be observed and described using empirical data. Researchers in this paradigm seek to test hypotheses, establish patterns, and identify causal relationships through statistical analysis.

The study used a correlational cross sectional research design. The correlational design was

selected to investigate the effect of subcontracting practices on the dependent variable (performance of manufacturing firms). This design enables the study to establish potential cause-and-effect relationships without manipulating variables, thereby maintaining the natural environment of the subjects (Indu & Vidhukumar, 2019). Correlational research is particularly valuable in business studies where experimental designs are often impractical due to ethical or logistical constraints

The study focused on manufacturing firms located in Kenya, a country in East Africa bordered by Tanzania, Uganda, South Sudan, Ethiopia, and Somalia, with the Indian Ocean to the southeast. quoted in Rajab (2024). According to the KAM directorate, Kenya has 596 firms spread out across the country but majorly concentrated and headquartered in urban areas, with Nairobi county playing host to 80% of the large manufacturing firms. These firms are segmented in 14 manufacturing sectors which include 1. Automotive (21 companies). 2. Building, Mining and Construction (70 companies). 3. Chemical & Allied (17 companies). 4. Agriculture & Agro-processing Sector (20 companies). 5. Energy, Electrical and Electronics (27). 6. Food and Beverages (71). 7. Leather and Footwear (34). 8. Metal and Allied (66). 9. Paper (7). 10. Pharmaceutical and Medical Equipment (68). 11. Plastics and Rubber (20 companies). 12. Textile and Apparels Sector (35 companies). 13. Timber (63 companies). 14. Services and Consultants (77 companies), making up a total of 596 firms (Rajab, 2024). From this, we applied Krejcie & Morgan (1970) sample size estimation table select 234 firms.

A questionnaire was selected as research instrument to obtain primary data from heads of procuring units. The heads of procuring units were targeted as units of observation since they are primarily responsible for carrying out all procurement functions including sourcing for materials and supplies as well as ensuring prudent flow of information. In the analysis of data, descriptive statistics encompassing mean and standard deviation as well as a standard linear regression model established the effect of subcontracting practices on performance bearing mean subscales of subcontracting practices and the mean subscales of performance (Cohen, Cohen, West, & Aiken, 2013). This is modelled in equation 3.1:

$$Y_i = \beta_0 + \beta_1 X_{1_i} + \varepsilon_i \quad \text{.....(3.2)}$$

Where;

Y_i Is the dependent variable (Performance),

β_0 Identifies an adjustment constant due to scale differences in measuring subcontracting practices and Performance (the intercept or the place on the P - axis through which the straight-line passes). It's the value of Y when the X1 is 0.

β_1 Constants describing the functional relationship in the population.

$X_{1,}$	Is the independent variable, subcontracting practices
Epsilon, ε_i	It represents the error component for each Entity. The portion of Y score that cannot be accounted for by its systematic relationship with values of X_1, the predictor variable.

4.0 RESULTS AND DISCUSSIONS

4.1 Response return rate

A total sample size of 234 manufacturing firms distributed across 14 sectors participated in the study. The purpose of presenting this response distribution is to validate the credibility, reliability, and representativeness of the findings that follow in the broader analysis. Table 4.1 presents the response rate.

Table 1: Response Rate

	Sector	Sample	Response	Response Rate
1	Automotive Industry	8	8	100.0
2	Building, Mining and Construction Industry	27	26	96.3
3	Chemical & Allied Industry	7	6	85.7
4	Agriculture /Agro-processing	8	8	100.0
5	Energy, Electrical and Electronics Industry	11	10	90.9
6	Food and Beverages	28	27	96.4
7	Leather and Footwear sector	13	12	92.30
8	Metal and Allied Industry	26	24	92.3
9	Paper Industry	3	3	100.0
10	Pharmaceutical and Medical Equipment	26	25	96.2
11	Plastics and Rubber Industry	8	8	100.0
12	Textile and Apparels	14	14	100.0
13	Timber Industry	25	25	100.0
14	Services and Consultants Industry	30	27	90.0
	Total	**234**	224	95.7

Source (Field Survey Data, 2025)

The response rates across the sectors indicate a very high level of participation and reliability in the data collection process. Out of the 234 firms sampled, 224 responded, yielding an impressive overall response rate of 95.7%. Several sectors, including Automotive, Agriculture/Agro-

processing, Plastics and Rubber, Textile and Apparels, Timber, and Paper recorded a perfect 100% response rate, reflecting full engagement from all selected firms. Similarly, high response rates were noted in sectors such as Food and Beverages (96.4%), Building, Mining and Construction (96.3%), Pharmaceutical and Medical Equipment (96.2%), and Services and Consultants (90.0%). Other sectors, including Leather and Footwear (92.3%), Metal and Allied (92.3%), and Energy, Electrical and Electronics (90.9%), also demonstrated strong participation. The lowest response rates were observed in the Chemical & Allied Industry (85.7%) and Leather and Footwear sector (92.3%), but even these remained well above the commonly accepted 80% threshold in social science research. These consistently high levels of sectoral participation enhance the credibility, representativeness, and strength of the study's dataset, thereby reinforcing the reliability of the findings and the validity of conclusions drawn about the data.

4.2 Adoption-use of subcontracting practices in manufacturing firms

The adoption of subcontracting practices was measured on an item pool of 10 aspects. The sub variables examined under subcontracting practices included training and support, policy frameworks, technological adoption, creativity and innovation, trust and cooperation, open communication, conflict resolution systems, management support, and communication policies. Respondents were asked to rate the extent to which they agreed with ten specific statements using a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). The findings, summarized in Table 2, are presented using percentages, means, and standard deviations to reflect the distribution and intensity of responses across the selected subcontracting indicators.

Table 2: Subcontracting Practices

Subcontracting practices	SD	D	N	A	SA	M	SD
When subcontracting, we carry out training and capacity building for our parties	131(58.5)	89(39.7)	1(0.4)	1(0.4)	2(0.9)	.46	0.627
We have a policy for training and building capacity of parties in our contracts	119(53.1)	93(41.5)	6(2.7)	3(1.3)	3(1.3)	1.56	0.737
When subcontracting, we encourage use of up to date technologies in our practices	105(46.9)	112(50)	1(0.4)	4(1.8)	2(0.9)	1.60	0.682
When subcontracting, we encourage parties in our contracts to be creative and innovative	110(49.1)	95(42.4)	14(6.3)	3(1.3)	2(0.9)	1.62	0.741
There is trust and cooperation among parties in our contracts during sub-contracting	130(58)	82(36.6)	4(1.8)	3(1.3)	5(2.2)	1.53	0.797
There is open communication among our parties during sub-Contracting	134(59.8)	76(33.9)	6(2.7)	6(2.7)	2(0.9)	1.51	0.758
The organization has systems in place which aid in solving conflicts during sub-contracting	121(54)	82(36.6)	12(5.4)	7(3.1)	2(0.9)	1.60	0.803
Our organization has a policy on communication among parties during sub-contracting with service providers	110(49.1)	86(38.4)	13(5.8)	10(4.5)	5(2.2)	1.72	0.925
The top management of our organization supports training and capacity building through resource and facilities and allocation	120(53.6)	86(38.4)	7(3.1)	9(4)	2(0.9)	1.60	0.808
Our organization has policy guideline on use and incorporation of current and up to date technologies in our practices	110(49.1)	82(36.6)	5(2.2)	25(11.2)	2(0.9)	1.78	0.998

Source (Field Survey Data, 2025)

Regarding training and capacity building during subcontracting, a majority of respondents strongly disagreed (58.5%) and disagreed (39.7%) with the statement that they carry out such initiatives for subcontracted parties. With only 0.9% agreeing or strongly agreeing, the item recorded a very low mean of 0.46 (SD = 0.627), indicating that training and capacity development efforts are largely

absent or unrecognized in many manufacturing firms. This gap may hinder subcontractors' ability to meet quality standards, innovate, or adapt to client requirements. The existence of policy frameworks for training subcontractors also drew a negative response, with 53.1% strongly disagreeing and 41.5% disagreeing. The mean score was 1.56 (SD = 0.737), reflecting weak institutional commitment to structured training programs. Such policy gaps likely compromise consistent capacity development and may weaken performance and compliance outcomes across subcontracting arrangements.

Respondents also reported limited support for technological integration in subcontracting practices. Almost half (46.9%) strongly disagreed and 50% disagreed with the assertion that their organizations encourage the use of up-to-date technologies. With a mean of 1.60 (SD = 0.682), this indicates a general reluctance or incapacity to drive modernization across subcontracted operations, possibly due to cost constraints, lack of training, or limited strategic vision. On fostering creativity and innovation among subcontracted parties, 49.1% strongly disagreed and 42.4% disagreed with the statement. The mean of 1.62 (SD = 0.741) implies that firms may not actively promote or reward innovative subcontractor practices. This stifles opportunities for adaptive solutions, value addition, and continuous improvement in performance.

When assessing trust and cooperation, 58% of respondents strongly disagreed and 36.6% disagreed that such values are prevalent in subcontracting relationships. With a mean of 1.53 (SD = 0.797), these results reflect a transactional and possibly adversarial subcontracting culture. Poor trust undermines collaboration, weakens communication, and may lead to conflicts or inefficiencies in delivery and quality assurance. Open communication during subcontracting also scored poorly, with 59.8% strongly disagreeing and 33.9% disagreeing. A mean of 1.51 (SD = 0.758) underscores persistent communication barriers between firms and subcontractors, which may limit the flow of vital instructions, feedback, or early warnings about potential disruptions or quality concerns.

With respect to the presence of conflict resolution systems, 54% of respondents strongly disagreed and 36.6% disagreed with the claim that such systems exist in their organizations. The resulting mean of 1.60 (SD = 0.803) indicates weak institutional infrastructure for managing disputes, potentially leading to unresolved issues that affect performance and relationships with subcontracted entities. Communication policies were also lacking, as 49.1% strongly disagreed and 38.4% disagreed that their organization has a communication policy for subcontractors. A mean of 1.72 (SD = 0.925) points to the absence of standardized guidelines that govern how information is shared with subcontractors. Such inconsistencies may breed confusion, errors, and accountability issues.

Top management support for training and capacity building was also reported to be low, with 53.6% strongly disagreeing and 38.4% disagreeing. A mean of 1.60 (SD = 0.808) suggests that even where training efforts are acknowledged, they lack backing in terms of budget allocation, time, and managerial commitment, weakening their impact. Lastly, on whether firms have policy

guidelines for incorporating current technologies in subcontracting, 49.1% strongly disagreed and 36.6% disagreed, while only 0.9% strongly agreed. With a mean of 1.78 (SD = 0.998), this was the least negatively skewed item, but still reflects broad neglect in institutionalizing technological adoption. Without formal policies, technology usage remains inconsistent, reactive, and potentially ineffective.

4.3 The effect of subcontracting practices

In order to achieve the effect of subcontracting practices on performance, we carried out a standard linear regression involving Mean sub-contracting practices and Mean performance as modelled in methodology section. This approach allows for a more focused understanding of the direct relationship between subcontracting and firm performance, without the influence of other variables. By employing simple linear regression, the study provides a clear and interpretable measure of the strength and direction of this individual predictor, which is essential for decision-making in both policy and practice within the manufacturing sector. Consider the results in Table 3:

Table 3: Summary model results on effect of subcontracting practices

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.625[a]	.390	.388	.45163	.390	142.189	1	222	.000

a. Predictors: (Constant), Mean Subcontracting practices

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.906	.074		12.326	.000
	Mean Subcontracting practices	.470	.039	.625	11.924	.000

a. Dependent Variable: Mean Performance of manufacturing firms

Source (Field Survey Data, 2025)

The model summary reveals a strong positive relationship between subcontracting practices and performance of manufacturing firms, as indicated by an R value of 0.625. This suggests that subcontracting practices account for approximately 39% of the variation in firm performance (R^2 = 0.390), which is a substantial proportion for a single predictor model. The statistical significance of the model is affirmed by the F-test (F,1 222) = 142.189, p < .001), indicating that the model as

a whole reliably predicts firm performance. The adjusted R^2 of 0.388 further confirms the model's goodness-of-fit, demonstrating that the relationship holds even when adjusted for sample size.

The coefficient results show that subcontracting practices have a statistically significant and positive effect on firm performance (B = 0.470, t = 11.924, p < .001). This means that for every one-unit increase in the mean score of subcontracting practices, the performance of manufacturing firms increases by 0.470 units, on average. The standardized beta coefficient (β = 0.625) underscores the strength of this effect. These findings suggest that subcontracting plays a critical role in enhancing efficiency, reducing costs, or improving productivity in Kenya's manufacturing sector. Consequently, firms that invest in or improve their subcontracting strategies may be better positioned to achieve superior performance outcomes.

The findings (R^2=.390, β=.470, p<.05) on the role of subcontracting practices on performance of manufacturing firms in Kenya show that subcontracting practices has a positive significant effect on performance. These results support theoretical findings in previous works. Firstly, the findings agree with findings by Adinyira, et al. (2020) who investigated role of sub-contracting risk management on the performance construction projects of the building industry in Ghana. This study used a quantitative methodology approach to conceptualize five variables: subcontracting financial risks, subcontracting resources risks, subcontracting technical risks, subcontracting management risks and subcontracting relationship risks. The results showed that four sub-contracting risk management practices (financial risks, resources risks, technical risks, management risks) have a positive significant effect on performance.

Findings in current study on sub-contracting further lends acceptance to the works of Okon (2023) in a Nigerian case who carried out a study on the relationship between subcontracting practices and the performance of bottling companies using an exploratory design on 1500 staff of Nigeria bottling company in Lagos and Ajegunle cities. This study targeted managers, technical staff and clericals as the population and used the Krejci and Morgan sampling table to arrive at a sample of 205 participants. Results of the study confirmed that subcontracting practices in Lagos, Ajegunle and associated franchised outlets is related to productivity, profitability and efficiency of the Nigeria bottling company.

Additionally, furtherance to current discussions is recorded in Mbuvi (2021) works which was based on informal sub-contracting practices on performance of projects in Nairobi city county. Specifically, the writer explored the level of health and safety necessities, investigate level of compliance of applicable acts and regulations and to examine relationship between the existing challenge of informal subcontractors and performance of construction projects. In a mixed methods design, findings showed building construction industry in Nairobi city county adopted labor contractors because of flexibility, the specialist contractors mostly used nominated contractors due to the need for labor intensive actions.

Although the previous findings support results by majority of previous reviewed literature, the

findings however disagree with other empirical works. For instance, Lew et al. (2020) while studying multilayered subcontracting practices using a questionnaire survey of employees in the construction in Malaysia, found out that implementing use of subcontracting systems results into poor performance, e.g. poor time management, poor quality, increased costs, and lengthened communications among parties in construction firms. This study targeted main contractors, subcontractors as population respondents since the two parties are involved in subcontracting practices in the Malaysian construction industry.

5.0 CONLUSSION

The paper sought to understand the effect of subcontracting practices on performance of manufacturing firms a developing economy, Kenya. In a standard linear regression analysis, model results show that sub-contracting practices has a significant positive effect on performance, agreeing with empirical establishments. We thus conclude: Improvements in adoption-use subcontracting practices improves performance in the manufacturing firms. The paper provides a primary-quantitative evidence that if supply chains among business firms implement policies geared towards adopting and using subcontracting practices, then manufacturing firms will raise their economic levels by improving their performance. The paper provides interesting discussions that supply chains in business firms can be agents of value creation through there sub-contracting practices, but then recognize that such efforts can only bear fruits if such firms effectively and religiously implement such practices.

6.0 RECOMMENDATION AND FUTURE RESEARCH AGENDA

The paper divulges from theoretical assertions that have heavily focused on subcontracting practices in other industries, ignoring the delve in manufacturing in the case of a developing economy like Kenya. We provide sufficient evidence that indeed, subcontracting practices can alleviate performance of manufacturing firms. In this, the study recommends that policy makers and stakeholders in manufacturing firms to regularly adopt-use sub-contracting practices. We suggest the following future research lens;

1. Given that the paper is a primary study birthed in quantitative paradigm, future research need to focus on literature reviews over the last decade to investigate whether there is a harmonious agreement in wider academic community that subcontracting practices alleviates results.

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