

**MODERATING EFFECT OF INTEGRATED FINANCIAL MANAGEMENT  
INFORMATION SYSTEM USE ON THE RELATIONSHIP BETWEEN SUPPLY  
CHAIN PRACTICES, PROCUREMENT PERFORMANCE OF LAKE REGION  
ECONOMIC BLOC COUNTIES, KENYA**

**BY**

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DEGREE OF DOCTOR OF PHILOSOPHY IN SUPPLY CHAIN MANAGEMENT**

**SCHOOL OF BUSINESS AND ECONOMICS**

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## DECLARATION

### Declaration by the student

I declare that this thesis is my original work and has not been presented for the award of a degree or any other award in any other university

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## **DEDICATION**

This thesis is dedicated to my parents Gabriel Kudoyi, Mary Khadudu and siblings.

## ABSTRACT

Procurement performance of county governments in Kenya, particularly within the Lake Region Economic Bloc (LREB), continues to face challenges despite the implementation of the Integrated Financial Management Information System (IFMIS). Recent studies and audit reports have highlighted non-compliance with procurement regulations, particularly in cost performance, where counties have experienced cost overruns, excessive delays, and poor budgetary control. Auditor General's reports on LREB counties indicate persistent inefficiencies in managing procurement costs, with many projects surpassing their initial budget allocations by over 30 percent. Moreover, quality control and timely delivery issues related have negatively impacted overall procurement performance, raising concerns about effectiveness of supply chain practices in these counties. While supply chain practices are known to influence procurement performance, their impact might be significantly moderated by use of IFMIS. The Lake Region Economic Bloc counties have made strides in adopting the IFMIS system, but there is limited understanding of how its use moderates relationship between supply chain practices and procurement performance. This study examined the moderating role of IFMIS use between supply chain practices and procurement performance focusing on cost performance, timely delivery, quality, and budgetary compliance in LREB. By analyzing how IFMIS enhances or limits supply chain effectiveness, study aimed to offer solutions to improve procurement performance through better compliance, cost control, and transparency in the public procurement system. Specific objectives were to: establish effect of supply chain practices on performance; determine effect of IFMIS use on procurement performance, establish moderating effect of IFMIS use on between supply chain practices-performance. Study was conceptualized based on resource-based view theory by linking supply chain practices, IFMIS use and performance and adopted positivist philosophy in correlational research design. Target population was 382 staff (chief, procurement, finance officers) with 196 staff selected using proportionate stratified random sampling. Primary data were collected through 181(92.3%) useful questionnaires. A pretest was done in Uasin Gishu county where 20 staff was selected indicated instrument reliability at Cronbach's Alpha coefficient  $\alpha=0.9563$ . Validity confirmed by expert reviews, correlations matrix (SCP;  $r=0.769$ ,  $p=0.00$ ), (IFMIS;  $r=0.773$ ,  $p=0.00$ ) since R-values were above 0.7. Multiple regression was adopted for data analysis and findings revealed supply chain practices have a significant positive effect ( $R^2=0.500$ ,  $\beta=0.708$ ;  $t=12.35$ ,  $p<0.05$ ), IFMIS use have significant positive effect ( $R^2=0.489$ ,  $\beta=0.649$ ,  $t=10.665$ ,  $p<0.05$ ) implying unit implementation of supply chain practices, IFMIS use results into 0.708, 0.649 units increase on performance respectively. Moderated regressions analysis revealed interactive effect ( $R^2=0.110$ ,  $\beta=0.393$ ,  $t=8.555$ ,  $p<0.05$ ), confirming unit use of IFMIS increased procurement performance by 11 percent. Findings ratify theoretical evidence that counties create value by adopting IFMIS. Study concluded effective IFMIS use can lead to significant improvements in LREB counties procurement outcomes. Study recommended LREB devolved governments to prioritize the integration of IFMIS with supply chain management practices to fully realize the potential benefits for procurement performance. Study indicates, IFMIS use and supply chain practices leads to improved results. In practice, it contributes to knowledge on supply chain management and procurement policy formulation on procurement.

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

<b>CIPS</b>	Chartered Institute of Procurement and Supply
<b>EACC</b>	Ethics and Anti-corruption Commission
<b>EDI</b>	Electronic Data Interchange
<b>EPEC</b>	Eastern Passage Education Centre
<b>ERP</b>	Enterprise resource planning
<b>ESI</b>	Early Supplier Involvement
<b>EU</b>	Europe Union
<b>IFMIS</b>	Integrated financial management System
<b>KIPPRA</b>	Kenya Institute of Public Policy Research and Analysis
<b>KISM</b>	Kenya Institute of Supplies management
<b>MNC</b>	Multinational Corporations
<b>MRO</b>	Maintenance, repair and operations
<b>PP</b>	Procurement Performance
<b>PPADDA</b>	Public Procurement and Asset Disposal Act
<b>PPARB</b>	Public Procurement Administrative Review Board.
<b>PPRA</b>	Public Procurement Regulatory Board
<b>R&amp;D</b>	Research and Development.
<b>SCRM</b>	Supply Chain Risk Management
<b>SS</b>	Supplier Selection
<b>UK</b>	United Kingdom

## OPERATIONAL DEFINITION OF TERMS

<b>County governments:</b>	Devolved units of government inaugurated by the 2010 constitution ratified in the year 2013 in Kenya, to enhance easy access to the public resources, and economic growth at the grassroots.
<b>Devolved units:</b>	County governments of Kenya.
<b>IFMIS:</b>	IFMIS is a centralized, computerized system that automates and integrates public financial management processes, including budgeting, procurement, accounting, and reporting. It is designed to improve transparency, accountability, and efficiency in financial management. The system helps LREB county governments' entities manage their finances in a streamlined way, providing real-time data, enhancing decision-making, and preventing financial mismanagement or corruption.
<b>IFMIS use:</b>	Refers to the process through which an organization or government body integrates and begins to use the IFMIS system in its financial operations. It involves the steps, policies, and changes necessary to successfully implement and utilize the system. The goal of IFMIS adoption is to ensure that the system is fully incorporated into the daily operations of LREB counties or organization to improve financial management. This involves training staff, updating processes, and ensuring the infrastructure is in place to support IFMIS.
<b>Lake region economic bloc:</b>	Consists of counties from Lake Basin Region. Was formed as a result of an understanding that networking among counties with common interest is an effective way of promoting the possibility of creating reasonable development impact in counties. Comprised of Nyamira, Busia, Kakamega, Bungoma, TransNzoia, Kisii, Kisumu, Siaya, Homabay, Migori, Nandi, Vihiga, Kericho and Bomet Counties.
<b>Performance:</b>	It's the achievement of set objectives by making use of available resources.
<b>Procurement:</b>	The process by which organization acquire materials for use and disposals of assets in order to accomplish its goals.

**Procurement Performance:** Is the organization ability to meet end to end customer needs through availability of services and product observance of timeliness.

**Supply Chain Management:** Is the management of all activities, information, knowledge and financial resources associated with the flow and transformation of goods and services up from raw- materials, work in progress, finished goods and inventory in such a way that the needs of the users and the organizations are fulfilled or surpassed.

**Supplier Selection:** It's the process by which buying entity identify, evaluate and contract suppliers to provide goods and services to an organization. In return, buying entity expect significant benefits from selected suppliers.

**Supply Chain Risk Management:** Is the implementation of strategies to manage Exceptional and daily risks along the procurement process based on continuous risk assessment with aim of ensuring continuity and reducing vulnerability.

**Supply Chain Management Practices:** Is a set of activities carried out in an organization to enhance effective management of procurement.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

This chapter presents the background to the study, statement of the problem, the study objectives, research hypothesis, scope, significance of the study and conceptual framework. Procurement refers to all activities involved in identifying, acquiring, and receiving goods, works, and services required by an organization (Kahukya, 2019). The procurement process refers to the activities through which public institutions acquire different types of works, any supplies and services by purchasing, renting, leasing, hiring, licensing, franchising, or any other contractual means (Ogwel, Iravo, & Lagat, 2016). Procurement typically consists of planning, standards setting, creation of specifications, research and selection of suppliers, value analysis, finance, pricing negotiations, buying, contract administration, inventory check and storage, disposal and associated activities. As a government function, public procurement entails and is aimed at ensuring the proper acquisition of goods and services necessary to facilitate projects and social services efficiently and successfully (Patrucco, Luzzini, & Ronchi, 2016). It is, therefore, true to say that inefficient procurement practices decrease and denies the strategic importance of sound procurement from being realized by citizens and consequently, lowers peoples' confidence and trust in LREB devolved units' leadership to deliver the required services and developmental projects (Raj, Agrahari, & Srivastava, 2020).

The products and services procured by LREB county governments are used for the construction of large infrastructure such as roads and hospitals, which citizens and businesses rely on, underscoring the importance of quality public procurement to the achievement of national development and growth goals (Caldera, Desha, & Dawes, 2019). Erica and Simeon (2020) affirm that Kenya spends 26% of GDP on procurement processes and with this much

investment, failure to adopt good supply chain practices may have significant impacts on the LREB Counties ability to meet the development goals.

The current study anchored on the resource-based view (RBV) theory, which stems from the work of Edith Penrose (1959) and later popularized by Wernerfelt (Rugman & Verbeke, 2002). Proponents of the resource-based view (RBV) asserts that “resources owned and controlled by organizations’ are the fundamental sources and drivers of competitive advantage and superior performance” (Rose, Abdullah, & Ismad 2010). Thus, LREB devolved units must seek to comprehend the relationship between their resources (supply chain practices, IFMIS use) and capabilities and their likely effects on procurement performance (Ismail, Rose, Abdullah, & Uli, 2010). The choice of RBV theory in this study is informed by its ability to link LREB counties resources or capabilities to procurement performance. The resource-based view theory provides adequate ground in which adoption of IFMIS and proper implementation of supply chain practices can be harmonized and tapped as vital resources in public procurement to create value and enhance performance of the LREB devolved units.

Despite spending a substantial amount of public financial resources and instituting public reforms, inefficient and ineffective public procurement has been an issue of great concern in many countries (Best *et al.*, 2017). According to He, Milne and Ataullah (2023), most UK public procurement contracts are awarded late and that simpler procurement procedures and organization factors at both contract and institutional level play a crucial role. In China, local government officials training and awareness of procurement implementation policies have had savior influence on public procurement outcomes. Grandia and Meehan (2017), assert that in contrast to the private sector, public sector procurement remains an understudied topic in relation to the public sector management. Roman (2017) adds that literature on procurement



often suffers from an overly optimistic bias, assuring readers that procurement implementation has immediate results.

The Kenya government made it compulsory for procurement of all public goods, works and services to be done through online platform. County governments were therefore issued with directives to conduct all procurement and financial operations online (National Treasury, 2016). In-line with these objectives, the government introduced and rolled out the Integrated Financial Management Information System (IFMIS) in all 47 counties in 2013-2014 financial year. The system was intended to enhance governance by offering real time financial information, thus improving accountability and transparency. However, despite the potential benefits of IFMIS use in public procurement performance, Lusuli (2019) asserts that IFMIS implementation in LREB devolved governments in Kenya is still inadequate. The performance among LREB devolved governments in the procurement arena raises concerns among stakeholders, ranging from procurement methods that take an excessive amount of time, conflict of interest and delays in the acquisition of goods and services.

Performance of LREB county governments depend heavily on procurement performance be it private or public and therefore there is need for IFMIS use implemented. Procurement performance is the efficiency and effectiveness in sourcing products and services in order to achieve reduced cost, lead time, improved customer satisfaction, law adherence and compliance to procurement policies and regulations (Mugo & Odari, 2018). The dimension of how well an organization is attaining this function has turned into an important aspect in LREB devolved governments (Muange & Chirchir, 2018).

Schiele (2020) noted that procurement performance is realized by achieving organizational set objectives and that value for money in procurement is realized from the devolved government's perspective in terms of getting competitive pricing, reduction in wastage and improved quality

of delivered goods and services. Coviello, Guglielmo, and Spagnolo (2018) noted that the concept of procurement performance is ambiguous due to the different levels within the organization that focus on achieving varying goals. However, in general, the procurement performance can be limited to the achievement of competitiveness, value for money, timeliness, quality of goods and services, efficiency, and effectiveness. Kumar and Ganguly (2020) revealed that procurement performance could be assessed using non-financial measures such as coordination, technical efficiency and transparency, effectiveness, and information disclosure.

Procurement performance is vital to LREB devolved units' success, according to Barsemoi, Mwangagi, and Asienyo (2014), since it results in the competitive purchase and acquisition of high-quality commodities, which gives the devolved units' goods or services a competitive edge in the economy. However, researchers assert that poor procurement performance leads to poor service delivery, which is a major impediment to the LREB devolved units' development as it causes delivery delays, infrastructural underdevelopment and an increase in faults and defects. The performance of procurement involves how effectively county government procurement targets have been achieved. Procurement performance in county governments within the Lake Region Economic Bloc (LREB) has been under increasing scrutiny due to recurrent issues of non-compliance, cost overruns, delayed delivery, and quality concerns. The Integrated Financial Management Information System (IFMIS) was introduced to streamline procurement processes, ensure financial control, and enhance transparency in supply chain management. However, despite its implementation, procurement inefficiencies persist, particularly in managing cost performance and timely execution of projects. Reports from the Auditor General and various government audits have consistently pointed out issues such as over-expenditure, unforeseen project costs, and poor supplier performance (Transparency International, 2019).

Richardson and Sevenesson (2018) established that procurement performance can be measured using the price/cost dimension, where the relationship between the standard/baseline and the actual price of the delivered items is measured. They further found that product or quality dimensions of items of goods purchased as a critical performance measuring indicator. They also revealed that the efficiency of inventory flow of purchased materials and services in quantity control and timely delivery of supplies are essential when measuring procurement performance.

Furthermore, purchasing magazine survey of consultants revealed several objectives that public entities pursue when employing procurement strategy. They include driving the lowest possible purchase price, identifying high-quality product/service sources, simplifying the purchasing and supply management processes, and reducing transaction costs. In addition, a leading consulting firm reported that companies use strategies to reduce transaction costs, purchase price, purchase order processing cycle times, and speed up the time-to-market cycles, the standard measurement of procurement performance (Aberdeen, 2016). Thus, this study adopted the quality of products/ services, timely delivery, cost performance and budgetary to measure the performance of the devolved county government.

In Kenya, Public Procurement Oversight Authority (PPOA) states that the public procurement system has been undergoing a transformation consistent with the global trend since the mid1990s (Republic of Kenya, 2010), with procurement reforms focusing on transparency, accountability and value for public money. Muhia *et al.*, (2017) assert that in 2006, focus was placed on upgrading technologies and employee capacity through training and hiring of specialized graduates to help fill the professional gap in the public procurement. However, PPOA reports that despite the reforms, procurement operations still experience problems in virtually all public entities associated with loopholes in the procurement law and systemic infrastructural weaknesses (Barsemoi, Mwangagi, & Asienyo, 2014).

Procurement managers and players, especially in the public service, often face varied challenges, complex statutes, laws, regulations and policies which complicate the procurement process (Matindi & Ngugi, 2013). The public procurement environment is characterized by rapid changes accelerated by frequent program reviews, needs to adopt to emerging technologies, calls for increased efficiency, accountability and the high expectation that there is a focus on continuous improvements (Muhia *et al.*, 2017). Kamotho (2015) affirms that Kenya's county governments' procurement process is complex and characterized by increasing complexity, duplication of roles, loss of revenues and resources, inefficiency and low compliance levels concerning procurement regulations. Despite reforms, Muhia *et al.*, (2017) states that the streamlined legislation and the IFMIS roll out have not had the expected impacts on the performance of public procurement in Kenya particularly in the LREB devolved governments.

According to Ondieki (2015), Kenya's LREB county governments procurement process exhibits inadequate performance as evidenced by inadequate implementation of the PPADA 2015, overpricing, inferior planning, poor administration of contracts, inadequacy in accountability and transparency, material repetition, and debasement of materials. LREB county governments depend on procurement to get their goods and services. This includes buying and sourcing, as well as bidding and contracting, among other methods. Despite these restrictions, Kenya loses substantial amount of tax payers' money due to the use of inappropriate procurement procedures (Government of Kenya, 2017).

King'oo and Muli (2019) state that the government of Kenya losses about Ksh. 121 billion which is equals to 17% of the state budget annually due to inappropriate procurement procedures, lack of proper contract management and poor inventory management procedures. According to Mbatia and Osoro (2020), cases of public procurement malpractices costs Kenya

approximately KSh700bn (USD 8.24 billion) during 2018/2019 financial year. The 2019 Auditor General's report earmarked some procurement malpractices in LREB devolved governments such as price inflation up to three times that of the real price, therefore breaching the general procurement guideline that standard products and services must be acquired at current market rates. Direct procurement of products and services, such as event locations, entertainment and tents, was widespread. The report also claimed that products and services were deemed irregularly acquired in that no prequalification registers, no requisitions, no tender documents, no signed contracts, and no inspection or acceptance reports were produced. In certain instances, the service providers were not prequalified. No quotes were included to verify if the items were procured competitively. The user departments had no request to assess the necessity for the purchase.

Mogikoyo (2016) asserts that LREB county governments in Kenya are faced with challenges of ineffectiveness which has hindered their performance. Much of this ineffectiveness can be attributed to the bureaucratic system in supply chain practices, frequent political interferences, inadequate supervision, malpractices, and incompetent staffing (Datche, 2015). Further Mukunga and Karanja (2017) asserted LREB county governments in Kenya had become a continuous channel of fraud and public funds loss through dubious supply chain practices. From an allocation of 70 billion Kenya Shilling per year in the procurement process, LREB county governments in Kenya have been losing more than 40 billion KES through inflation of procurement costs, inefficiencies in the procurement process, corruption, inadequate tender process and the implementation of procurement. According to the Public Procurement Regulatory Authority (PPRA) report of 2016, at least 60% of all funds budgeted for the public procurement process are lost due to dubious claims, increased mark-ups, and outright embezzlement (Kitheka, 2019). Public Procurement and Asset Disposal Act 2015 outlined the process through which the county governments and National government operates and spends

public money (Rotich, 2015). The LREB devolved governments are not complying to the Public Procurement and Asset Disposal Act 2015 resulting into procurement performance challenges and glaring gaps regarding procurement performance. Therefore, LREB devolved units provides a good contextual background to undertake this study.

Supply chain practices are a “set of approaches utilized to integrate suppliers, manufacturers, and logistics effectively and customers to improve its long-term performance and the supply chain” (Wainaina 2021). Furthermore, Wainaina (2021) argued these practices link downstream and upstream activities of a focal organization such as production, processing, distribution, and retailing to gain the competitive advantage required to survive global competition. Therefore, supply chain practices are practices designed to manage and coordinate the entire supply chain's activities from the origin of raw materials to the end customer in a seamlessly integrated manner (Abebe, Beyecha, & Gemed, 2020). Procurement practices are critical to improving the performance of both public and commercial enterprises worldwide. County governments in Kenya are continuing to lose public funds owing to inefficient procurement processes. Supply chain practices are in place to ensure that county governments get value for money when committing their expenditure, while focusing on the county's strategic objectives by purchasing their required goods and services (Kipkemoi 2017). Taxpayer money has been alleged to have been wasted in LREB devolved units’ due to claims for damages from potential suppliers, as well as poor quality work as a result of contracts issued without due process by inept purchasing specialists (Juliana *et.al.*, 2021).

The basic principles of good supply chain practice, according to Thai (2017), are accountability, where effective mechanisms must be in place to enable procuring entities to spend limited resources carefully while knowing that they are accountable to members of the public; competitive supply, which requires procurement to be carried out by competition unless

there are compelling reasons for single sourcing; and consistency, which emphasizes equal treasury treatment. Informed decision-making, which requires public organizations to make choices on correct data and ensure that requirements are satisfied, should also be part of the process. Procurement should also be responsive to the goals, expectations and requirements of the people who use it. Finally, there is need for transparency to enhance openness and clarity on procurement policy and its delivery (Aboelazm, 2018). According to Lemalreni *et al.*, (2017) the management of county projects has a number of challenges, including the organization structure placement of supply chain practices and project identification criteria. Since their inception, internal management inefficiencies have hampered devolved government's ability to achieve their objectives (Machoka, 2017). As a result, current supply chain practices must be reviewed, as well as their impact on county governments' performance.

Studies have been conducted to link supply chain practices and procurement performance the outcomes have been mixed: comprising of negative and weak positive relationship. Other studies found non-significant relationship (Ngugi and Kihara, 2019) and Ondoro (2018) while others found mixed results (weak positive and negative) like Serem (2019) who noted that support towards environmental management affirmatively impacts on performance of SC while re-usability of product has an undesirable and significant result on performance. These inconsistent findings provided a good back ground for this research to resolve the inconsistency.

Kiarie *et al.*, (2014) conducted a study on county government of Nairobi. He dwelled on procurement practices such as management support, staff competence, information communication technology tools and budgeting process. The findings concluded there is a positive relation between staff competence and procurement planning. Conceptually there is a gap as the above study independent variable was procurement planning while this study

focused on procurement performance as independent variable. Contextual there was also a gap as the study focused on Nairobi County while the current study focused on LREB devolved governments.

Globally, Cankaya and Sezen (2019) on practices of managing green supply chain on sustainable performance while aiming at exploring the impacts of the scopes of management of supply chains social economic and ecological performance. Methodology used was e-mail survey and cross-sectional one with data being gathered from manufacturing entities in Turkey. The findings indicated that GSCM influenced sustainability performance. Methodologically, this study adopted correlational research design and contextual the above study was done in Turkey while this study was done in LREB devolved units in Kenya, therefore the findings cannot be generalized in the Kenya context. Khalid *et al.*, (2012) in study carried out in Germany considered long-term relationship development, partner development, joint development, enhanced communication and stakeholder governance in their study on supply chain management practices the finding revealed technological blending is the fundamental driver of supply chain management practices.

Supply chain performance in government agencies and county governments have produced varied results this is supported by studies on the association between risk management and execution. A study done by Mburu (2015) found risk management strategies had a significant positive effect on supply chain performance, while a study done by Kisia (2017) found risk management had an insignificant negative impact on supply chain performance. A study done by Hariharan (2018) found a positive relationship between risk management and supply chain performance, while another similar study conducted by Ganiyu (2020) found a negative relationship between risk management and supply chain performance. The variation in these



studies and the auditor reports and the supply chain risk management challenges have brought a gap in supply chain risk management that needed to be addressed.

Many of the reviewed studies on supply chain practices have concentrated on other sectors and not county governments, some have concentrated on the manufacturing sectors (Cankaya & Sezen, 2019; (Cousins, Lawson, Petersen & Fugate, 2019; Nyariaro, 2017). Some were done in the supermarkets (Watulo, 2017; Oduor 2019; Wahome, 2020). These gaps have occasioned the need for a study to configure possible connection between IFMIS use, supply chain practices and procurement performance by the LREB county governments.

Methodological gaps were also noted in some of the studies linking Supply chain management practices to performance as some used simple analytical methods, (Cousins, Lawson, Petersen and Fugate 2019) and explanatory research (Mohammed, Lagat & Ngeno, 2019). Also, some researchers used secondary data (Sharma, Chandna & Bhardwaj, 2017; Mutangili, 2019). Although many studies have adopted quantitative approaches including surveys, regression analysis, and structural equation modeling to assess the relationship between supply chain practices and procurement performance, these studies often fail to address the moderating influence of technology systems like IFMIS. While these methodologies are useful in exploring direct relationships, the moderating effect requires a more nuanced examination.

In particular, most studies have treated procurement performance as a direct outcome of supply chain management without evaluating how technology-driven financial management systems impact this relationship. The proposed study seeks to address this gap by integrating moderator analysis into the research design. Through the use of moderated regression analysis, this study investigated not just the direct relationship between supply chain practices and procurement performance, but also how the use of IFMIS affects this relationship. Furthermore, while

previous studies in the procurement sector have used broad and sometimes simplistic metrics of performance (e.g., delivery time or basic cost efficiency), the study delved deeper into budget compliance, timely delivery, cost performance, and quality control within LREB counties, areas that are often underexplored in county-level governance research. This involved a more context-specific framework that accounts for the unique procurement challenges in LREB counties, which previous studies have overlooked.

A study by KIPPRA (2020) demonstrated that counties using IFMIS showed a 20% improvement in budget absorption rates (the ability to spend allocated funds efficiently) compared to those not fully utilizing the system. The study further argued Counties using IFMIS can process payments faster, improving service delivery and reducing cases of delayed contractor payments, the system enables real-time tracking of funds allocated to development projects, reducing cost overruns and ensuring projects stay on track. An empirical study by The Institute of Certified Public Accountants of Kenya (ICPAK, 2018) found that counties implementing IFMIS recorded higher compliance rates with financial reporting timelines than counties relying on manual or hybrid systems. Further the Counties using IFMIS are able to align their operations with the national PFM Act, including timely budget submissions, procurement compliance, and reporting requirements, the system fosters alignment between county governments and the National Treasury, ensuring that disbursements and reports are made in compliance with national financial regulations.

World Bank (2019) asserted counties using IFMIS had a 30% reduction in project delays because of improved budgetary monitoring and financial resource tracking, compared to those without the system and IFMIS facilitates easier preparation of performance reports, which are crucial for assessing the success of government programs and interventions. A study by Transparency International Kenya (2017) revealed that IFMIS reduced opportunities for

financial misappropriation in counties by removing the need for manual approvals and increasing scrutiny of procurement and payments. The study asserted Counties that use IFMIS record lower instances of ghost suppliers and fictitious payments and the system's audit trail makes it easier to detect fraud, such as illegal tender awards, by providing a transparent record of supplier bidding and selection processes. Most of the available literature on SCM practices in Kenya focused on one county or ministries supply chains. Study by Memia (2018) examined the influence of supply chain practices on Kenya's large manufacturing firms' performance. Additionally, Apopa (2018) examined the influence of SCM practices on the performance of government ministries in Kenya using organizational culture as the moderating variable. Barasa (2016) also assessed the role of SCM practices on the performance of Steel Manufacturing companies in Kenya. There was a need for an empirical study linking moderating role of IFMIS use, SC practices and procurement performance of LREB devolved governments since empirical studies provide strong evidence supporting IFMIS as a moderator in county governments' financial management. The system promotes transparency, accountability, efficiency, and legal compliance, while also facilitating monitoring and evaluation of public projects. However, technical and capacity-related challenges still need to be addressed for full realization of the system's potential

A public procurement system aims to deliver efficiency and value for money on the use of public funds and the government is mandated to ensure public entities carry out public procurement in line with elements of transparency and cost-effectiveness (Lusuli, 2019). The Kenyan government made it compulsory for procurement of all public goods, works and services to be done through online platforms. County governments were therefore issued with directives to conduct all procurement and finance operations online (National Treasury, 2016). In-line with these objectives, the government introduced and rolled out the Integrated Financial Management Information System (IFMIS) to all 47 counties. The system was intended to

enhance governance by offering real time financial information, thus improving accountability and transparency. However, despite the potential benefits of IFMIS in public procurement performance, Lusuli (2019) asserts that its implementation in Kenya is still inadequate. For instance during the year under review, the County Executive of Siaya spent an amount of Kshs.6,276,158 on various goods and services without using the IFMIS system. This was contrary to regulation 49(2) of the Public Procurement and Asset Disposal Regulations, 2020 which states that the conduct of e-procurement procedures for the supply of goods, works and services shall be carried out by a procuring entity using an IFMIS system which is integrated to the State Portal. In addition, two hundred and fifty-two (252) payments amounting to Kshs.256,093,457 were reflected in the internet banking (IB) but were not in IFMIS payment details. This is an indication that the payments were made outside IFMIS. No explanation was provided for failure to process the payments in IFMIS. (Audit report 2019-2020)

USAID practical guide (2008), argues a sound IFMIS systems with the adoption of treasury centralized operations helps developing nations achieve efficient control of their finances and enhance accountability, transparency, act as a deterrent to misconduct and fraud and reduce political wariness. IFMIS use was and is perceived as the driver of refinement in the financial sector in evolving countries. Invention of IFMIS was upon the realization that government of Kenya can leverage on emerging and existing technologies to promote accountability and transparency on the management and reforms of cash (government of Kenya, 2011). Kragbe (2012) argues developing nations suffer from dysfunctional and unsatisfactory governance systems which include inefficient revenue systems, inappropriate allocation of resources and weak delivery of key public services.

Recent research was conducted in respect of IFMIS ranging from its benefits, constituents that affect it, its effects on supply chain management, challenges in the central government, its

impact on performance and performance of projects (Omwoha and Getuno, 2015; Lundu and Shale, 2015; Gekara and Odolo, 2015; Njenga *et al.*, 2014; Kiilu and Ngugi, 2014; Secretariat, 2013; Odago and Mwajuma, 2013; Mary, 2012). Similar studies on IFMIS were conducted on the devolved governments of Mombasa, Taita Taveta, Bungoma, Nyandarua, Meru, Kericho, Nairobi, Nakuru, Kakamega, Muranga, Kiambu and Migori by Mwaura (2016), Rotich (2015), Kahari *et al.*, (2015), Bonventure (2015), Karanja and Ng'ang'a (2014), Mary (2012), Musee (2011). Further, a relatively large number of such studies in the Kenyan context have used questionnaires, which are either open ended, closed-ended or a mixture of both and published materials as a source of data. However, currently there are substantial challenges to the effect that IFMIS is still encountering at the county governments on the management of public funds.

Studies related to IFMIS in Kenya shows, that the system has not fully provided the expected benefits of integrated financial planning, effective budgeting and control of public expenditure. These studies have indicated lack of management support, capacity trained with IT skills and resistance (Rotich, 2015; Richard, 2015; Lundu and Shale, 2015; Kahari *et al.*, 2015). Further, Mwaura (2016) noted that the use of obsolete infrastructure inherited from municipal governments cannot be able to handle the IFMIS software that require advanced and improved software and hardware.

A study by Stein (2009) confirmed adoption of information technology within state agencies had an impact on the provision of services by 40%, as such, the necessity to improve the effectiveness of service provision by the adoption of automated operation. He further argued the execution of the procurement function, has been hindered by the use of traditional techniques. In a study in Bangladesh, Ahmed, As-Saber, Fry, and Smith (2018) examined bureaucracy and E-government in e-procurement initiatives. The study focus was on public institutions with case study research design employed. Research data was collected from

government ministries using both quantitative and qualitative instruments. The study revealed that core aspects such as institutionalization, capacity building, e-readiness, and infrastructural challenges affected e-procurement adoption. The paper further found out that rigidity in government structures and poor coordination affected the successful adoption of e-procurement in the public sector. The study does not consider procurement performance measures within the public sector which was considered in this research. It is apparent that there are major conceptual, contextual and methodological gaps on the study which this study addressed.

Ndegwa and Mungai (2019) also looked at the guidelines for implementing IFMIS in the South African public sector. The goal of the research was to identify the problems and hazards associated with implementing the IFMIS in South Africa. Lack of capability, lack of commitment, institutional and technical obstacles are among the challenges noted in the study. For successful IFMIS use, the study also advised capacity building programs, stakeholder commitment, the formation of an effective change management team, and a detailed implementation plan.

Kissi, Osei-Tutu, and Desmond (2019) evaluated the critical factors for implementing e-procurement in Ghana. The focus of the study was on the public procurement authority of Ghana. The study adopted a survey research design with 60 procurement professionals considered in the sample. The study findings indicated that availability of internet connection, stability of power connection, availability of technical infrastructure, and technological capacity of procurement officers were critical to the implementation of e-procurement. However, the study does not extend to investigate the effect of information systems on procurement performance, which this study established.

Mwangi (2019) researched on the relationship between integrated financial management information systems and procurement performance on the county government of Nyeri. The

study was descriptive and considered 74 respondents drawn from government officers and suppliers of the county. The study revealed a lack of confidence in the procurement systems due to poor sensitization among suppliers and a lack of stewards and accountability. The study found a significant association between adaptability of the IFMIS, user technical professional skills, and procurement performance in the county. The research revealed there was minimal acceptance of information technology systems which limited the procurement process's execution.

The study by Cheptora, Osoro, and Musau (2018) focused on information and communication technology integration and their impact on procurement performance in Kenya's manufacturing firms. The study employed a descriptive survey approach and employed descriptive and inferential techniques in the analysis. Findings showed that lack of adequate ICT infrastructure, technical systems, enterprise resource planning systems, and integrated networks significantly influenced its procurement performance functions. The study noted that the adoption of technological systems was nascent in the organization hence there is a need for increased digitalization of operations.

Similarly, Nyaporo and Atambo (2017) looked at factors influencing the implementation of government electronic procurement systems in the county government of Nyamira, Kenya. A descriptive design was employed in the research, with 44 procurement staff considered in the sample. The research utilized structured questionnaires in data collection. The findings noted that employee aspects within the county determined e-procurement readiness. The results indicated that user training, improved user competencies and skills contributed to embracing e-procurement in the county. The study also found out that adequate infrastructure contributed positively to the adoption of e-procurement. The survey was constrained to the implementation

of e-procurement and does not analyze procurement performance in LREB devolved governments.

Mose (2013) indicated that the objective of IFMIS Procure to Pay (P2P) system is to build up a streamlined as well as efficient system of procurement and payment by automating fully the process of procurement and payment to enhance visibility as well as control over the complete procurement transaction life-cycle, from planning of procurement to payment. There have been increasing allegations on misappropriation of public funds over the years despite the implementation of IFMIS in the government and according to the Report of the Auditor General (2021-2022) a number of adverse and disclaimer of opinions were expressed.

In Kenya, the introduction of the Integrated Financial Management Information System (IFMIS) was intended to enhance transparency, accountability, and efficiency in public financial management, particularly in procurement processes (PPRA 2020). However, while the national-level impact of IFMIS has been explored in various studies, there remains a significant gap in the literature when it comes to its specific impact at the county level, particularly in relation to supply chain practices within the public procurement framework. Most studies on the use of IFMIS in Kenya have focused on its national implementation and impact, largely ignoring its county-level dynamics. Counties, particularly those in the Lake Region Economic Bloc (LREB), face unique challenges in procurement due to limited resources, capacity constraints, and varying levels of system adoption. The regional variations in how IFMIS is implemented and its effectiveness across different counties remain underexplored. Furthermore, while national audits and reports highlight challenges in public procurement, specific empirical studies that focus on the LREB counties and their adoption of IFMIS are sparse. These counties often face issues such as delays in procurement processes, poor financial control, cost overruns and inefficient supply chain management (PPRA 2019,



but the role of IFMIS in addressing these problems has not been thoroughly investigated. The LREB counties have a unique political and economic context, with varying levels of development and administrative capacity, making it essential to study how IFMIS is applied differently across counties and its impact on improving procurement performance

Marcon, Lima, Echeveste, Frank & Marondin (2017) researched on moderating effect of ICT by basing on a survey of 48 Brazilian Companies. Questionnaires were used as the main research instrument. Performance of firms was evaluated by on time delivery, customer satisfaction, quality and cost. Multiple regression analysis was used during data analysis. Results revealed that lean practices had a positive and significant effect on performance. ICT practices were also found to moderate the relationship. The study however, didn't derive recommendations for practical implementation.

Researchers adopted different variables in moderating supply chain practices, performance relationship. Nyambura, 2018: moderating effect of ICT on supply chain risks and performance; Mudany *et al.*, 2021 looked at moderating role of technology on leadership and performance; Mkwizu & Sichone, 2019: moderating effect of technological innovation on user attributes and e-government IS success. Most existing studies examine direct relationships between procurement systems and performance and the general technology systems but do not investigate the moderating role of IFMIS. Supply chain practices such as supplier selection and supply chain risk management are known to influence procurement performance, but the way in which IFMIS enhances or limits these practices at the county level remains underexplored. For instance, while IFMIS is meant to ensure budget compliance and prevent cost overruns, few studies have looked at whether it effectively moderates procurement activities to improve outcomes such as timely delivery, cost management, quality control and budgetary compliance in counties.

IFMIS is designed to enhance financial transparency, streamline procurement processes, and improve accountability in public spending. However, its effectiveness in moderating the relationship between supply chain practices and procurement performance in LREB counties is not well understood. Exploring how IFMIS can address the aforementioned procurement challenges offers a valuable research opportunity. By identifying its role in enhancing budget compliance, reducing cost overruns, and improving overall procurement performance, the study provided actionable insights for policymakers and practitioners. The procurement performance problems faced by LREB counties characterized by issues related to budget compliance, cost overruns, delayed service delivery, and compromised quality pose significant challenges to effective governance. Understanding these problems in depth, particularly in relation to the moderating role of IFMIS, is crucial for developing strategies to enhance procurement efficiency and improve public service delivery. Furthermore, IFMIS is justified as a moderator due to its critical role in enhancing transparency, improving decision-making, mitigating cost overruns, ensuring compliance with regulations, and fostering strong supplier relationships (Auditor general report 2020). By examining how IFMIS interacts with supply chain practices in the context of LREB counties, the research provide valuable insights into how technology can improve public procurement performance and addressed persistent challenges in the region.

Mugwe (2018) refers to county governments as devolved units of government inaugurated by the 2010 constitution ratified in the year 2013 in Kenya, to enhance easy access to the public resources, and economic growth at the grassroots. Each county government elects a representative to the Kenyan senate and representative of women to the National Assembly of Kenya. During the 2013 general elections in Kenya, there were 47 counties that obtained size and boundaries from the previous Kenya constitution acknowledged 47 districts. After the country national administration was restructured, counties were embodied into the new national

administration, county commissioners were appointed to represent the national government at county.

County Economic Blocs were introduced as one of the strategies for accomplishing the objectives of devolution. They came into being to promote effective and efficient delivery of functions as per the fourth schedule of the Kenya 2010 Constitution and greater inter-county consultation and cooperation. The blocs serve as a platform to promote joint planning of programs and projects that would be performed through joint effort. To promote investment, vested interest and inter-county trade seven county economic blocs were set up. They put in place blocs as a result of their historical, political and economic resemblance, namely; Lake Region Economic Bloc, Jumuiya ya Kaunti za Pwani, South East Kenya Economic Bloc, Frontier Counties Development Council, Mt. Kenya and Aberdare's Region Economic Bloc, Narok-Kajiado Economic Bloc and North Rift Economic Bloc.

According to Deloitte report (2014) economic blueprint of Lake Basin Region was as a result of an understanding that networking among counties with common interest is an effective way of promoting the possibility of creating reasonable development impact in counties. According to census (2019) the Lake Region has over 14 million people which represent about 30% of the Kenya population, it's deemed as one of the most thickly populated region of Kenya. According to Deloitte report (2014) the blueprint presents the socioeconomic interests of 14 counties and seeks to shape and secure the region's destiny. The report further says the economic blueprint is crafted to guide development efforts by using existing assets, defining key steps and addressing impediments leaders and citizens of the lake region undertake to reshape shared vision of prosperity into real life. Bomet, Bungoma, Busia, Nyamira, Homa Bay, Kisii, Kakamega, Nandi, Kericho, Transzoia, Kisumu, Migori, Siaya, and Vihiga are

counties that comprise the Lake Region economic block. They are not only having common ecological zones and natural resources; they also have similar cultural history.

The Constitution of Kenya 2010 upon promulgation and enactment changed the governance structure from a centralized unit to devolved sub-units known as the county governments. The aim of devolved governments after the 2013 elections and enactment of subsidiary laws was to address development challenges of the centralized governance that Kenya has faced since independence. These challenges include bureaucratic inefficiencies, lack of accountability and transparency, unequal distribution of national resources and minimal community participation in local development (Khaunya, Wawire & Chepng'eno, 2015). Nevertheless, poor procurement performance is a common problem in many county governments with an immeasurable cost spiraling to over Kshs. 85 billion annually (Selebwa &Morenge, 2018).

There is no single one county government that has attained a compliance level of 100% (PPRA Reports, 2020), indicating that there is inadequate implementation of supply chain practices, procurement procedures and regulations. LREB counties continue to flout procurement procedures and regulations through poor implementation of supply chain practices such; lack of internal manuals and policies, weak contracts management system, poor records keeping, lack of price market surveys, this leads to lack of transparency, accountability and lack of value for money, leading to loss of public resources (PPRA Review Report, 2020). For instance, the review report 2019-2020 showed the following compliance levels among LREB counties:

Trans Nzoia County has attained a partial compliance level of 63.4 % and a low-risk rating of 36.6%, Kericho County has attained a compliance level of 60.3% which is rated as marginally compliant and a risk rating 39.7% which is considered as a moderate risk, Nandi County attained a compliance level of 74.4 % and a risk rating of 25.6% in respect of the indicators used in the audit (PPRA annual Report on Public Procurement Compliance, 2022). This is an

indication of partial compliance and low risk level. Homa Bay county government at 40.2%, Migori county had a compliance level of 49%, Busia County 51.5%, Vihiga 56.8%, (PPRA annual Report on Public Procurement Compliance, 2020). Bomet has attained a partial compliance level of 63.4 % and a low-risk rating of 36.6%, Kakamega has attained a compliance level of 60.3% which is rated as marginally compliant and a risk rating 39.7% which is considered as a moderate risk Nyamira attained a compliance level of 74.4 % and a risk rating of 25.6% in respect of the indicators used in the audit (PPRA annual Report on Public Procurement Compliance, 2022). This is an indication of partial compliance and low risk level. Kisii county government at 40.2%, Siaya county had a compliance level of 49%, Kisumu County 51.5%, Bungoma 56.8%, (PPRA annual Report on Public Procurement Compliance, 2020). This shows that implementation of supply chain practices in LREB counties, Kenya is partial compliant, as a result of supply chain malpractices leading to wastage and loss of public resources in LREB counties (PPRA Review Report, 2022). Devolved units in Lake Region economic bloc therefore provided a good contextual background to undertake this study. The county-level implementation of IFMIS was crucial for understanding how counties manage their procurement activities, which directly affect service delivery and development outcomes. Given that counties in the LREB experience significant procurement challenges, studying the moderating effect of IFMIS on supply chain practices provided insights into: whether IFMIS is truly making procurement more efficient, transparent, and accountable at the county level. The extent to which counties are facing systemic issues such as budget non-compliance, cost overruns, and project delays, despite having IFMIS in place.

While numerous studies have explored the relationship between supply chain practices and procurement performance, Gichuhi, M., & Kamau, J. (2020), (Selebwa &Morenge, 2018), Barasa (2016), (Ngugi and Kihara, 2019), Ondoro (2018) and Serem 2019 any of these studies tend to focus on the direct relationship without considering the moderating role of systems like

IFMIS. Additionally, most previous research has been conducted in different contexts, either focusing on specific industries, national-level data, or broad public sector evaluations, with limited focus on county-level governance, particularly within the LREB counties. Moreover, there has been inadequate exploration of how the integration of financial management systems like IFMIS influences the link between supply chain practices and performance outcomes, especially in the context of cost management and budget compliance. Addressing the above gaps did not only contribute to the academic literature but also provide practical recommendations for improving the performance of public procurement systems in counties, particularly in resource-constrained regions like the LREB.

### **1.2 Statement of the Problem**

Procurement performance is critical for the effective functioning of county governments, impacting their ability to deliver services to the public. In LREB counties, persistent procurement challenges undermine operational efficiency and hinder development progress. Budget compliance is vital for financial stability and resource allocation. LREB Counties often experience budget overruns due to inadequate forecasting, failure to align procurement plans with budgetary allocations, and unexpected project costs. Cost overruns are frequently attributed to poor project management practices, lack of competitive bidding, and insufficient due diligence in supplier selection. In some cases, political influence may lead to the selection of contractors who do not meet quality standards, resulting in inflated costs and project delays. Inefficient supply chain management practices, such as inadequate supplier selection and poor risk management hinder LREB counties' ability to respond to changing demands and emergencies.

Counties within this bloc, including Kisumu, Homa Bay, Kakamega, Vihiga, Bungoma, and Siaya, have consistently faced challenges in managing procurement processes effectively despite the adoption of the Integrated Financial Management Information System (IFMIS).

Among these counties, Siaya County has emerged as a key example of the persistent procurement challenges in the region. Reports from the Auditor General and various county audit evaluations have highlighted significant inefficiencies in Siaya's procurement processes, including cost overruns, delayed project delivery, and non-compliance with budget allocations. For example, audits report (2020) revealed that Siaya County's infrastructure projects exceeded their budgets by more than 40% in the past fiscal year, contributing to delays in service delivery and strained financial resources. These challenges are reflective of broader procurement performance issues that other LREB counties are also experiencing, though with varying degrees of severity. The selection of Siaya County as a focal point for this study is based on its representation of common procurement challenges within LREB counties and the availability of detailed procurement data from the county's financial records and audit reports. Siaya's procurement performance is emblematic of the systemic issues that other counties in the region face, making it an appropriate benchmark for understanding the moderating role of IFMIS in improving procurement performance across the LREB (Auditor general report 2020). While the study drew upon evidence from multiple LREB counties, the focus on Siaya County was justified by the severity of its procurement inefficiencies and its status as a critical case in the evaluation of supply chain practices and the use of IFMIS in the region.

Most existing studies examine direct relationships between procurement systems and performance but do not investigate the moderating role of technology systems like IFMIS. Supply chain practices such as procurement planning, supplier management, and contract execution are known to influence procurement performance, but the way in which IFMIS enhances or limits these practices at the county level remains underexplored. For instance, while IFMIS is meant to ensure budget compliance and prevent cost overruns, few studies have looked at whether it effectively moderates procurement activities to improve outcomes such as timely delivery, budgetary compliance, cost management, and quality control in counties.

Additionally, most previous research has been conducted in different contexts, either focusing on specific industries, national-level data, or broad public sector evaluations, with limited focus on county-level governance, particularly within the LREB counties. Moreover, there has been inadequate exploration of how the integration of financial management systems like IFMIS influences the link between supply chain practices and performance outcomes, especially in the context of cost management, quality control and budget compliance. This study involved a more context-specific framework that accounts for the unique procurement challenges in LREB counties, which previous studies have overlooked.

### **1.3 General Objectives**

The main objective of the study was to establish the moderating role of IFMIS use on the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya.

The specific objectives were;

- i. To establish the effect of supply chain practices on procurement performance of LREB devolved governments, Kenya.
- ii. To determine the effect of IFMIS use on procurement performance of LREB devolved governments, Kenya.
- iii. To establish the moderating effect of IFMIS use on the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya.

### **1.4 Research Hypothesis**

The study was guided by the following research hypotheses:

**H<sub>01</sub>:** Supply chain practices have no significant effect on procurement performance of LREB devolved governments, Kenya.

**H<sub>02</sub>:** IFMIS use have no significant effect on procurement performance of LREB devolved governments, Kenya.



**H<sub>03</sub>:** There is no significant moderating effect of IFMIS use on the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya.

### **1.5 Scope of the study**

The study focused on 14 LREB devolved governments, Kenya. LREB counties were settled on for this study being that they are agents of public value creation and have a mandatory requirement to apply the procurement law and procedures during the acquisition of goods and services. More so, they are guided by same supply chain practices during procurement process and disposal of assets. The essence of regulations and procedures in public procurement is to uphold accountability, value for money, economy, fairness, equality and transparency (Sec 227, Constitution of Kenya 2010). The study grounded on resource -based theory and supported by agency and stakeholders' theory and it was confined to supply chain management, specifically supply chain practices, IFMIS use and procurement performance among LREB devolved governments, Kenya. The study was limited to supplier selection and supply chain risk management. Population was drawn from the chief officer from various departments in the counties, procurement officer and finance officers. This study was carried out within a period of twenty 24 months.

### **1.6 Significance of the study**

The success of this research was of benefit to the following people in the identified ways.

The study helps the county governments to understand the influence of supply chain practices and come up with relevant policies, laws and regulations that are based on empirical evidence.

The study is of benefit to the county governments as they can draw from the findings to understand the influence of supply chain practices in their respective county government for purposes of coming up with better strategies to help improve on their level of compliance hence improved performance.

The study is of significance to the regulatory organs like the Public Procurement Regulatory Authority (PPRA) as it will enable them understand the level of compliance in various government institutions and chart the way forward based on the research findings.

The study adds knowledge on supply chain practices and open up more gaps for further research hence those in the academic realm interested in conducting further research in this area will have more materials for references. Since most research works focus on firm performance and not procurement performance.

The study may help the general public since an in depth understanding of the influence of supply chain practices may enable the government to come up with better strategies and relevant policies and laws that may improve on compliance, cost reduction and social concerns hence economic growth which may have a positive effect on the standard of living of all Kenyans.

### **1.8 Conceptual framework**

According to Sekaran and Bougie (2013) conceptual framework is a schematic and logical framework depicting interrelationship between variables under examination. This section outlines the hypothesized relationship between the (supply chain practices) independent variables and (procurement performance) dependent variable. This influence is moderated by IFMIS use. Conceptual framework was adapted from; Swaen, B. & George, T. (2022); Micheli *et al.*, (2008); Girubha *et al.*, (2016); Mohamood *et al.*, (2014) thereafter modified or refined from an existing model or theory to better fit the specific context of this research on the moderating effect of Integrated Financial Management Information System (IFMIS) use on the relationship between supply chain practices and procurement performance in the Lake Region Economic Bloc (LREB) counties. The framework was thoughtfully adjusted to ensure its relevance and effectiveness in addressing the specific research questions and context of the

study. The hypothesized relationship is shown in Figure 1, it shows supply chain practices on left hand side, whereas procurement performance on the right-hand side. Both extremes have been connected with the arrows which show the relationship dimension amidst the variables through IFMIS use as a moderator. It was expected that performance metrics in procurement such as quality products, cost effectiveness, timely procurements & delivery and budgetary compliance may improve when there is adequate implementation of supply chain practices and IFMIS use.

Therefore, it is expected that the procurement value as adopted in the constitution in terms of economy, accountability and value for money, transparency, effectiveness and competition may be achieved by LREB counties as grounded on resource-based theory since counties manager will have to utilize counties resources (supply chain practices and IFMIS use) to create public value. IFMIS can be viewed as a valuable and strategic resource that can enhance procurement performance by improving transparency, efficiency, and control over financial and supply chain processes. The moderating effect of IFMIS suggests that its proper implementation can maximize the efficiency and effectiveness of supply chain practices, contributing to better procurement outcomes in the LREB counties. Also the effective use of IFMIS by county government officials and procurement staff can be explained by technology acceptance model theory. Whereby IFMIS use helps ensure that counties adhere to budgets by enforcing spending controls and preventing unauthorized expenditures, thus reducing the likelihood of cost overruns. Further the technological systems like IFMIS introduce a new layer of influence in procurement processes that was previously underexplored in traditional models. Final procurement challenges in LREB counties such as Busia, Kisumu, and Homa Bay are different from those in other parts of Kenya, requiring the framework to be adapted to reflect this unique context.

**Independent variable**

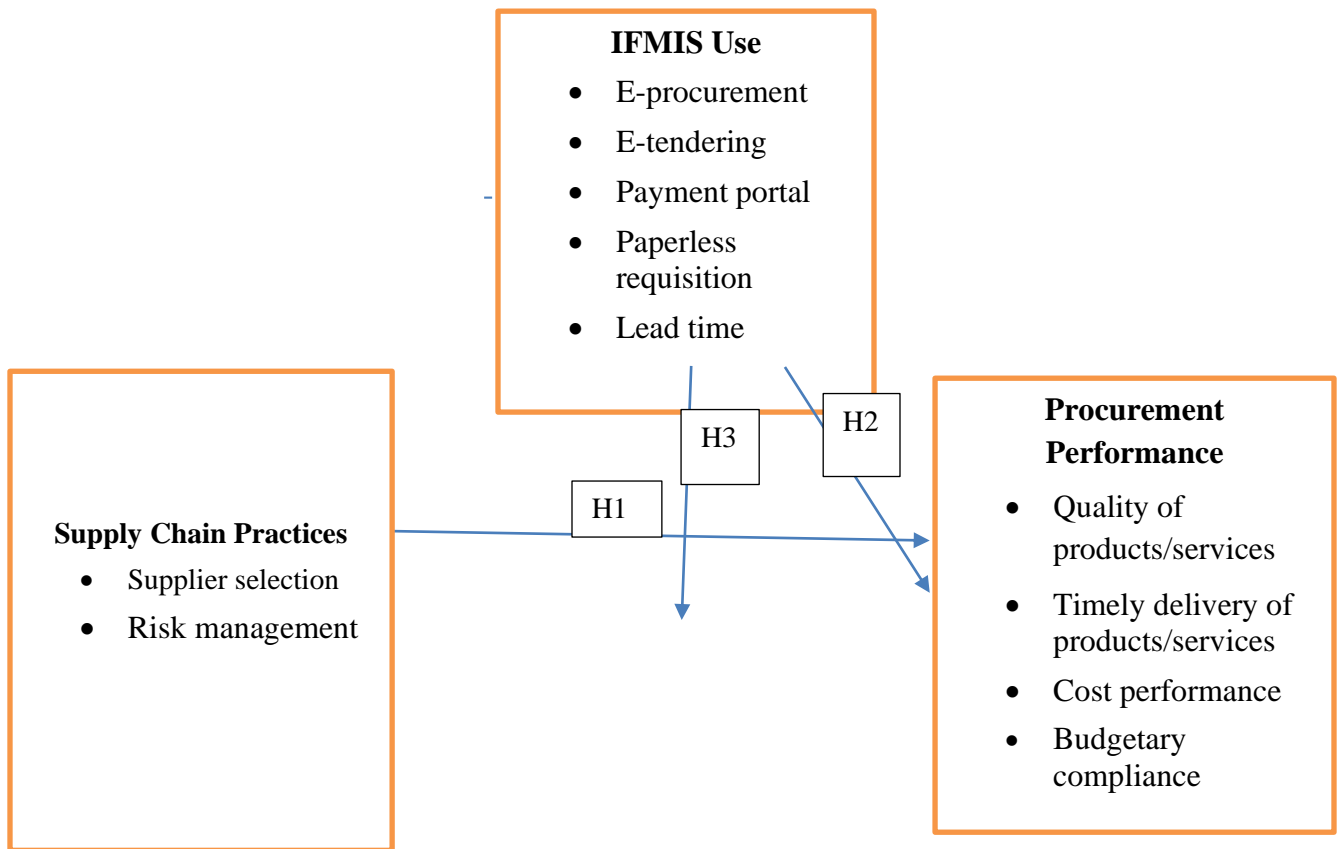
Supply chain practices

**Moderating variable**

IFMIS use

**Dependent variable**

Procurement performance



**Source:** (Adapted from; Swaen, B. & George, T. (2024); Micheli et al., (2008); Girubha et al., (2016); Mohamood et al., (2014))

Figure 1 depicts the interactions of the independent variable, moderating variable and dependent variable in a conceptual framework. It is conceptualized that supply chain practice is the independent variable, IFMIS use as moderating variable and the procurement performance is the dependent variable.

Procurement performance directly affects customers whether in terms of service quality, delivery time, financial burden, or overall satisfaction. For county governments in the LREB, poor cost performance can lead to inefficiencies, reduced quality of life, and a potential loss of public trust, while strong cost performance ensures better public services and citizen welfare.

Cost overruns often force counties to compromise on the quality of goods and services procured, which in turn affects citizens' access to well-built infrastructure, reliable health services, and educational resources Transparency International Kenya (2020). Example: In Kisumu County, a cost overrun was observed in the procurement of health supplies and the construction of health facilities. This affected the timely supply of essential drugs and services, leading to shortages in health facilities (Auditor General's Report (2020). Vihiga County experienced issues with procurement in the education sector, particularly in the construction of classrooms and supply of learning materials. The county overshot its allocated budget for these projects, and procurement delays meant that many facilities were incomplete at the start of the school year. These cost inefficiencies impacted students, teachers, and the local community, who relied on the timely completion of educational facilities to improve learning outcomes Auditor General's Report (2021). Each county in the LREB faces unique challenges related to procurement performance and cost management. These cost overruns and inefficiencies directly affect service delivery, which impacts the quality of life for citizens. By addressing these cost performance issues, counties can ensure more efficient use of public resources, leading to better services for residents.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

A literature review is the process of exploring the existing literature to ascertain what has been written or otherwise published on a research topic (Collis & Hussey, 2003). In order to carry out a literature review, one would initially need to search for the relevant literature, the aim of which is to identify as many items of relevant secondary information as possible such as books, journal articles, conference papers, reports, archives and published statistics (Collis & Hussey, 2003). This chapter reviewed the theoretical and empirical literature from other researchers on supply chain practices, integrated financial management information systems and procurement performance. It also covered critical review of the literatures and finally identified the research gaps.

#### **2.1 Theoretical Literature Review**

A theoretical framework guides the researcher in determining what statistical variables need to be measured. Thus, the theoretical literature helps the researcher to see clearly the variables of the study, provides a general framework for data analysis and helps in selection of applicable research design (Ngumi, 2013). The objective anchoring the study was to examine the moderating effect of the Integrated Financial Management Information System (IFMIS) on the relationship between supply chain practices and procurement performance in the Lake Region Economic Bloc (LREB) counties in Kenya. This objective provided the foundation for the research literature review by focusing on: The relationship between supply chain practices (such as supplier selection and risk management) and procurement performance (focusing on cost, timely delivery, and quality). The moderating role of IFMIS, which adds a unique dimension to existing literature by assessing how technology influences the effectiveness of supply chain practices in improving procurement outcomes. The regional context of the LREB

counties, with an emphasis on procurement challenges such as budget compliance, cost overruns, and delayed service delivery, which are central to the study. By grounding literature review in this objective, the discussion focused on the relevant theories, studies, and gaps that directly contribute to addressing this key aspect of research.

Three theories were used to explain the relationship between supply chain practices and procurement performance. These theories are: Resource based view theory which shows the effect of LREB internal tangible and intangible resources on their procurement performance, the agency theory which shows the effect of the principal-agent relationship on procurement performance and technology acceptance theory.

### **2.1.1 Resource Based View (RBV) Theory**

The study hinges on the resource-based view (RBV), which stems from the work of Edith Penrose (1959) and later popularized by Wernerfelt (Rugman & Verbeke, 2002). Proponents of this theory argue that the “fundamental sources and drivers to firms' competitive advantage and superior performance are mainly associated with the attributes of their resources and capabilities, which are valuable and costly-to-copy” (Rose *et al.*, 2010). The choice of RBV theory in this study is informed by its ability to link LREB devolved units' resources to IFMIS use and procurement performance.

Thus, the LREB devolved units' success mainly lies in its internal tangible and intangible resources, such as ifmis (Hameed, Basheer, Iqbal, Anwar, & Ahmad, 2018). However, these resources must be “valuable, rare, inimitable, and non-substitutable capabilities” to generate a competitive advantage (Narasimhan & Schoenherr, 2012). According to Yew Wong & Karia (2010), resources that are valuable (useful in exploiting opportunities or neutralizing threats from the environment) and rare (unique) would attain a competitive advantage and enjoy an improved procurement performance in the short term. SCM-related activities and practices are

considered essential resources for improving procurement performance (Chae, Olson, & Sheu, 2014). Nonetheless, mere possession of resources does not guarantee competitive advantage thus, firms must process raw resources to make them useful (Newbert, 2007). Therefore, capabilities to combine resource allocation can generate a competitive advantage and enhance the efficiency of processing and ensure a steady supply of products to the ultimate consumers in the right quantity and quality and affordable price (Nik *et al.*, 2014). According to Raduan, Jegak, Haslinda, & Alimin (2009), resources and capabilities must be heterogeneous and imperfectly mobile between organization in an industry to generate a competitive advantage and enhance procurement performance. A resource is a tangible or intangible factor of production owned and controlled by an organization (Barney, Wright, & David J. Ketchen 2001). On the other hand, capabilities are complex bundles of individual skills, assets, and accumulated knowledge exercised through organizational processes that enable organizations to perform a coordinated set of tasks to achieve a particular result (Olavarrieta & Ellinger, 1997). Therefore, the difference in LREB county governments' performance is an outcome of the unique combination of resources and capabilities (Wu, Yenyurt, Kim, & Cavusgil, 2006). The current study conceptualizes supplier selection practice and risk management practices and IFMIS use as valuable LREB resources and capabilities, by adhering to best procurement practices, LREB counties can ensure they get the best value for money, securing quality goods and services at the most competitive prices, hence optimizing public funds. Effective supplier selection, evaluation, and management practices ensure that counties have access to reliable suppliers who can deliver goods and services of the right quality, at the right time, and at competitive costs. Supply chain risk management practices help counties identify potential risks (such as supplier failure, fluctuating prices, or logistical challenges) and develop strategies to mitigate them. This ensures continuity in service delivery even in the face of unforeseen challenges. LREB counties that implement robust risk management practices can



build resilience in their supply chains, ensuring that they can adapt to disruptions, such as delays, price changes, or political instability. Supply chain represent resources of the LREB counties as follow: developing supply chain practices that are responsive to local conditions and challenges makes LREB counties more adaptable. This capability can be a crucial resource in navigating economic uncertainties, by prioritizing local suppliers, LREB counties can enhance their economic resilience and community ties. This practice builds strong relationships, reduces transportation costs, and fosters local economic development.

Implementing appropriate technologies, like inventory management systems or data analytics, streamline operations. These technological resources help improve decision-making and efficiency in the supply chain, Investments in transportation and logistics infrastructure (like roads and warehouses) can significantly enhance supply chain effectiveness. This physical infrastructure serves as a critical resource for facilitating trade and movement of goods. Training and skill development initiatives improve the capabilities of the local workforce. A skilled workforce is a valuable resource that enhances supply chain efficiency and innovation. By leveraging these aspects, supply chain practices in LREB counties can be seen as strategic resources that contribute to sustainable economic development and competitive advantage. These dimensions of SC practices will expand the theory of SC in the county governments since they encompass both upstream and downstream supply chain activities. The resource-based theory anchored this study. It grounded the contribution of the study on procurement performance. Procurement Performance (quality compliance, budgetary control, cost effectiveness) create value to the citizens through adoption and use of important resources such as supply chain practices and IFMIS use.

### 2.1.2 Principal- Agency Theory

According to Jensen and Meckling (1976) agency relationship is the “contract under which one or more persons (the principal(s) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent”. Agency theory explains the relationship between the agents and principal and highlights a major problem in the relationship; the potentially differing objectives and risk attitudes (Lan *et al.*, 2010) following this thought, Shrestha *et al.* (2013) highlights two resultant issues; the goal conflict and the information asymmetry. Berg *et al.* (2008) point that in supply chain management; it’s often difficult for the purchaser (principal) to verify technical capacity and quality especially in complex purchases since they mostly rely on information given by potential contractors (agent). Olufemi (2013) review of agency literature shows that the theory also portends a risk sharing problem arises when the principal and the agent have different attitudes towards risk.

Agency theory places importance on information. For efficient risk management in procurement of LREB county governments, there is need to have a rigorous supplier selection towards a more accurate risk identification to enable supply chain risk reduction strategies (Bistch, 2010). The theory thus gives prominence to efficient risk identification. Further, Agency theory extends organizational thinking by pushing the ramifications of outcome uncertainty to their implications for creating risk. The implication is that outcome uncertainty coupled with differences in willingness to accept risk should influence contracts between principal and agent (Whittington, 2012; Jensen & Meckling 1976). In the procurement processes, risk identification allows for risks to be dealt with up front and thus managed efficiently by most able party (Shrestha *et al.*, 2013) The theory thus also gives prominence to risk assessment and monitoring.

Agency theory provides lenses to explore and understand the five landscapes on which supply chain risks occur: external dependencies (supply chain robustness, supplier viability); market conditions and behaviors (competitive or not; supply availability); procurement process; management controls; and the ability and agility to handle unexpected event (Russil, 2010); and therein provides a basis on which to develop risk management strategies. Efficient procurement risk hinges on; feasibility and market study to identify risks early; Risk reduction (accuracy of information in all procurement process for instance cost forecasts); risk allocation (risk sharing depending on negotiation power and ability to handle risk); and risk monitoring, considering the dynamic environment of public procurement process (EU, 2010) Agency theory has been applied in understanding risk management in supply chain processes (Halldórsson & Skjott-Larsen, 2006; Ritchie *et al.*, 2008; Norrman, 2008; Shook *et al.*, 2009), while Zsidisin and Smith (2005) show how compliance strategy such as ESI, have been used to gather information on suppliers in order to mitigate risk towards strengthening the principal and agent relationship.

### **2.1.3 Technology Acceptance Model Theory**

Technology acceptance model was founded in 1986 by Devis. He established that emerging technologies cannot improve organizational effectiveness and performance if the change has not been accepted by the users. Adoption of any innovation or especially information technology based requires investment in computer based tools to support decision making, planning communication (Kamel, 2014). However, these systems may be risky. It is therefore very critical that the systems are specified on devolved units' preference and logic. It is also necessary to understand that people (county governments employees) may resist technological changes. There must be an effort to understand why people resist changes and the possible ways through which such issues can be resolved. Appropriate culture must be inculcated; the change must

be adopted in an incremental way accompanied by communication. Everyone involved must be informed on their roles and empowered to perform the respective roles (Kamel, 2014).

LREB devolved systems of governance in Kenya should adopt technology as a way of enhancing infinite and non-restricted access of information and increases market transparency and economic incorporation based on complementarities (Carayannis & Popescu, 2005). Procurement technologies such as e-procurement grasp a virtual market, open to capable suppliers (and goods) according to not mainly restrictive selection criteria, in which LREB devolved systems of governance can choose goods and services offered by several suppliers (Szekely, 2005). IFMIS makes the whole process of procurement to be digital, using digital signature in order to guarantee transactions faster. Also, IFMIS will make devolved systems of governance to reduce administrative costs, budgetary compliance, possible broadening of suppliers base, easy access to preferred goods (predefined quality standards), information intelligibility and ease of comparison among goods and purchases logging and ensuing expenditure monitoring (Dobler, 2003). Thus, the LREB counties should adopt this theory so as to improve procurement performance, enhance productivity, effectiveness and efficiency in their operations. This theory also brought an understanding that acceptance and use of new technology in implementation is crucial for LREB county government procurement performance success.

### **2.2.0 Procurement Performance**

The procurement process refers to the activities through which public institutions acquire different types of works, any supplies and services for an organization by purchasing, renting, leasing, hiring, licensing, franchising, or any other contractual means (Ogwel, Iravo, & Lagat,

2016). Performance measures aid in understanding, managing, and improving what organizations do. Organization performance is linked to organization's efficiency, evaluation, quality, profitability, effectiveness, growth, and competitiveness (Taouab & Issor, 2019; Saini & Singh, 2020). Patrucco, Luzzini and Ronchi (2016) define public procurement performance as the purchasing of all necessities in terms of goods and services from the right place and in the right time, quality, purpose, price, and quantities for use by the procuring entity. Supply chain performance entails meeting customers' expectations by ensuring products are available and are delivered on time (Weeks & Namusonge, 2016). Mady, Mady, and Mady (2014) state that procurement performance within entities could be measured using efficiency levels, cost minimization, target attainment, supplies quality, elimination of defects, and material quality. Key indicators of procurement performance have been established to involve technology, flexibility, quality, timely delivery, and optimal costs (Kafimbou, 2019).

Procurement management is increasingly becoming central for public or private organizations performance (Amemba, Nyaboke, Osoro, & Mburu, 2013). The most significant elements of procurement performance are the efficiency and efficacy of purchases. Procurement performance is the backbone of an organization's success, according to Barsemoi, Mwangagi, and Asienyo (2014), since it results in the competitive purchase and acquisition of high-quality commodities, which gives the company's goods or services a competitive edge in the market. However, the researchers believe that poor procurement performance leads to a decrease in profitability, which is a major impediment to the organization's development as it causes delivery delays, lower-quality goods, and an increase in faults and defects. Performance measures aid in understanding, managing, and improving what organizations do. Firm performance is linked to a firm's efficiency, evaluation, quality, profitability, effectiveness, growth, and competitiveness (Taouab & Issor, 2019; Saini & Singh, 2020). Supply chain performance entails meeting customers' expectations by ensuring products are available and

are delivered on time (Weeks & Namusonge, 2016). Performance of procurement in this study was measured by on-time delivery of goods and services, cost performance, quality of the goods and services and budgetary compliance.

The performance of procurement involves how effective organization procurement targets have been achieved. Procurement performance is best measured by the extent to which procurement operations are able to get maximum value for every dollar spent on the purchase of goods and services (Kiage, 2017). A study by Carton (2015) deduces there is no accepted measures of performance in the preceding literature. Further he affirmed the general agreement of performance is final outcome of given activities within a given time frame. Knowing exactly what to measure, how to measure and when to measure helps to critically assess the level of procurement performance. According to USAID (2013) report and Marr (2013) the following performance scorecards: timely delivery, customer service, quality, payment processing time, procurement cycle time, overall equipment effectiveness, transparent price information and machine downtime level were identified as the indicators of measuring performance of procurement.

However, in Kenya, the Institute of Economic Affairs (2018) and the World Bank (2019) reports have pointed at a public procurement system with a worrisome performance in terms of critical key performance indicators: efficiency, effectiveness, quality, and innovation. Indeed, the poor performance of the public procurement system has been pointed at supplier selection criteria that have been designed devoid of the salient characteristics of world-class supplier assessment and selection criteria (Maina & Moronge, 2018). Mutua (2014) perceives public procurement performance as a crucial element in efficient and effective public service delivery.

Schiele (2020) noted that procurement performance is realized by achieving the organization set objectives and that value for money in procurement is realized from the government's perspective in terms of getting competitive pricing, reduction in wastage and improved quality of delivered goods and services. Coviello, Guglielmo, and Spagnolo (2018) noted that the concept of procurement performance is ambiguous due to the different levels within the organization that focus on achieving varying goals. However, in general, the procurement process's performance can be limited to the achievement of competitiveness, value for money, timeliness, quality of goods and services, efficiency, and effectiveness. Kumar and Ganguly (2020) revealed that procurement performance could be assessed using non-financial measures such as coordination, technical efficiency, and transparency, coordination, effectiveness, and information disclosure.

According to Chimwani *et al.*, (2014) there are eight essential success factors which determine performance of procurement namely; a clear procurement strategy, effective information management and control systems, corporate management role, coordination and focused efforts, an entrepreneurial and proactive approach, development of expertise and communication of success factors across an organization and arrange a strategy for continuous improvement. This is centered on competitiveness of enhancement, quality and total cost of suppliers using best procurement practice.

Tukuta and Saruchera (2015) study on challenges facing procurement performance in public entities asserted that a well-planned procurement system supported by a feasible regulatory framework can really boost execution of the procurement function; that is, a legal and policy framework that are complicated can pose risks to procurement planning and its effectiveness. Song, Haas and Caldas (2016) studies on inventory management in the US firms indicated that majority of the companies attain significant savings from effective materials management,

which amounts between 50%- 60% of total costs. That is, effective management of materials can lead to a reduction in cost, resulting in a significant saving; hence improve organization performance. Every dollar saved by reducing cost is more valuable than dollar sales. A dollar profit cannot be made from dollar sales; hence cost reductions positively impact an organization bottom-line profit. In order to achieve this, organizations must avoid incurring unnecessary cost and prioritize managing materials. Chong (2018) study on inventory management recommended that procurement process which is well prepared and implemented increase the possibilities to organizations' inventories reduction, encompass good services to customers, cost reduction as well as aid fast turns of inventory. Among the major procurement benefits are through the condition of short-range goals leading to productivity increase and inventory decline as well as less lead time.

In Kenya, Public Procurement Oversight Authority (PPOA) states that the public procurement system has been undergoing a transformation consistent with the global trend since the mid-1990s (government of Kenya, 2010), with procurement reforms focusing on transparency, accountability and value for public money. The first step was to put in place a unified and legal regulatory framework to guide the reforms, followed by the creation of Public Procurement Directorate (PPD) to oversee the public procurement process in Kenya and the Public Procurement Complaints, Review and Appeals Board (PPCRAB) to handle tendering disputes. The public procurement environment is characterized by rapid changes accelerated by frequent program reviews; needs to adopt to emerging technologies, calls for increased efficiency, accountability and the high expectation that there is focus on continuous improvements (Muhia, *et al.*, 2017). Kamotho (2015) affirms that Kenya's procurement process is complex and characterized by increasing complexity, duplication of roles, loss of revenues and resources, inefficiency and low compliance levels concerning procurement regulations. Despite reforms,



Muhia, *et al.*, (2017) states that the streamlined legislation and the IFMIS roll out have not had significant impacts on the performance of public procurement in Kenya.

There is a mountain of evidence as indicated by Mesa (2018); Odero and Ayub (2017) who were in consensus that the procurement performance within the country is deficient, as shown by the poor distribution of resources, inefficiency in the process, gross negligence, non-adherence to procedures, untimely deliveries, unqualified personnel and incompetence from public administrators in Kenyan corporations (Ogwel, Iravo, & Lagat, 2016). Procurement performance that falls short of expectations is a widespread issue in many county governments, with an incalculable cost that exceeds USD 0.5 million (Ksh 50 million) every year (Transparency International, 2019). Tom (2019) showed that the county suffers from inefficiency and incompetence, resulting in a loss of more than Ksh.50 million each year. It is estimated that the majority of the tendered works/services have a mark-up of 60 percent above the market costs, according to the Public Procurement Regulatory Authority (PPRA).

According to Auditor General Report (2021), the procurement performance in the county governments in Kenya has not ensured value for money due to increase in cost of procurement, increase lead time during procurement process. The report indicated that there was irregular procurement and unsupported expenditure. For instance, an expenditure of 5,500,000 was incurred by the Department of Education and ICT to procure furniture contrary to section 104 (b) of the public procurement and Asset Disposable Act 2015 in County of Nyamira. Payment was done in respect to un-numbered invoice and delivery note. Further, county Executive through the procurement section floated 460 quotations for procurement of various items within the county. However, it was not clear how the procurement section obtained the documents of bidders without delivering the quotation to the respective firms.

Best *et al.* (2017) noted that review of procurement performance has focused on legalistic and procedural issues, with limited examination of efficiency and value for money, directly affecting procurement outcomes. Kafimbou (2019) established the effectiveness of rules and procedures, combating corruption, and sanctions will improve public procurement performance in South Africa. Kahukya (2019), in a review of state authority in Uganda, concluded that improving procurement planning and control will significantly improve procurement performance. Simachew (2019) revealed that procurement planning, effective leadership, and adequate resources were critical to procurement performance within Ethiopian firms. Similar observations were made by Mesa (2018) who affirmed that appropriate budgeting, staff competency, procurement planning information communication flow, and management contracts positively and significantly affected procurement performance in the Kenyan Judiciary.

Nyamasege and Biraori (2015) asserts that Kenya's procurement process experiences lackluster performance portrayed by formality measures, resistance to the Act, overpricing, inferior planning, contracts which are poorly managed, inadequacy in accountability and transparency, material repetition and debasement. According to Mutuku, Muathe and James (2019) it is vital to consider a wide range of performance indicators when determining organizational performance. Quality, efficiency, productivity, profitability, and sustainability should all be considered when measuring organizational performance. Procurement should be viewed as an integral aspect of an organization's overall strategy.

Abdallah and Alnamri (2015) investigated the use of monetary and non-monetary performance measurement practices, in global companies carrying out operations in the Middle East targeting the Saudi Arabian subsidiaries. In the findings, financial measures are mostly used by most of the companies included in the sample due to the fact they are well known, and day to

day performance measures in the business practice and can with ease be put into effect, understood and quantified. As result, the current study carried through the following performance measures: Cost performance, quality of products/service, timely delivery of products/services and budgetary compliance. This aims to capture measurement of customer satisfaction, perfect orders, absolute performance and cash-to-cash cycle time, which is the time required to convert a shilling spent on inventory into a shilling collected from sales revenue. The analysis of procurement performance is complicated because of the different actor involved such as customers, suppliers, regulatory authority, wholesalers and manufacturers.

Kariuki and Paul (2019) tried to assess the impact on Kenya's county governments' procurement procedures through contract management. Following the findings of this research, county governments in Kenya have shown to have a substantial and beneficial impact on their procurement performance in the areas of contract monitoring, management capability, contract relationship, and contract planning. Ogembo and Muturi (2019) attempted to determine what impact contract management had on procurement performance in Kenya's devolved administrations. According to the findings of the research, contract automation, a contract management team, strategic contract management, and contract risk management must all be implemented successfully in order to enhance procurement performance within Kenya's decentralized government. Salim and Kitheka (2019) aimed to identify the impact of procurement strategy on state owned companies' procurement performance in Mombasa County, Kenya. It was found that the identification of procurement needs has a major impact on the procurement performance of government companies in Mombasa County, Kenya. In conclusion, procurement budget costs & projections have a significant impact on public corporation procurement performance in Mombasa County, Kenya.

Miriti and Mwangangi (2018) sought to investigate how acquisition strategy has an effect on the performance of the supply chain of the Kenya Medical Supplies Authority. The study has shown that the evaluation of procurement needs, budgeting, quality standards and supplier selection have had a positive and significant effect on the supply chain performance of Kenya Medical Supplies Authority. Mesa (2018) looked at the factors that influence procurement performance in the Nakuru Law Courts' Judiciary Department. The research found that effective procurement planning affects service delivery success, which workers are frequently educated on procurement processes, that proper contract management improves procurement performance, and that not all suppliers have access to tender information and may apply online. Procurement performance in the Nairobi city county government has received sharp critics. According to Africog (2019), procurement of goods and services in Nairobi City County lacked the requisite documentation, such as prequalification registers, market surveys, requisitions, quotation registers, quotations/tender documents, signed contracts, inspection and acceptance reports. Akinyi & Odhiambo (2015) noted that the Nairobi city county government did not take serious consideration to supplier profile during supplier sourcing leading to inefficiencies in the procurement process. Njagi and Kinoti (2018) further noted that county governments have lost a lot of money in the procurement processes as a result of poor records keeping, inadequate transparency and accountability, transaction inefficiencies, delays in delivery and collusion with suppliers which negatively affects procurement performance. Auditor reports (2016/2017, 2017/2018 and 2018/2019) have indicated that there was irregular award of contracts hence that rates were not commensurate with quantity and quality of works. The reports also indicated that value of money was not realized on the expenditure due to the delay noted in the completion of projects and poor workmanship (Office of the Auditor General, 2020).

### **2.2.1 Supply Chain Management Practices**

Globally, a substantial number of scholars averred that supply chain management is the management of all activities from raw materials so that the expectations of the users and the organizations are met or surpassed (Lyson & Farrington, 2016). In Africa, a number of countries have enacted legislations and advocated for the adoption of SCM practices in order to enhance their competitiveness not only in the regional trade but globally. Muogboh and Ojadi (2018) opines that it is a strategic competitive for organizations operating in Africa to understand SCM practices, challenges and enormous business opportunities in the continent. In Kenya, public procurement is anchored and guided by the constitution, the Public Procurement and Asset Disposal Act 2015, the Public Procurement and Asset Disposal Regulations 2020 and various policies issued by the National Treasury and the Public Procurement and Regulatory Authority. These legal frameworks emphasize on fairness, competitiveness, cost effectiveness, equity and transparency. These are the vital tenets of SCM practices that if effectively adopted would lead to improved organizational performance.

In the recent past, procurement performance has been attracting great attention not only in Kenya but across the world. This has been aggravated by the widespread none-adherence to the SCM practices. Procurement performance provides the basis for an organization to assess how well it is progressing towards its predetermined objectives, and identify areas of strengths and weakness (Shombe & Ouma, 2020). They further discussed the use of effective SCM practices is one of the valuable ways of securing competitive advantage and improving organization performance. SCM practices are a set of valuable activities undertaken by an organization to effectively improve their performance and meet their customers' needs. Due to the growing interest in SCM, various scholars have discoursed that SCM practices impacts organizations' performance both directly or indirectly.

Gawankar *et al.*, (2013) asserts excellent supply chain practices are the driver which influence the complete supply chain, decisive processes or its parts. Ralston (2013) argues supply chain management has emanated as a household practice across industries because it embraced supplier-buyer partnerships, strategic alliance, joint planning along organizational logistics governance, information sharing and be in charge of inventory. Procurement practices are those management measures that are conducted in order to enhance the performance of the procurement function. The procurement practices of other organizations have been defined as a set of activities undertaken by an organization in order to promote effective management of its supply chain, as well as the approaches applied in the integration, management and coordination of supply, demand, and relationships in order to effectively satisfy clients (Sindiga, Paul & Mbura, 2019).

Organization's procurement performance is achieved through effective supply chain management practices which are a blueprint that may be applied to all organizations, irrespective of the contexts in which they operate; however, this has been quite a challenge in County Governments in Kenya (Transparency International, 2019). This is supported by the findings of Barber, Garza-Reyes, Kumar, and Abdi (2017), who state that effective procurement methods are critical to the success of government programs because they serve as a connection between policy and delivery.

Lin (2014) in China, examined the following practices; adoption of information technology, collaboration, and enhancement of supplier relationship, He assessed inefficiencies in resource management of the firm. Whereas Kimondo *et al.*, (2016) studied the following supply chain practices; long-term relationships, effective communication, strategic purchasing, prudent supplier selection and few supplier policies, logistics integration, supplier involvement in

product development, good interaction and internal supply network coordination. Kazi (2012) considered tracking and trace products in the supply chain, short lead time, alerting customers on product availability, customers update on status of shipment, timely delivery, and Innovative design of a supply chain in his study on supply chain management practices and performance at Kenya Medical Supplies Agencies. Barasa (2016) examined supply chain management practices such as; customer relationship administration, supply chain partnership, green supply, information sharing in his investigation on performance of steel manufacturing companies in Kenya.

Rono (2017) stated on his research that, the connection between procurement procedures and the performance of an organization. Proper structures and systems in procurement ensured transparency, accountability, reduced costs and improved quality and specifications. Continuity of the workforce greatly contributed to organization performance. The study confirmed that procurement practices actually contribute to increased organizational performance. Procurement practices enable organizations achieve differentiation through better customer service and reduced lead times.

Lee (2014) reviewed five supply chain management practices specifically customer relationships, outsourcing, strategic supplier alliances, information sharing and product modularity to substantiate they are basic practices to improve the position of supply chain responsiveness which leads to improved procurement performance. Odero and Ayub (2017) studied the effect of procurement practices on public sugar manufacturing firms' procurement performance in Western Kenya. The study applied a descriptive survey design targeting procurement manager from the manufacturing firms. The regression results showed that procurement planning and staff competency positively and significantly influenced procurement performance. Findings revealed that adequate skills among procurement managers, improved staff training, knowledge of rules and regulations, and staff induction were

important to achieving better procurement performance (timely delivery, minimal complaints, reduction in wastage) in the sugar manufacturing firms.

### **2.2.1.1 Supplier Selection Practices**

Supplier selection is a crucial process that addresses how organizations select strategic suppliers in order to enhance their competitive advantage. Over the years, the supplier selection process has evolved into a more complex process that not only considers price but also series of qualitative and quantitative factors vital for firms' survival and growth (Shombe *et al.*, 2020). Kiage (2016) posits that procurement selection criteria dynamics affect organizational performance hence a key factor of consideration in public procurement practice today. According to Makori and Muturi (2018), the existence of systemic inconsistencies in supplier selection criteria is a recipe for gaps and loopholes for unscrupulous businessmen and organizational staff to be involved in unethical practices. Furthermore, inconsistencies bring about poor service delivery on the part of the institutions and hence a need to stimulate the application of the practices for efficiency (Wachiuri, 2018). According to Beil and Ross (2009) unsatisfactory selection of suppliers' setback the organizations due to recalls, guarantee costs, and inflict immense damage on their reputations and prospective sales. To refrain from such aftermath, it is vital to have effective screening processes to help identify efficient and effective suppliers before bestow upon contracts.

Marendi (2015), the basic principles of good procurement practice include supplier selection, where effective mechanisms must be in place in order to enable procuring entities spend the limited resources carefully, knowing clearly that they are accountable to members of the public; competitive supply, which requires the procurement be carried out by competition unless there are convincing reasons for single sourcing; and consistency, which emphasizes the equal treatment of all bidders irrespective of race, nationality or political affiliation. Supplier



selection criteria are critical in public organizations because it makes it possible for organizations to carry out the procurement function within standardized selection biases that are meant to ensure efficiency and effectiveness (Ogohi, 2014). Supplier selection criteria further ensure that the interest of the organization is achieved without jeopardizing the interest of the customers and the vendor hence facilitating the improved performance of the organization (Theuri, 2015).

Another way to improve supplier selection process is to integrate more social sustainability aspects into the selection process. Production disruptions can be reduced by highlighting the importance of suppliers' social sustainability when selecting suppliers. It also has a positive effect on reputation risk management and on the safety of the production (Wu *et al.*, 2021). Since it directly affects the competitiveness of any industry, supplier selection as a function of the procurement department has grown to be one of the most crucial responsibilities of procurement managers. As a consequence, choosing the right suppliers helps firms significantly while also raising customer satisfaction (Masemola *et al.*, 2022). They further asserted failure to use the right procedure when choosing the best possible supplier might lead to supplier risks, which could halt business operations. The competency of potential vendors is assessed using a variety of methods during the selection process. Firms can save money by evaluating potential suppliers against pre-determined criteria while also enhancing customer service quality. Therefore, selecting suppliers on the basis of the past records of similar contracts executed is fundamental in building the confidence of the user departments in terms of successful execution of contracts. The demand on procurement departments to select the most economically advantageous offer in order to ensure cost-effective and efficient procurement is increasing. To choose a bidder, a thorough analysis of potential candidates should be conducted whose historical performance could have an impact on the effectiveness of any procurement function or process (Mutai, 2016).

During the tender stage, a supplier's capabilities in terms of capacity, financial stability, quality standards, performance, and organizational and process structures may be evaluated by a questionnaire, interview, or site visit. In order to be included to the list of approved suppliers, existing and potential suppliers are evaluated for suitability and either accepted or rejected (CIPS, 2018). When selecting the best offer to purchase the commodities, services, and labour needed for an organization to achieve its objectives, a supplier is assessed based on past performance (Oteki, 2021). The evaluation criteria also take into consideration other factors such as personnel (key managers, technical staff), competency and capacity (tools and equipment, process quality systems, certification), Experience (clients served for last three years of similar tender), financial capability (audited financial statements). The lowest responding evaluated proposal is what is referred to as the best offer after bid evaluation (Oteki, 2021). The most advantageous bid is another name for it. Nevertheless, inefficiencies in supplier evaluation continue, ranging from partial contract delivery to early contract termination, notwithstanding the passage of the Public Procurement and Asset Disposals Act (PPAD) of 2015 and the Public Procurement and Asset Disposal Reform Act (PPADR) of 2020.

It is vital to assess the procurement performance and how it can be accrued from proper assessment of supplier's past performance. This is because of its contribution to the advantages that results from an effective selection process such as increase in efficiency and productivity and boosted customer confidence on supplier's ability and reliability to execute contracts of similar nature. The choice and retention of competent employees is crucial in procurement. To choose the best bidder, a corporation must take into account additional aspects (Ondieki, Biraori & Muhoro 2023). But studies reveal that even after having carried out an in-depth supplier evaluation plus appraisal coupled with the enactment of Public Procurement and Asset Disposals Act (PPAD) of 2015 and other policies on supplier evaluation, inefficiencies still

exist in LREB devolved units ranging from supplies being made halfway or even termination of contracts before conclusion.

LREB county governments in Kenya are affected negatively by delayed deliveries of goods, works and services due to the inability of suppliers to deliver contracts as agreed. This is attributed to poor selection of suitable suppliers from a common pool of suppliers. This results on constant project delays considering that most non-performing contracts are terminated and hence have to be started again (Kibet & Njeru, 2014). According to a report by Ethics and Anti-corruption Commission 2015, an evaluation of corruption and procurement performance in public procurement asserts that termination of contracts is a common challenge in public sector procurement (Kakwezi & Nyeko, 2019).

Further, the report attributes 25% of contract terminations to supplier failure, 15% results from non-adherence to timeline by suppliers, 14% results from changes in prices of goods, while 9% is attributed to poor quality of goods and services. Procurement is perceived to experience challenges in terms of waste and low quality of service (Mukarumongi, 2018). The 2018 Auditor General's Report claims that county governments in Kenya lost Ksh. 2 billion in the 2016–2017 fiscal year as a result of paying bidders for work that was subpar, incomplete, and didn't meet requirements, as well as those who provided poor quality goods and services (Masemola *et al.*, 2022). It is evident that most procurement challenges are attributed to termination of procurement contracts, incomplete orders, and delivery of substandard works, products, and services, supplier failure, and non-adherence to delivery timelines.

Despite having a procurement system in place, Makori and Muturi (2018) found that companies still experience delivery problems as a result of inadequate vendor selection criteria. Despite the presence of a system to regulate economic activity, this was shown to be true. Numerous studies on the factors that influence supplier selection have created a wealth of knowledge

about the numerous problems that arise from poor supplier selection, leading to ineffective project execution and publicly apparent outcomes. According to the results of several empirical studies investigating supplier selection factors, poor performance, for instance, is related to difficulties encountered throughout the supplier selection process (Wachiuri, 2018). AfriCOG (2015) cited inadequate pre-qualification of suppliers in the public sector in Kenya, as there are scores of single sourcing. This is echoed in the report of controller of budget (2015) which cited a number of single sourcing cases which could be as an outcome of executive interference in procurement process which undermine the principle of competition and encourage favoritism. This results into the risk of corruption and misuse of public resources by county government officials. They collude with service providers to reap financial reward from tenders in exchange for elimination of competition and favoritism.

Previous studies in supplier selection criteria have adduced considerable evidence on the presence of multiple challenges leading to unproductive project execution and deliverables within the public domain due to supplier selection deficiencies. For instance, Empirical evidence on various studies concerning supplier selection criteria points out to underperformance is attributable to failure on supplier selection procedural criteria misgivings (Wachiuri, 2018). Odhiambo (2016) established that substantial amounts of resources get wasted as a result of ineffective and inefficient policies and procedures, coupled with supplier selection criterion processes hence poor, or inadequate service or product deliverables, a departure from what is expected from the recipient consumers.

Athumani (2012) carried out an assessment on tendering process effectiveness in the Tanzania public sector in the ministry of health and social welfare the findings revealed when tendering process is executed according to the public procurement and asset disposal act 2015, the outcome is value for money to the public sector. According to world forum (2012) Tanzania

received a total of \$ 495M from donors and pledged more support to Tanzania a mid-warning future disbursement would depend on how it handles corruption cases and misuse of public funds especially in procurement of goods and services. Collins (2019) argued all the monies given as bribes to procurement practitioners by unethical suppliers are siphoned back from the buyer inform of inflated quoted price of goods, services and works.

Businesses may monitor the efforts made by their current suppliers to suit their needs through supplier performance monitoring. An essential part of supply chain management is assessing suppliers' performance in fulfilling expectations from procurement organizations (Maestrini *et al.*, 2018). Supplier monitoring has been connected to performance in a variety of areas of the literature (Subramaniam *et al.*, 2020; Yang & Zhang, 2017), While some studies found no connection between supplier monitoring and performance others found a strong one (Maestrini *et al.*, 2018). Therefore, it is essential to evaluate the effectiveness of one's providers. Efficiency in procurement has been examined as a means of cost reduction. Kakwezi and Nyeko (2019) define "procurement operational efficiency" as the capacity to provide goods and services at the most reasonable cost.

Organizations necessary safety stock may be reduced, according Baily *et al.*, (2015), if it can depend on its vendors to deliver on time. The appropriate time period should be stated together with the considerations to be taken into account for evaluating these criteria. Early deliveries into a vacant warehouse incur no additional cost, whereas delivery delays or early deliveries into a full warehouse may incur greater expenses (Barla, 2018). Quantitative data is necessary to offer a reliable evaluation based on this criterion, and this data must be continually preserved for each bidder. This criterion is quantitative since its evaluation is based on data (Monczka *et al.*, 2016).

Carr and Pearson (2019) reported that, supplier sourcing is the process of developing a plan, executing activities, directing and assessing the key activities of purchasing to attain the 15 strategic goals of the organizations. Supplier sourcing is a major issue in any organizations and the decisions related to sourcing is made by the top management of the organizations because the decisions affect a firm's resources utilizations that support its capabilities and competitive advantage. The precision with which quantities are given must be quantified in order to evaluate delivery reliability. This criterion and the previously mentioned "Delivery reliability based on time" criterion are fairly comparable (Ondieki, Biraori & Muhoro 2023). The amount reliability and real accuracy of the bidder should be considered while applying this criterion. Barla (2018) suggests retaining adequate order amounts as criteria, which is defined as putting the proper number of orders. This statistic assesses the efficiency and accuracy with which a provider can execute an order and serves as a quality indicator for the logistics industry.

Globally, procurement practice postulate that with specific reference to France and Germany that supplier selection criteria have been motivated by the desire to solve the gaps and shortcomings arising and existing in supplier selection practices (Thanga & Kwasira, 2016). A study of procurement in public institutions in South Korea suggests that an effective supplier procurement system that relates to the government is imperative to the well-being of the national economy of a nation as it facilitates the efficient utilization of public resources (Choi, 2015). Thanga and Kwasira (2016) point out that poor supplier selection criteria are an impediment to the successful execution of public projects in India and other Asian countries resulting in projects becoming uneconomical due to time and cost overruns hence negatively affecting economic development. A regional study of Nigerian public enterprises showed flows in supplier selection criteria and confirming the presence of a vital association between supplier selection practices and the performance of the organization. (Ogohi, 2014). This view is

augmented by Sunday (2015) who assessed banks in Nigeria have experienced performance bottlenecks created by supplier selection criteria challenges (Sunday, 2015).

In Kenya, supplier selection criteria has been on the spot in many public enterprises as it has been viewed as the biggest challenge in sound procurement implementation. Studies on supplier selection criteria postulate that public organizations have been experiencing supplier selection challenges despite the existence of government regulations to ensure compliance (Onyango & Muturi, 2016). Despite having a procurement system in place, Makori and Muturi (2018) found that companies still experience delivery problems as a result of inadequate vendor selection criteria. Despite the presence of a system to regulate economic activity, this was shown to be true. Onyango and Muturi (2016) observe that a sound public procurement system is necessary for the economic enhancement of several African countries and is a tangible countenance of their domestic obligations to making the best utilization of state resources. Numerous studies on the factors that influence supplier selection have created a wealth of knowledge about the numerous problems that arise from poor supplier selection, leading to ineffective project execution and publicly apparent outcomes. According to the results of several empirical studies investigating supplier selection factors, poor performance, for instance, is related to difficulties encountered throughout the supplier selection process (Wachiuri, 2018). After conducting several empirical analyses of supplier selection criteria, this conclusion was established. According to Odhiambo (2015), ineffective and inefficient rules and procedures which are the end result of supplier selection criteria processes are the cause of poor or inadequate service or product delivery.

A study done by Odhiambo, (2013) examined the effect of strategic sourcing practices and performance of multinationals in Kenya. Descriptive research design was applied and primary data gathered through structured questionnaires. Quantitative data was analyzed through

correlation, regression descriptive statistics. Qualitative data was thematically analyzed. It was reported that there was positive and significant effect of strategic sourcing, internal integration and information sharing on procurement performance. These findings cannot be generalized in public sector since manufacturing companies are geared towards profit making and state corporations are meant to alleviate social needs. Shicvati, Kibet, and Musiega (2016) on supplier selection criteria in public institutions using a case of Kakamega County found that the supplier selection criteria determine the level of success of an organization. This study established that public organizations are differently influenced by supplier selection criteria. While studying procurement procedures in public institutions in the case of Kisii County, Muturi and Onyango (2016) established the presence of strong bidding mechanisms, facilitated by regulatory compliance which allows a participatory supplier selection and hence improved performance. Nyagari *et al.*, (2014) examined causality of strategic sourcing and performance of tier three banks in Kenya. The study adopted descriptive research design and purposive sampling were applied. Structured questionnaire was the tool for data collection which was analyzed through descriptive and inferential statistics. Positive influence of banking performance was reported. Data analysis through exploratory factor analysis to examine most optimal attributes to be retained for subsequent analysis should have prioritized regression analysis. Further, failure to execute diagnostic test amplified possibilities of drawing biased findings. Moreover, some commercial banks are multinationals hence there are high chances of them incorporating strategic culture emanating from country of domicile. The study conducted by Freweyni (2017) at commercial bank of Ethiopia indicated that employee commitment to need assessment has a significant effect on project performance of CBE. The hypothesis tests of her study also confirmed supplier management has a significant effect on Project Performance of CBE. She asserted that it is important to involve suppliers in decision



making, encouraging information sharing and looking for new ways to integrate upstream activities.

According to Nabiliki, Wanyoike & Mbeche (2019) the benefits of supplier development include enhanced operational performance, effective communication, improvement in supplier performance, quality, delivery performance and cost reduction. Thus, the improvement of operational performance is beneficial to the procuring entity and as such supplier development can be used as a mechanism to enhance operational performance of a firm. According to Praxmarer-Carus, Sucky and Durst (2013) improving and developing of suppliers is a relevant management activity as it results in great earnings for the procuring entity. Supplier development is an effort by both the buying and supplying firm to jointly improve the supplier's performance or capabilities in terms of cost, quality, delivery lead time, technological advancement, safety and environmental responsibility, managerial capability and financial viability (Nabiliki *et al.*, (2019). Since supplier development is usually conducted by a buyer, the benefits of supplier development are often described from the buyer's perspective. Supplier development aims at enhancing firms' procurement operations (Dalvi & Kant, 2015) and therefore, an understanding of the relationship between supplier development and operational performance is important.

Buying entities and suppliers should build a common understanding on the rules of competitive bidding. Supplier selection is notably paramount as it unfolds how organizations decides on suppliers to strengthen their competitive edge. Supplier selection process has grown more complex as it not only considers price but series of factors important for firms' survival and growth (Ho *et al.*, 2010). Chartered institute of purchasing and supplies (2012) asserted that supplier financial status and stability is very vital and must be measured by factors such as cash flows management, profitability, debts owed, asset owned, among other. It further a firm

financial criterion is very key since settling on suppliers with inadequate financial position presents dangers to the buying entity which include but not limited to irresponsiveness, failure to execute the contract, poor service delivery and financially over dependent. Public procurement should ensure prudence during bidding process.

Whereas Cherotich (2018) contents that tendering is a procedure whereby potential suppliers are invited to make an offer on the terms and price they are will to supply specified goods, services or works which an acceptance shall form the basis of the subsequent contracts. Tendering process is aimed at ensuring public resources are used in an economic way and efficiently to achieve value for money. Tendering efficiency is ensured by adhering to the public procurement and asset disposal act 2015. Gallego (2011) alluded that the success of a buyer depends on suppliers' performance. Further he affirmed poor inspection of goods and services has resulted to under delivery or delivery of sub-standard goods. It's not clear on whether inspection and acceptance committee is established by the organizations, to ensure that acquired goods and services were delivered conform to the specifications set. He concluded that the supplier performance has a correlation to the firm's performance.

CIPS (2012) deduces that financial stability of a supplier reflects the ability of the supplier to fulfil the current contract. The studies concluded that a buyer needs to look into various sources of financial information to help on decisions regarding financial sustainability of suppliers. Kavuva & Ngugi (2014) argued adequate procurement planning leads to effective and efficient performance in Kenya local government procurement systems. Their findings were affirmed by AfriCOG (2015) cited inadequate pre-qualification of suppliers in the public sector in Kenya, as there are scores of single sourcing. This is echoed in the report of controller of budget (2015) which cited a number of single sourcing cases which could be as an outcome of executive interference in procurement process which undermine the principle of competition

and encourage favoritism. This results into the risk of corruption and misuse of public resources by county government officials. They collude with service providers to reap financial reward from tenders in exchange for elimination of competition and favoritism.

According to Apopa (2018) the following are factors to consider while selecting the suppliers; price of materials, pliable contract terms and conditions, the ability to positively react to emergency orders, adeptness deadlines, parts and services, geographical adjacency. The observed point of reference is used to gauge the strategic fit amidst buyers and suppliers, the cultural match within the firms, collaboration with the suppliers, the supplier's fiscal stability, regular communications and ethical character between buyer and supplier. Apopa (2018) contends s portfolio governance in selection phase implies selecting suppliers who have diverse competencies and traits to serve the clients. Furthermore, she argues from a sustainability point of view, attributes and adeptness in relation to the economic, environmental and social depth should be considered and balanced. Ageron *et al.*, (2013) carried out exploratory research they centered on criticizing the importance of IS/IT standards in the supplier's selection procedures. Study determined setbacks companies experience and assessed performance of supply chain as a result of integration of this criterion. Researchers reviewed literature on supplier selection and collected data using structured questionnaire. The result confirmed that IT/IS is crucial criterion during supplier selection because of the swift escalation of information across the chains.

#### **2.2.1.2 Supply Chain Risk Management Practice**

Apopa 2018 defines supply chain risk management as strategies to manage exceptional and daily risks in supply chain with an aim of minimizing vulnerability and promoting continuity based on risk assessment. Ganiyu *et al.*, (2019 defines risk management as “an ongoing process that can help improve operations and opportunities” (p.8). In 2019, Ganiyu *et al.*, also stated that risk management is a key aspect of strategic management of the organization. While

Adamu *et al.*, 2014 noted it's an ongoing process of risk assessment with different methods and tools which points out all possible risks, ascertain which risks are critical and then bring out strategies to deal with these risks. The spectrum of risks associated with purchasing goods and services is wide, encompassing issues such as reliance on a single provider, fluctuations in material costs, subpar product quality from suppliers, supply chain disruptions, currency fluctuations, supplier insolvency, legal and regulatory concerns, and unexpected costs, among others (Ahmad *et al.*, 2019), other risks include poor delivery schedules, poor pricing, poor quality, and non-delivery (Ominde *et al.*, 2022). To mitigate disruptions caused by these risks, many businesses/organizations informally adopt risk management practices, which typically include risk identification, risk assessment, risk mitigation, and ongoing risk monitoring within their supply chain operations (Simba *et al.*, 2017). Integrating risk management into a firm's supply chain activities has been shown to enhance overall performance (Luisa, 2020), making it a critical consideration for contemporary supply chain management (Hallikas & Lintukangas, 2016; Wiengarten *et al.*, 2016).

According to Ukalkar (2007) procurement risk management are measures placed by an organization to identify likely events that may unfavorably affect the acquisition process and set up of strategic plans to minimize or avoid risks in acquisition of goods, works and services. Like any other organizations or institutions in the market, LREB county governments in Kenya are not immune to risky events, therefore, the management of procurement risk should be considered all the time (Christopher, 2018). Risk management has drawn attention to the procurement entities globally due to continuous changes in the supply chain function. Poor risk management strategies may attract issues such as lack of risk decision-making, accountability, risk identification, risk assessment, mitigation, and monitoring (World Economic Report, 2020). The world economic report (2020) also recorded an increasing concern regarding approaches in supply chain risk management.

Kisia (2017) stated risk management in the supply chain has been a key area of concern to organizations universally because of several industry changes. The current global economic crisis reveals the need for ensuring proper risk management practices within the organizations. Further, he asserted that risk is presenting entirely all the departments of the organization. However, he noted that supply chain management is still a new notion that most organizations, particularly the government agencies such as county governments, have not fully embraced. Risk management is crucial, and it is thought that agency concerns have an impact on managers' attitudes toward risk management (Wawire, Fozia & Kiganda 2022). Risk management is the process of putting strategies and plans in place to sustain supply chain networks by constantly assessing risks and reducing vulnerabilities to maintain supply chain resilience (Gurtu & Johny, 2021). Further they argued sustainable supply chain is more important than ever in today's evolving business environment because risks tend to interrupt sustainable operations, lowering an organizational performance. However, these risks can be handled by risk management practices to integrate with supply chain management, resulting in greater organizational performance.

Supply chain risks contribute substantial threats to organizations' since they are believed to account for an average of 40% drop in long-term performance of most organizations' (Grotsch *et al.*, 2013). They argue that even companies which report minor supply chain hitches face a 10% negative return on their performance. Therefore, there has been an increasing concern regarding supply chain risk management and internal control systems within organizations. However, supply chain management within the county governments have been facing challenges such as managing their suppliers, unfinished projects, poor service delivery, inadequate contract management, inventory and maintaining safety and quality (Kisia 2017).

Risks have the potential to disrupt supply chains. Supply chain risk management guarantees that there are few breakdowns and that supply chains run smoothly. (Christopher, Martin, & Hau Lee, 2014). Many institutions have adopted risk management practices such as monitoring risks by identifying risk management strategies in order to prevent fraud. However, despite these mechanisms being in place, LREB county governments still have inaccurate forecasting and unreliable suppliers that has reduced the level of stock replenishment. This has made it difficult for the county governments to account for Kshs. 200-500 million every financial year as per the auditor general report (The Auditor General Report, 2020).

According to Ouma (2017) supply chain risks are serious threats to organizations since they account for an average of 40% drop in long-term performance of most organizations. Further, he argues minor hitches in supply chain leads to 10% negative return on companies' performance. That being so, there is concern relating to supply chain risk management and internal supervision in organizations. However, supply chain management in the devolved units has been facing challenges such as inventory governance, suppliers failing to honor the contracts and maintaining safety and quality. According to Varma and Khan (2015) the use of Information and Communication Technology (ICT) is greatly embraced by organizations' but has also generated a lot of ICT risks. The major computerized supply chain systems used for mitigation of risks within the organizations include Automatic Identification (Auto ID), Electronic Data Interchange (EDI) and Enterprises Resource Planning (ERP) systems. In addition, governmental organizations in Kenya, such as county governments, have adopted an Integrated Financial Management Information System (IFMIS) which is used to manage risks though the risk management challenges still exist (Miheso, 2013).

A report by the Public Procurement Authority (PPOA) (2013) disclosed that most of the products/services tendered are bought with a mark-up of 60% of the market price affecting the

supply chain performance due to high costs. Therefore, supply chains performance in Kenya is at a risk of inadequate risk influence and interference. According to CIPS (2012) organization with proper procurement risk management system gains on strategic decision-making areas, which in some organizations may undertake without the incorporation of procurement expertise. Such resolutions have a positive outcome on the firm's supply chain performance although the focus was not on performance of supply chain. Russill (2008) argued procurement is not treated as a strategic tool in facilitating an institution to gain competitive edge. He postulates most organizations concentrate on managing the assets, workers employed and on satisfying their customers' needs while failing to understand the supply chains risks. According to Okonjo, Magutu and Nyaoga (2015) procurement risk exists in an organization when the organization's dealings with suppliers and supply market behavior result into outcomes that harm operational integrity, organization reputation, and financial viability. Olsha (2010) identified supply chain disruptions, supplier's quality issues, legal affairs, price volatility and supplier dependency on a company and supplier bankruptcy as some of the procurement risks.

According to Behnezhad *et al.*, (2013) and Abolghasemi *et al.*, (2015) the ultimate goal of supply chain risk management process is to protect the integrity of organization against the unfortunate events and their consequences in order to gain maximum power and ability to make as much as profit as possible. The lack of effective risk management has caused many organizations to suffer untold loss. For example, Apple and Ericsson suffered over 400 and 300 million euros losses respectively due to poor risk management (Norman and Jansson, 2004). According to Abolghasemi *et al.*, (2015), Supply Chain Council members have reported that less than half of enterprises have established metrics and procedures for assessing and managing supply chain risk. In addition, organizations' lack sufficient market intelligence, process, and information systems to effectively predict and mitigate supply chain risks he concluded. This expression agrees with the opinion of Christopher *et al.*, (2011) who said,

“Most companies do not have a structured management and mitigation system covering supply chain risk”. Hendrick, Singhai and Zhang (2009) see this as one of the reasons why desired performance is not achieved in supply chains.

According to study by Rotich, Kamoni & Ochiri (2018) the vital aspects in procurement risks management are government assurance of contractual guarantees provision on various projects as well as involvement of management and stakeholders in the overall process of contract management. The best practices in management of procurement risk advocate for the need for transactional and operational efficiency on activities related to contract management (CIPS, 2013). Study by Okonjo (2014) proposes there are notable connection between management of procurement risk and performance of procurement, therefore county governments must invariably endeavor to put together these key approaches and incorporate them to the outlined strategies of procurement. This is an approach towards risk mitigation in procurement function as all the county mn governments’ stakeholders are involved. It’s of important to note, procurement risks are very diverse and mechanisms for continuous improvement should be at the core all the time to enhance uninterrupted flow of activities.

### **2.2.3 Integrated Financial Management Information Systems Adoption**

Giner, *et al.*, (2011) defines E-sourcing as use of internet to look for new suppliers by an organization or an individual. Whereas E-tendering is inviting suppliers to provide information regarding goods, services and works they offer, there prices and getting feedback from potential suppliers through the internet. Giner *et al.*, (2011) further affirms the internal users are critical for the success of IFMIS, this is attributed to the fact that the internal users may not be willing to adopt the new system due to the fear of the unknown or due to being so attached to using the old manual system thus changing would be difficult. Hence, there is resistance to IFMIS implementation which affects procurement performance. Dener and Young (2013) conducted a study to identify improvements in budget transparency and



publication of budget data by IFMIS platforms. They pin pointed 20 critical indicators from the public fiscal websites of 198 countries to analyze the position of government websites in publishing reports from IFMIS. Findings indicated despite the fact that the system is widely acknowledged and used worldwide, only 12% of the user's portrayed good practices in presenting open budget data from the systems. They concluded in spite of the IFMIS use by 198 countries reports generated from IFMIS are visible in only 24 countries.

Mahdillou and Akbary (2014) noted that the adoption of e-tendering was associated with transactional benefits. The e- tendering simplifies any transaction process. The entire tendering process from the raising of requisition to online payment has been supported through the e-payment system. The electronic processing of tendering activities has been associated with great time saving and improved efficiency because of the electronic enabled relationships with suppliers, elimination of trivial activities, greater data accuracy, and facilitating supplier performance improvements. Boudijilda and Pannetto (2013) noted that the infrastructure of e-tendering and its procedures can be facilitated by the achievement of the principles of transparency and accountability which are required in the public offices as the enhancement process of efficiency, flexibility and effectiveness in the process of tendering. E-tendering has the potentiality of promoting the operation efficiency in the public sector tendering and providing a significant cost saving.

On the other hand, in South Africa, Hendriks (2012) pursued the risks and challenges involved in the discharge of the integrated financial management information systems. The study employed literature review without collection of data. Findings revealed challenges of the system where data involved is of large quantity. However, well maintained IT infrastructure leads to success. Aminatu (2015) used a case study research design to investigate the impact of IFMIS on Ghana's economic development. The study focused on

the Ghana IFMIS and used both qualitative and quantitative data from the Ministry of Finance and Economic Planning during a ten-year period. The study evaluates the Gross Domestic Product (GDP), economic growth, and resource allocation, among other economic performance measures. The findings of the study found that the efficiency of the public and private sectors, government budgetary policies, interest rates, and the regulatory environment all have a role in the country's economic success.

Isidore (2012) conducted a study in Tanzania's organization, he looked at how financial decision making are enhanced by IFMIS. Descriptive study design was adopted, study focused on 34 respondents sampled purposively. Primary data collection method was employed, the findings revealed the use of IFMIS leads to efficiency in management of finances in Tanzania. In another study, Conrad (2013) linked the use of IFMIS and its effect on service delivery in the public sector. The study used primary data, correlation and regression analysis was adopted for the analysis. Findings revealed the system enhanced service delivery to businesses and it hastens the integration among various stakeholders such as citizens, suppliers and government.

According to Bhatia (2003) IFMIS is an information system which integrates financial management, budget preparation, reporting, budget execution and accounting activities for efficient management of finances. Further he articulated IFMIS bring about computerization of the public pay out governance processes along with accounting, budget conceptualization and budget fulfilment with the support of the integrated system for governance of fiscal matters of the line ministries and other pay out agencies. IFMIS is designed to enhance systems for tracking, financial data recording and information management (Ministry of Finance and Office of the Deputy Prime Minister, 2011). This is in respect to increasing demands for greater accountability and transparency in the management of public finances. Further it gives real-

time information on finances which final users can use to generate budgets, oversee projects and manage resources effectively. LREB County Government have adopted IFMIS, and therefore all its procurement functions are expected to be performed on the IFMIS platform, raising transparency of the procurement process, and allowing more suppliers to access tenders. Several challenges have been encountered which have been characterized by construction delays resulting from the long process of acquiring bills of quantities, and slow procurement process (Republic of Kenya, 2019). According to Kenyan E - Government strategy paper (2014), IFMIS use was one of the medium-term objectives which were to be implemented by 2015 among county governments to enhance efficiency in delivery of public services, procurement being one of them. Nevertheless, Chemoiywo (2014) revealed that procurement performance in LREB county governments has been dogged by procurement system inefficiency, lack of sound procurement policy guidelines and lack of a genuinely open and competitive system of procurement amongst other shortcomings.

IFMIS use in Kenya is seen as the most effective strategy in addressing the effects of public procurement misappropriations that have bedeviled the public sector from the time the country attained self-rule. Integration of financial management systems improves the ability to acquire financial information as well as operational performance, avail information on the financial position of the government, as well as information on the performance of the economy, thus demonstrating accountability to the public as well as donors (Biwott, 2015). Mose, Muranga and Magutu (2015) conducted research on adoption of e-procurement in large scale manufacturing firms. They found out that the five main factors that lead to e-procurement were: employees and management commitment to success of adoption; reliability of information technology and supplier performance; monitoring the performance of e-procurement systems; user acceptance of e-procurement systems and top management support. Ogachi (2015) sought to find out the factors influencing the implementation of integrated financial management

information systems (IFMIS) in Kenyan county governments. Her research focused on Kisii, Migori, Homabay, Kericho and Nyamira counties in Kenya. The research established that most counties did not have different strategic approaches to IFMIS implementation; the ICT platform for the roll out IFMIS is in place; there are no regular skills upgrading courses on IFMIS and no motivation to retain skilled personnel; the political class is not supportive of IFMIS implementation and the counties have not allocated enough resources towards implementation of IFMIS.

Ndegwa and Mungai (2019) looked at the guidelines for implementing IFMIS in the South African public sector. The goal of the research was to identify the problems and hazards associated with implementing the IFMIS in South Africa. Lack of capability, lack of commitment, institutional and technical obstacles are among the challenges noted in the study. For successful IFMIS use, the study also advised capacity building programs, stakeholder commitment, the formation of an effective change management team, and a detailed implementation plan. Cherotich and Bichanga (2016) focused on factors that affect implementation of IFMIS in county governments and concluded that change management, technical infrastructure, top management commitment and human capital development affect IFMIS implementation in county governments in Kenya. Sigei (2013) in research on factors that affect IFMIS implementation concluded that user involvement, clear goal setting, management support and appropriate infrastructure are among the critical factors that affect IFMIS implementation.

Bosire (2016) examined the influence of IFMIS on financial probity in Kenya's public sector, using the Ministry of Foreign Affairs as a case study. The study relied on 40 users of IFMIS in the ministry of foreign affairs and employed a case study design that drew from both agency theory and systems theory. The study's findings show that the adoption of IFMIS re-

engineering approaches accounts for 74.8 percent of the public sector's financial performance. Furthermore, the study found that IFMIS implementation has an impact on overall procurement performance in Kenyan government ministries, with management commitment, capacity, and training, as well as the level of IFMIS use, all having a favorable impact on financial probity. Research by Mwakio (2015) in Taita Taveta County looked at the Challenges Facing County Governments in Implementing IFMIS. The researcher aimed to establish the reason behind the poor management of funds despite the use of IFMIS. In his conclusion, the researcher pointed out that previous training on IFMIS had involved junior county staff and failed to include senior officers. This was because the senior county staffs were too busy attending to other matters and did not appreciate the importance of the IFMIS training and had instead sent their juniors to attend the training. The researcher recommended that the National Treasury should take a more decisive approach to implementation of IFMIS in County Governments. Ndzovu and Ng'ang'a (2019) assessed the effect of Integrated Financial Management Information System on financial performance in Kwale County Government. The study adopted descriptive research design and collected data through questionnaires from 137 out of 142 employees sampled through stratified random sampling from the finance and economic planning department, Kwale County Government. The results revealed that electronic budgeting, automated cash management, electronic procurement and automated financial reporting had a positive and significant influence on financial performance of the county.

Omar (2017) investigated the impact of IFMIS on financial performance in Kenyas' county governments, focusing on Garissa County. The study used a descriptive research design and secondary data from the county finance department for its findings. According to the conclusions of the study, IFMIS has a favorable and significant impact on Garissa County's financial performance. An increase in expenditures for improving the IFMIS system resulted in an improvement in the county's financial performance in terms of total revenue collected.

Muigai (2012) concluded that significantly IFMIS has contributed to betterment of management of finances in Kenya public sector. He further argues improvement can only be achieved if the adoption and implementation process is successful. Mugambi (2011) deduced minimal resistance to change by staff and end users, senior management commitment, availability of funds, availability of ICT infrastructure, legal and regulatory framework and a standard chart of accounts were factors which contributes to successful implementation of IFMIS. However, Kimwele (2011) identified lack of proper staff training, inadequate top management support and hurried implementation as some of the challenges hindering the implementation and successful use of the IFMIS in Kenya government ministries. He further argues the reengineering process concentrated on addressing the challenges and the system was improved to make it more reliable and useful. Therefore, technology acceptance theory fits this objective and relates to the application of IFMIS use in the tendering function and its performance. There is no doubt that the use of IFMIS has facilitated the reduction of coordination costs (Chepkwony, 2015). Therefore, this theory suits this study because the LREB counties would chose to employ the IFMIS in its tendering process for efficiency, effectiveness and transparency.

#### **2.2.4 Supply Chain Practices, IFMIS use and Procurement Performance**

SCM practices are practices designed to manage and coordinate the entire supply chain's activities from the origin of raw materials to the end customer in a seamlessly integrated manner (Abebe, Beyecha, & Gemedda, 2020). According to auditor general report (2021-2022) county governments performance in terms of procurement is worrying for instance “the statement of receipts and payments reflects use of goods and services amount of Kshs.1,380,479,065 in Nandi County which includes hospitality supplies and services amount of Kshs.147,464,882 as disclosed in Note 5 to the financial statements. However, verification of documents in support of the amount revealed that payments totaling to Kshs.14,469,230.00

were made to hotels for hire of conference facilities. The transactions were made outside the IFMIS system”. Further the professional opinion by the head of procurement function was issued on 14 October, 2021 while the tender evaluation was done on 28 October, 2021, fourteen (14) days after the professional opinion was given contrary to regulation 78 (2) of the Public Procurement and Asset Disposal Regulations, 2020 which states that the evaluation report under paragraph (1), shall be reviewed by the head of the procurement function and forwarded to the accounting officer together with the professional opinion referred to in Section 84 of the Act within a day upon receipt of the evaluation report”.

In an attempt to overcome the revenue and cost pressure, organizations are doing their best to improve their operations and among the efforts is the application of technological innovation in their procurement operations (Mishra *et al.*, 2013). Studies have indicated that the implementations of electronic procurement in organizations have benefited them by increasing transparency, cost savings, reduction in procurement time and efforts, and improved convenience (Cholette *et al.*, 2019) while other studies tend to challenge the applications of electronic procurement as it possesses limited functionality and in some cases, it has caused the reduction in the number of firms who participated in the tendering process (Gurakar & Tas, 2016; Tutu *et al.*, 2019).

Studies on technology usage in procurement, supply chain management, and value chain indicate the existence of a positive relationship between technology usage and public procurement performance (Alsac, 2007; Alsetoohy & Ayoun, 2018; Ateto *et al.*, 2013; Belisari *et al.*, 2019; Cholette *et al.*, 2019; Gardenal, 2013; Gupta & Gupta, 2012; Hsiao & Teo, 2005; Karthik & Kumar, 2013; Mäkinen *et al.*, 2011; Marinagi, Trivellas, & Sakas, 2014; Quesada *et al.*, 2010; Singer *et al.*, 2009; Svidronova & Mikus, 2015; Yu *et al.*, 2016). Despite significant studies concluding on a positive association between technology usage in

procurement and procurement performance yet still some studies provide ambivalent results on the relationship between technology usage in procurement and or supply chain performance.

Studies in developing countries more specifically in the private sector have indicated some positive benefits of technology usage with the majority of these studies being conducted in Asia with just limited studies in Africa (Gupta & Narain, 2012; Gupta *et al.*, 2011; Karthik & Kumar, 2013; Yu *et al.*, 2016). By considering public sector procurement reviewed literature indicated the number of studies conducted in the developed countries' public sector whereby, some of these studies also support a positive association on the relationship between technology usage, especially electronic procurement on the performance (Cholette *et al.*, 2019; Dooley & Purchase, 2006; Singer *et al.*, 2009; Svidronova & Mikus, 2015). Mutuerandu & Iravo (2014) examined the effects of SCM Practices and procurement performance in Haco Industries Ltd. The findings revealed that all the dimensions of SCM practices positively affected “organizational performance in terms of operational costs, reduced lead time, high customer service levels, product quality, fast response to changes in the market, and expanding its market share sales”.

There is no clear unique way of classifying technology application in procurement or supply chain as it has been conceptualized differently by each scholar (Oh *et al.*, 2013). Reviewed studies indicate some studies referred to technology application as the use of the Internet, while others add to the body of knowledge by further extending the concept of technology application by referring to the Internet as a complementary tool that could be used together with other technology such as electronic data interchange and other systems that are directly used to facilitate the procurement process (Presutti, 2003; Quesada *et al.*, 2010). Johnson *et al.* (2011) pinpointed some technological tools that could be used in purchasing among which include electronic procurement systems, electronic data interchanges, electronic marketing places,



online catalogues, commodity coding schemas as well as online reverse auctions. This lack of consensus is partly attributed to the fact that technology has different dimensions.

Cholette *et al.* (2019) using a case study of the University of California procurement system revealed some benefits generated as a result of using electronic procurement among them being the reduction in procurement time and efforts, improved convenience when ordering, delivery accuracy, and increased invoice automation which has significantly reduced the number of paper invoices. Furthermore, a study conducted in Slovakia suggested that technological innovation especially electronic procurement can enhance a very competitive and more transparent environment in public settings (Svidronova & Mikus, 2015).

Of studies on technology usage in procurement, most of them were from private sector organizations through which the level of innovation especially advanced technology applications in their process is at an advanced level compared to LREB county governments (Cholette *et al.*, 2019). Also, the literature indicates limited research on the benefit accrued through technology implementation in public procurement settings especially in public sector procurement in developing countries. Moreover, of these reviewed studies majority of them operationalized technology usage as electronic procurement only limiting other procurement related technologies. Based on these empirical shreds of evidence and theoretical analysis IFMIS use is very paramount.

The nature of the linkage between SCM practices and procurement performance could be, on the one hand, direct or indirect (Okongwu *et al.*, 2015). Therefore, adopting IFMIS in LREB counties opens strategic opportunities for creating competitiveness that promotes procurement performance leading to improved service delivery (Hatani, Djumilah, & Wirjodirjo, 2013). Generally, most studies focused on the relationship between SCM practice of either downstream or upstream SC sides and the performance. Therefore, there is a lack of an

integrated framework linking upstream and downstream SCM practice to procurement performance (Li *et al.*, 2006). Additionally, there is a lack of a comprehensive framework linking SCM practices, IFMIS use and procurement performance.

## **2.3 Empirical Literature Review**

### **2.3.1 Supply Chain Practices and Procurement Performance**

A study by Murray (2009), looked into how public procurement could help the UK get out of the global economic downturn and speed up the economic recovery. The study used a secondary research method to get information from the local government procurement. The study found that the British local government procurement strategy stayed mostly the same as it was before the recession. There is a good chance that current best practices will slow down the economy, and a short term change in procurement strategy is needed. However, the economic recession is still going on, so the secondary research could also be skewed by self-selection bias. Also, the study didn't talk about important supply chain practices like supplier selection and risk management, which are important to success of procurement performance. Omar & Sim (2010) in their study conducted in Malaysian manufacturing firms on supplier selection criteria concluded cost followed by quality ranked higher than any other determinants, delivery ranks third based on their analysis, while Nadir *et al.* (2012) considered main determinants of supplier selection as quality, financial stability, supplier profile and technical expertise.

Craighead *et al.*, (2020) examined the awareness level of risk management in their study on construction companies in Malaysia on the risk management practices. They established the policies undertaken while handling risks in a construction project and identifying the challenges in risk management. They employed interviews and questionnaire survey to study 27 private and public companies operating in Klang Valley. Their studies concluded that risk

management significantly contributes to the productivity and financial performance. Study was conducted to measure awareness level of risk management separately, while this study established the effect of risk management on procurement performance. Furthermore, their study adopted the interviews and questionnaire survey, this study adopted questionnaire only. The study was also done in construction companies in Malaysia therefore the study results can't be generalized in the LREB devolved units in Kenya.

Raj *et al.*, (2020) conducted a comparative study of developed and developing countries and revealed that across 102 countries' institutional pressures and citizen attitude was key to fostering sustainable public procurement. In a study in Pakistan, Best *et al.*, (2017) noted that review of procurement performance focused on legalistic and procedural issues, with limited examination of efficiency and value for money, directly affecting procurement outcomes. Ackah *et al.*, (2013) looked at competitive tendering, as effective tool in ensuring value for money in public sector procurement a case study at “Ahanta West District Assembly” a district in the western part of Ghana and established that the processes involved are seen to be complex more especially for some contractors and those employees who have little knowledge in procurement when it comes to works and also the problem of political interference. There is a contextual gap since the study was done in Ghana the result cannot be generalized in LREB devolved units in Kenya.

Mollel (2015) investigated the “role of SCM practices towards organizational performance in food processing firms in Dares Salaam, Tanzania”. The study obtained data via questionnaires from a sample of 53 food processing firms to examine the relationship between SCM practices and organizational performance. Results revealed that “strategic supplier partnership, customer relationship, level, quality of information sharing, and lean practices were positively related to organizational performance”. However, the study

concluded that there was no relationship between outsourcing and organizational performance. Outsourcing practices may indirectly affect organizational performance through a moderating variable which not considered in his study. According to Nitzl, Salgueiro, & Cepeda-Carrión (2016), the inclusion of a third variable in a model helps explain the intermediary process in the relationship between two variables. Conceptual and Contextual gaps existing in the above study, conceptual the study focused on organizational performance and lacked a moderator while this study looked at procurement performance and had a moderator to check the indirect relationship. Contextual the study was done in Tanzania food processing firms which is different from LREB devolved governments in Kenya.

Apopa (2018) examined the influence of SCM practices on the performance of government ministries in Kenya. The study adopted the RBV, coordination and system theories, and a cross-sectional survey design targeting 1372 staff working in the SCM department from 20 government ministries. Additionally, the study used “Pearson’s Product Moment Correlation analysis(r) and multivariate regression analysis to test the relationship between variables”. The findings revealed that SCM practices explained 96.4% of the performance variance, while the organization culture moderated the outcome of the effects. However, the results should be interpreted cautiously since regression analysis could neither assess no correct measurement error, raising the “possibility of incorrect conclusions due to misleading regression estimates” (Teo, Tsai, & Yang, 2013).

Ogutu and Were (2013) conducted study on the perception of regulation on procurement process of Devolved systems of government in Kenya: a case study of the county of Kajiado. The study adopted a descriptive research design to gather quantitative and qualitative data, target population of 595 employees of Kajiado County Government and sample size of 119

was drawn from all cadres of staff, the populations were regarded homogeneous. Descriptive analysis and regression analysis was used to establish the relationship between the study variables. The study found out that accountability, ICT adoption, operating procedures, affects the procurement process and ethics of Devolved Systems of Governance in Kenya to a great extent. But the study failed to address supply chain practices and how it influences the procurement performance of Devolved government. Also, the study scope was narrow because it covered only one County government and thus the study finding may not be generalized in LREB counties. Methodological the study adopted descriptive research design while this study employed correctional study design

Memia (2018) establish the influence of contemporary SC practices on large manufacturing firms' performance in Kenya. The study conceptualized SCM practices as a multidimensional construct consisting of supplier relationship practices, customer relationship management practices, outsourcing practices, and lean supply chain practices. Additionally, this study adopted five theories; theory of supply chain constraints, resource-based view theory, value chain theory, the theory of lean six sigma and transaction cost theory. Moreover, the study employed a descriptive research design to collect data from 312 respondents representing 563 large manufacturing organizations listed by KAM. Furthermore, the study utilized correlation and regression analysis to uncover the relationships among the predictor and criterion variables. The results revealed that all contemporary SC practices significantly influenced performance. However, this study concentrated on the direct relationship between SC practices and performance and omitted the indirect relationship between the variables. While this study focused on the direct and indirect relationship SC practices and performance adopting IFMIS as a moderator.

Musau (2015) in his study established that if purchasing practice is not carried with utmost management ethical standards, the procurement function in the organization will be rendered vulnerable to malpractices and hence procurement managerial ethical violation and abuses and declined organizational performance. Similar observations were made by Mesa (2018) who affirmed that appropriate budgeting, staff competency, procurement planning information communication flow, and management contracts positively and significantly affected procurement performance in the Kenyan Judiciary. Apiyo and Mburu (2014) examined factors affecting procurement planning in county governments in Kenya using a case study of Nairobi City County. The findings indicate that inadequate competencies of procurement staff, lack of management support, Information Communication and Technology (ICT) tools and budgeting procedures affect procurement planning. Finally, the study recommends further research to be carried out in other counties to find out if the same results can be obtained

Iregi and Kipkorir, (2017) carried out a study on the effects of Procurement Processes on the Performance of Public Sector Organizations in Kenya. The findings revealed that procurement methods and practices had a significant influence on the performance of state corporations in Kenya. The study indicated that open tender system influences logistic firms in that it ensures competitive prices and is a flexible system as it reduces the cost of business and overstocking expenses. Mohammed, Lagat and Ngeno (2019) employed explanatory research in determining how performance of Manufacturing Firms is influenced by Sustainable Supply Chain. It was postulated that for firms to boost their performance, decision makers need to implement social, economic and environmentally sustainable strategies. Ecological sustainable strategies like materials recycling, embracing ecological and clean systems of production ought to administer to augment the performance of production firms. The study focused on sustainable supply chain leaving a gap for supplier selection and supply chain risk management.

Contextually, the study focused on manufacturing firms leaving a gap for the LREB county governments. Mutangili (2019) studied Green Purchasing and Performance of parastatals in Kenya using systematic literature review. The firm's performance was influenced by Green Purchasing, Eco-Distribution, Reverse logistics and Eco-Procurement supplier selection and Eco-Marketing were noted to significantly impact performance. There is a contextual and conceptual gap in this study. Conceptually, it focused on green procurement not ordinary procurement and contextual it focused on performance of parastatals not LREB devolved governments.

Katheo and Mwangangi, (2018) conducted a study on the influence of supplier selection criteria on performance of public tertiary training institutions in Kenya. They adopted a descriptive research design and the study population comprised of all the 78 public tertiary training institutions in Kenya. The variables of the study included; financial evaluation, commercial evaluation, technical evaluation and quality management. A simple random sampling technique was adopted in the study and findings revealed that all the four variables, namely; financial evaluation, commercial evaluation, technical evaluation and quality management influenced the performance of public tertiary training institutions in Kenya.

Krop and Iravo (2016) also conducted a study on the effects of supplier selection on performance of procurement function in public sector using a case of county government of West Pokot. The variables of the study included; value for money, quality of goods and services, process cost management and timely delivery. According to the findings, 80% of the respondents were of the opinion that value for money was important in supplier selection while 20% were of a contrary opinion. The study also revealed that 76% of the respondents agreed that quality of goods and services should be one of the vital considerations during supplier selection exercise, 24% disagreed. Therefore, this study addressed the above gap. Martin,

Yusuf and Douglas (2014) conducted a study on determinants of supplier selection on performance of public institutions in Kenya using a case of county government of Kakamega. A descriptive research design was adopted and the target population was procurement staff in the county government of Kakamega. The study findings revealed that quality of supplies had a positive and significant association on performance of public institutions. Contrary to the above study this study target population was 14 LREB devolved units and it included chief officers, finance officers and procurement officers.

A study done by Rotich, Mutai and Okello (2016) concluded that that supplier quality commitment has significant effect on procurement performance of public universities campuses in Kericho County. Suppliers' level of quality commitment directly determines the level of quality in products and services obtained through procurement activities; product quality is just an aspect of procurement performance. In overall, achievement of product quality affects procurement performance though the effect is not significant and that supplier's financial ability has significant effect on procurement performance of public universities campuses in Kericho County. Suppliers' financial ability directly influences their ability to supply what the organization needs. However, the effect would be significant for organizations that deal with physical products. Mwangi and Moronge (2016) examined the influence of procurement practices on performance of logistics firms in Kenya using a case of Nairobi County and established that supplier management, inventory management, and ICT affected performance of logistic firms. Rotich, Muma and Waruguru (2015) explored the relationship between e-tendering and Supply chain performance among county governments in Kenya. The findings indicate that e-tendering is positively related with performance of supply chain function of county governments in Kenya.



A study by Thairu *et al.* (2012) in Dagoreti market, in Kiambu, Kenya, thought about the concept of supplier appraisal and whether they practiced it. The study found out that the traders considered location of supplier, adequate facilities, use of information technology, financial strength, quality in operations and products, adequate production capacity, and skilled personnel, corporate social responsibility and good ethics and environmental friendliness as important supplier evaluation criteria. The study however did not look at the relationship between supplier appraisal and performance. The researchers recommended that further studies need to be carried out to find out the causal relationship between supplier evaluation and performance of the both corporate and private world, a gap that this study taped and filled. Ngugi and Mugo (2014) assessed the internal factors affecting procurement process of supplies in the public sector; a survey of Kenya government ministries. The study adopted a descriptive research design to analyze the purchasing process. The findings revealed that Supplier selection and poor channels of communication affected the procurement process of health care supplies in the public sector to a great extent. On contrary this study focused on procurement performance as an independent variable not procurement process. The study also examined LREB county governments not a survey of Kenya government ministries.

Micheli (2008) administered a study on a decision-maker-centered supplier selection line of action for decisive supplies, the study explored the supplier selection matter in question as a way to alleviate across the board supply risk, amidst overall spending approach and concrete support for supplier selections as a decision-making affair, as opposed to an additional obstacle for the administrators. Study conceived a risk adeptness-based supplier selection design for integral supplies that allows administrators to reflect on investment for alleviation interventions and procurement risk. The research outcome presented a total cost profile linked to any supplier to be evaluated, as a function of investments can be compelled to put to use the upside and to alleviate the downside supply risks.

Bai and Sakaris (2014) recommended a methodology to single out key performance indicators for supply chain employed during appraisal of suppliers' performance. They deliberated about supply chain performance measurement complicatedness and two-stage method embracing neighborhood rough set theory to single out KPI and data improvement analysis to gauge and evaluate performance putting to use the KPI. They embraced supply chain operations reference model which break down the procedures of supply chain stages into course of action, make, transport and source and send back. They centered on the source function attributed to suppliers' attentions. The performance measures embraced in supply chain operations reference are organized into innovations cost, time, quality and flexibility.

Kariuki (2013) asserts transparency is very key in the award contracts slow development and implementation of policies, use of obsolete technology and skills and location difficulties. Previous studies (Muo & Omwenga, 2018; Gichuru, Iravo & Iravo, 2015; Ochieng, 2014) on supplier development have convergent opinions that supplier development leads to enhanced operational performance in term of cost reduction, customer satisfaction, quick order fulfillment and fast delivery. While Mukabi Shiati *et al.*, (2014) citing Degraeve *et al.*, (2006) used the total cost of ownership (TCO) as the foundation for scrutinize supplier selection, he paid no attention to other models of comparing suppliers. While Mukabi Shiati *et al.*, (2014) affirms quality of services, price structure, delivery timeline and cost as the supplier selection criteria. As stated by Odhiambo (2015) supplier selection is the function of supply chain executive since it exerts influence on productivity of the organization.

Lysons *et al.*, (2008) argued a good procurement plan by extension asses the supplier and ensures that considered supplier has appropriate strategies and systems in place for quality control and assurance. The buyer needs ensure all the supplier systems are working before settling on a particular. Furthermore, they asserted that during supplier evaluation processes its

vital to focus on supplier's quality management systems and controls. They also stated the following criteria; inspections and testing and accreditation with national and international quality standards bodies should be considered while appraising suppliers. Whereas Cherotich (2018) contents that tendering is a procedure whereby potential suppliers are invited to make an offer on the terms and price they are willing to supply specified goods, services or works which an acceptance shall form the basis of the subsequent contracts. Tendering process is aimed at ensuring public resources are used in an economic way and efficiently to achieve value for money. Tendering efficiency is ensured by adhering to the public procurement and asset disposal act 2015.

Kavuva & Ngugi (2014) argued adequate procurement planning leads to effective and efficient performance in Kenya local government procurement systems. Their findings were affirmed by Ogwel *et al.*, (2006) deduces budgetary planning influence procurement performance. Further they argue senior management has a role to play in ensuring the resources allocations are available competent staffs, budgets are prepared and adhered to and ensuring staff training. Suppliers also play a vital role in procurement performance in an organization by ensuring timely delivery and adhering to specifications. Omar & Sim (2010) in a study conducted on Malaysian Manufacturing firms on supplier selection criteria concluded that cost followed by quality ranked higher than any other determinants. Delivery ranks third established on their analysis, on the contrary according to Mukabi Shiati *et al.*, (2014) quality, delivery and performance history rank top with net price ranking a distant sixth. It concurs with previous studies, the difference in price ranks lower than quality. A handful of supplier selection standards have been examined and their competences highlighted, nevertheless the literature fails to document enough empirical probe of supplier evaluation, supplier certification and supplier comparison. Therefore, this study shed more light in this area and emphasize on the importance of the customer's input.

Mburu (2015) conducted study on how Kenyan manufacturing companies' supply chains performed after implementing a risk identification and management method. The study focused on 153 Kenyan manufacturing businesses and Kenya Association of Manufacturers members in the Nairobi industrial district (KAM, 2011). No sampling technique was used because the study used a census approach to gather data from all 153 respondents. The results of this study showed that supply chain performance was greatly improved by risk identification management measures. In the study there was a conceptual and methodological gap. Contextual the study focused on manufacturing companies while this study focused on LREB devolved governments. Methodological the study didn't employ any sampling techniques while this study employed random sampling.

Mburu, Ngugi and Ogolla (2017) researched on supply chain performance and risk management tactics among Kenyan industrial firms. The study used a cross-section survey that was descriptive in nature, and the 412 manufacturing enterprises in Nairobi County that were registered members of KAM made up the target group, the sample size was 199. The results of the study showed that supply chain performance was greatly improved by risk detection tactics. Contextual the study focused on Kenyan industrial firms while this study focused on LREB devolved governments. Methodological the study used a cross-section survey while this study employed descriptive research design.

Munyuko (2015) studied on impact of supply chain risk management on organizational performance in terms of their profits. They worked as a case study in Andy Forwarders Services Limited. Questionnaires were employed to collect data. The results showed that risk identification had a significant positive effect on organization performance. This study contradicts that of Sukdeo 2017 on the impact of risk management practices on procurement performance in beverage manufacturing organizations in South Africa, revealing that supplier

identification had a negative and insignificant effect on supply chain performance. There was a conceptual and contextual gap to be addressed. Conceptually the result yielded negative result hence need for another study while contextual the study was done in manufacturing firms in South Africa while this study was done in LREB county governments in Kenya. Valinejad and Rahmani (2018) conducted study on telecom companies' supply chains to identify sustainability risks. Then the study used the conventional sustainable development approach, which is a three-dimensional triangular model made up of the economic, social, and environmental elements of development. There were 14 companies chosen, both public and private. Investigative research was used. The study's findings reveal that sustainable risk identification is positively and significantly related with the supply chain of telecommunication. There was a conceptual gap since the study focused on sustainability risk while this study focused on supply chain risk management.

Cherono and Juma (2014) did a study on the Analysis of the significance of risk management practices in supply chain performance in Kenya; A case study of County Government of Kericho. The study concluded that risk management practices are positively correlated with supply chain performance in Kericho County. Wieland and Wallenburg (2012) carried out a study on supply chain risks to test the assumption SCRM helps supply chains to deal with vulnerabilities both proactively and reactively. Both dimensions have an effect on the supply chain performance. Data was from 270 manufacturing companies. Qualitative data were collected to explore non-hypothesized outcome. Findings revealed both robustness and agility are important in performance improvement. There is a methodological gap where the researcher adopted Qualitative data while this study used quantitative data.

Supply chain performance in government agencies and county governments have produced varied results this is supported by studies on the association between risk management and

execution. A study done by Mburu (2015) found risk management strategies had a significant positive effect on supply chain performance, while a study done by Kisia (2017) found risk management had an insignificant negative impact on supply chain performance. A study done by Hariharan (2018) found a positive relationship between risk management and supply chain performance, while another similar study conducted by Ganiyu (2020) found a negative relationship between risk management and supply chain performance. The variation in these studies and the auditor reports and the supply chain risk management challenges have brought a gap in supply chain risk management that needed to be addressed. Many of the reviewed studies on supply chain practices have concentrated on other sectors and not County Governments, some have concentrated on the manufacturing Sectors (Cankaya & Sezen, 2019;(Cousins, Lawson, Petersen & Fugate, 2019; Nyariaro, 2017). Some were done in the supermarkets (Watulo, 2017; Oduor 2019; Wahome, 2020). These gaps have occasioned the need for a study to configure possible connection between IFMIS use, supply chain practices and procurement performance by the LREB county governments.

Methodological gaps were also noted in some of the studies linking Supply chain management practices to performance as some used simple analytical methods, (Cousins, Lawson, Petersen and Fugate 2019) and explanatory Research (Mohammed, Lagat & Ngeno, 2019) Also, some researchers used secondary data (Sharma, Chandna & Bhardwaj, 2017; Mutangili, 2019). This study utilized primary data, analyzed by multiple regression analysis. From the aforementioned studies, it is apparent that there are major conceptual, contextual and methodological gaps on the studies linking procurement performance to supply chain practices at the LREB counties in Kenya.

Equally, a study by Oyuke and shale (2014) on the role of strategic procurement practices on Organizational Performance: A Case Study of Kenya National Audit Office County failed to address key strategic practices such as negotiations and e-procurement practices. In addition,

the study focused only on two variables i.e dependent and independent variables. The study did not use moderating variable to check its effect on the performance of organization. In addition, the findings of majority reviewed literature are based on qualitative and therefore lack quantitative methods to validate and prove theoretical concepts.

One more study on procurement best practices and organizational performance: a case study of Cadbury's Kenya limited (Kilonzo 2014) The researcher identified procurement best practices include strategic planning, performance measurement and use of cooperative contracts; risk management; ethics in procurement; procurement policy manuals; performance management; and performance-based contracts. The research design adopted was a case study because the unit of analysis was one organization, and it was also a private company.

Notably, while there have been many studies on supply chain practices researchers have not explored the effect of supply chain practices (supplier selection and supply chain practices) on procurement performance of the LREB devolved units in Kenya that have continued to report dismal performance. The studies have also found positive influence of supply chain practices without detailing what constitutes the ideal supply chain practices to achieve the best results. Further, none of the studies seemed to have focused specifically on 14 LREB counties. Poor performance of the counties in Kenya hinders achievement county's objective hence investigating this is imperative to realization of effective service delivery by LREB counties. It is against this backdrop that this study was conducted and aimed at answering the research question.

### **2.3.2 Integrated Financial Management Information System Adoption**

Dener and Young (2013) conducted a study to investigate the implications of IFMIS posting budget data from 198 economies' public finance websites. The goal of the study was to identify areas where budget transparency may be improved, as well as to provide advice on how to

effectively use IFMIS platforms for open budget data sharing. Despite the widespread use of financial management information systems by 198 governments throughout the world, only 24 countries have proof of excellent budgetary procedures, according to the study's conclusions. This gives a room for another study.

Ndegwa and Mungai (2019) looked at the guidelines for implementing IFMIS in the South African public sector. The goal of the research was to identify the problems and hazards associated with implementing the IFMIS in South Africa. Lack of capability, lack of commitment, institutional and technical obstacles are among the challenges noted in the study. For successful IFMIS use, the study also advised capacity building programs, stakeholder commitment, the formation of an effective change management team, and a detailed implementation plan. Aminatu (2015) used a case study research design to investigate the impact of IFMIS on Ghana's economic development. The study focused on the Ghana IFMIS and used both qualitative and quantitative data from the Ministry of Finance and Economic Planning during a ten-year period. The study evaluates the Gross Domestic Product (GDP), economic growth, and resource allocation, among other economic performance measures. The findings of the study found that the efficiency of the public and private sectors, government budgetary policies, interest rates, and the regulatory environment all have a role in the country's economic success. In the above study there is a conceptual methodological gap, IFMIS was adopted as independent variable while in this study it was used as moderator variable. Also, methodological gap was presented whereby both qualitative and quantitative data was collected in contrary this study only used quantitative data. In a study on the Effects of Integrated Financial Management Information System on Performance of Public Sector in Nigeria targeting Osun State by (Michael *et al.*, 2017). The findings indicated that as a result of applying IFMIS on budgeting process consequently resulted in successful and timely completion of most projects initiated through the system. This resulted cannot be applied in the



Kenyan LREB devolved units since the Nigeria public sector is different from Kenya public sector hence need for this study. According to Oyinlola (2017) a study on the effects of integrated financial management information systems in Nigeria whereby IFMIS was found to be effective on performance of public sector in Nigeria through improvement in financial reporting. The study also found that there is improvement in reporting system due to use of single reliable application of financial reporting since IFMIS helps in tracking financial events and summarizing the reports and preparing a timely budget.

Bosire (2016) examined the influence of IFMIS on financial probity in Kenya's public sector, using the Ministry of Foreign Affairs as a case study. The study relied on 40 users of IFMIS in the ministry of foreign affairs and employed a case study design that drew from both agency theory and systems theory. The study's findings show that the adoption of IFMIS re-engineering approaches accounts for 74.8 percent of the public sector's financial performance. Furthermore, the study found that IFMIS implementation has an impact on overall procurement performance in Kenyan government ministries, with management commitment, capacity, and training, as well as the level of IFMIS use, all having a favorable impact on financial probity. The study focused on Ministry of Foreign Affairs and not LREB county governments of Kenya, also it focused on financial probity not procurement performance.

In a study by Nazareen (2017) on the effects of IFMIS on cash management in Kenya- a case of Kisumu county concluded that cash management influences the financial management in the public sector, IFMIS helps in monitoring revenue collection and disbursement, also helps in tracking expenses therefore producing timely and accurate reports A study on the effects of innovation in revenue collection process on organizations performance of Nairobi city county (Owino, senaji and Ntara 2017) findings showed less corrupt and fairer tax systems due to automation of revenue collection process. The study was neutral that the automation of revenue

collection process offers great deal on effective management. Rotich, Muma and Waruguru (2015) explored the relationship between e-tendering and Supply chain performance among county governments in Kenya. The findings indicate that e-tendering is positively related with performance of supply chain function of County Governments in Kenya. Through a multiple regression analysis, Kamotho (2014) found that among the e-procurement variables under consideration, e-tendering had the least effect on the procurement performance. In contrast, Chepkwony (2015)'s study established that e-tendering had positive and significant correlation with the supply chain performance. Therefore, owing to these differing results, the current study considered the moderating effect of IFMIS use and supply chain practices on the procurement performance.

On a study done by Okiro (2015) on the effects of e-payment system on revenue collection by the Nairobi city county found that that revenue collection in Nairobi County increased immediately after implementation of automated payment in revenue collection. The study also found positive influence of electronic payment to the revenue collection performance by indication that increase in electronic payment adoption increases revenue collection performance and reduction in electronic adoption reduced revenue collection performance. In a study on effects of IFMIS on performance of public sector in the county government of Nairobi by (Njonde and Kimanzi, 2014) showed that there is a relationship between IFMIS and public finance in the area of financial reporting with some challenges relating to internal control regarding posting of figures by non-existing figures being noted by the system. However, the above studies only focused on one county leaving a gap for the study on a given bloc of counties. Therefore, LREB county governments study was ideal. Roseline (2018) conducted research on effects of integrated financial management information systems implementation on service delivery in Homabay County, Kenya. The result showed a negative effect of automated budgetary process on service delivery in Homabay County.

Kennedy and Kiarie (2015) in a case study on the impact of e-procurement at Nyamira County established that e-procurement software application in the procurement function had a positive significant effect on performance. Musiega *et al.*, (2018) in a study of procurement practices in Kakamega County affirmed that that software variation by vendors in procurement practices displays critical capabilities measurement and therefore offers a positive relationship with performance. Thanga and Kwasira (2016) while studying special interest groups on procurement entities in Nakuru County establish that the transition from traditional procurement to e-procurement is one of the most proficient methods of improving price formations and billing management among users. However, other studies argue that simply implementing e-procurement does not itself guarantee increased compliance. Their study argues that user perceptions of e-procurement provision significantly influence levels of contract and system and the performance of the organization. The above divergent opinions presented a gap to be filled. Conrad (2013) in his study on evaluation of IFMIS implementation by the Kenya government. He focused on the extent of adoption of IFMIS by the national government, drivers of IFMIS use and the challenges faced during the adoption of IFMIS in the national government. The outcome divulged exchequer discharge of funds doesn't concur with the manual funds released. The observation signified the research was not conclusive also the study was done at national government not LREB devolved units. Lundu (2018) conducted a study in county government of Nairobi to determine effect of IFMIS use on procurement performance. Using a descriptive research design, the study focused on employees in the ICT, procurement and finance sections. Primary data was collected and analyzed using correlations. Ndzovu and Ng'ang'a (2019) assessed the effect of Integrated Financial Management Information System on financial performance in Kwale County Government. The study adopted descriptive research design and collected data through questionnaires from 137 out of 142 employees sampled through stratified random sampling from the finance and economic

planning department, Kwale County Government. The results revealed that electronic budgeting, automated cash management, electronic procurement and automated financial reporting had a positive and significant influence on financial performance of the county. Omar (2017) investigated the impact of IFMIS on financial performance in Kenyan county governments, focusing on Garissa County. The study used a descriptive research design and secondary data from the county finance department for its findings. According to the conclusions of the study, IFMIS has a favorable and significant impact on Garissa County's financial performance. An increase in expenditures for improving the IFMIS system resulted in an improvement in the County's financial performance in terms of total revenue collected.

A study on effects of IFMIS on financial performance in public organizations a case of water infrastructure projects in Bomet County by Langat (2016) revealed that increased use of IFMIS leads to improved financial performance while encouraging economic growth, increasing productivity, creating employment opportunities and also improving the life of the people in Bomet county and also the governance through provision real-time financial information to those who charged with governance to formulate plans. There was conceptual gap since the study adopted financial performance as an independent variable while this study adopted procurement performance as independent variable. IFMIS was adopted as dependent variable while in this study IFMIS was adopted as a moderator variable.

Further, a study by Salome (2017) on factors influencing performance of integrated management financial information systems project in public sector in Machakos County revealed that there was improvement in speed, accuracy, reliability, efficiency and also accountability of financial records due to introduction of IFMIS. The above study reviewed IFMIS influence on county governments, though there is conceptual gap since IFMIS was adopted as independent variable while in this study IFMIS is adopted as a moderator variable.

Study by Mutui (2014) on government ministries in Kenya on adoption of integrated financial management information system and procurement performance. The results displayed IFMIS implementation as moderate among government ministries in Kenya. Whereas, a study by Oduyo *et al.*, (2013) on how IFMIS affects governance of monetary in the public service. Questionnaires were employed to help collect primary data and interpretation was done using descriptive and inferential techniques. The results showed the system was reliable, flexible and hence positively affected cash management. They further say it leads to timely completion of tasks, accuracy and consistency in completion of tasks. The result displayed the system lacked support from the top leadership.

Recent researches have been conducted in respect of IFMIS ranging from its benefits, constituents that affect it, its effects on supply chain management, challenges in the central government, its impact on performance and performance of projects (Omwoha and Getuno, 2015; Lundu and Shale, 2015; Gekara and Odolo, 2015; Njenga *et al.*, 2014; Kiilu and Ngugi, 2014; Secretariat, 2013; Odago and Mwajuma, 2013; Mary, 2012). Similar studies on IFMIS were conducted on the devolved governments of Mombasa, Taita Taveta, Bungoma, Nyandarua, Meru, Kericho, Nairobi, Nakuru, Kakamega, Muranga, Kiambu and Migori by Mwaura (2016), Rotich (2015), Kahari *et al.*, (2015), Bonventure (2015), Karanja and Ng'ang'a (2014), Mary (2012), Musee (2011). Most studies on the use of IFMIS in Kenya have focused on its national implementation and impact, largely ignoring its county-level dynamics. Counties, particularly those in the Lake Region Economic Bloc (LREB), face unique challenges in procurement due to limited resources, capacity constraints, and varying levels of system adoption. The regional variations in how IFMIS is implemented and its effectiveness across different counties remain underexplored. Further, a relatively large number of such studies in the Kenyan context have used questionnaires, which are either open ended, closed-ended or a mixture of both and published materials as a source of data. However, currently

there are substantial challenges to the effect that IFMIS is still encountering at the county governments on the management of public funds.

Studies related to IFMIS in Kenya shows, that the system has not fully provided the expected benefits of integrated financial planning, effective budgeting and control of public expenditure. Ngeno and Kinoti (2017) did a review on ways in which e-procurement influenced the efficiency of supply chain administration in Kenya's energy sector. From the findings, it was realized that the energy sector's supply chain management activities were remarkably influenced positively by factors such as e-tendering and interchange of data. The review also observed that planning of corporate resources has huge impact on efficiency the supply chain activities of Kenya's energy sector. In the reviewed literature, electronic data interchange, supply chain incorporation, and electronic order processing were addressed. However, other IFMIS characteristics such as paperless requisition, and reduced lead time and e-tendering were disregarded which this study focused on, further contextual the above study was done in the energy sector where the results can't be generalized on LREB county government.

Most existing studies on IFMIS and procurement performance in Kenya focus on the national government or major cities like Nairobi and Mombasa. There is limited research specifically targeting the LREB counties, which have unique socio-economic and infrastructural challenges. The diverse socio-economic conditions and varying levels of technological advancement within the LREB counties may affect IFMIS implementation and procurement outcomes differently than in other regions, the need for this research to explore these contextual differences in greater depth. Also there is limited research on the level of paperless requisition and reduced lead time regarding IFMIS usage among procurement and financial management staff in LREB counties. Many studies assume that once IFMIS is implemented, it is uniformly understood and used. Furthermore, extant studies on effect of IFMIS on public procurement performance have resulted to different findings making it difficult for generalization hence

leaving significant knowledge gap. While studies such as Oteki (2019), Mwangi (2020) and Waganda (2018) have indicated significant influence of IFMIS on procurement performance, Makali (2015) indicated that IFMIS has insignificant effect on procurement performance. Similar results were obtained by Munyao and Moronge (2018) as well as Kiusya (2018). Further, Nurwin (2018) found that IFMIS exhibited a negative and insignificant relationship with performance.

### **2.3.3 Supply Chain Practices, IFMIS use and Procurement Performance**

Most of the empirical studies that analyze the relationship between supply chain practices and performance show positive results, which is in line with recent literature review and meta-analysis (*Leuschner et al.*, 2013); however, they are quite heterogeneous. They not only show lack of consensus in their results, but also in measuring both supply chain practices and performance (Huo, 2012; Vickery *et al.*, 2003). Nevertheless, supply chain practices construct is measured considering different instruments (un dimensional, multidimensional construct, and even as a set of practices). Meanwhile, performance measurements show more homogeneity, although mainly focused on operational performance (reliability, delivery time, response capability) and, to a lesser extent, on financial performance (return on assets or on investment). In addition, studies analyzing the relationships among different supply chain practices measures find that supply chain practices improve performance (Droge *et al.*, 2004; Huo *et al.*, 2014). Further, some studies suggest the existence of moderating effects among the supply chain practices measures (Danese and Romano, 2011, 2013; Flynn *et al.*, 2010; Wiengarten *et al.*, 2014).

According to Kim (2013), most of the studies address the direct relationship between supply chain practices and performance. In the same vein, Mackelprang *et al.* (2014) found that more than half of the supply chain practices -performance relationships analyzed are subject to unknown moderating effects. Thus, performance measurements associated with supply chain

practices might widely vary. A deeper study is needed to classify and categorize these moderating factors and their effects. The disparity and diversity of the moderating effects motivate this research in an attempt to systemize and unify them. Thus, and as far as possible, general guidelines about these effects could be provided.

The aim of this study was to carry out a systematic review of the empirical literature considering moderating factors that affect the relationship between supply chain practices and procurement performance. Previous studies concerning the supply chain practices and performance use a restrictive criterion to select the sample, usually limited to publications with a certain impact factor (Fabbe-Costes and Jahre, 2008; Kim, 2013; van der Vaart and van Donk, 2008). Besides, results of effects vary when they are combined with different integration and performance dimensions. This has led to some confusion that this study tries to clarify. Although the importance of the moderating effect has been recognized (Mackelprang *et al.*, 2014), the literature on the subject is scattered. Therefore, this study developed and analyzed them and proposed a classification.

The relationship between supply chain practices and procurement performance shows a great variety of results. Differences in results may partially arise as a consequence of the strategic adjustment among the organization and its environment, where organizations must adapt their structures and processes to different contingencies to optimize their performance. This also may be due to different elements such as the perspective adopted by researchers, the context of the study, the approach followed, the methodology or the measures used (Najafi Tavani *et al.*, 2014). In this sense, supply chain practices can be considered to be a lever with enough potential to positively influence of procurement performance. However, its usage in this way needs further exploration. For instance, Li (2015) found positive and non-significant moderating effects of IT on the supply chain practices- performance relationship.



Research by Ibrahim (2017) on IFMIS use at Garissa County, Mburu and Ngahu (2016) on IFMIS and financial management within Nakuru County and Njeru and Malenya (2019) on IFMIS and financial service delivery in Kakamega County; all reveal that misappropriation of funds still continues to be rampant at the county level. Due to the shortcomings of the system, there is need to explore further, its effectiveness and efficiency at the central point of Kenya's finances, that is the National Treasury and its performance.

Studies have been conducted on the effect of IFMIS use on performance, a few of these studies have been carried out on the moderating aspects of IFMIS use, and none has revealed its moderation effects on supply chain practices and procurement performance among LREB county governments, Kenya. Mudany, Kemei, Awuor & Ogutu (2021) studied the moderating role of technology on leadership and performance. The study was anchored on the contingency theories and diffusion of innovations, researchers adopted a cross sectional design on a target population of 68 firms in the energy sector. Primary data were collected by a questionnaire and adopted positivism philosophy. Descriptive statistics helped analyze the collected data. The results revealed that there is a significant positive relationship between leadership and performance. The results further showed that technology moderated this relationship ( $R^2 = .033$ ). They recommended managers to consider adopting innovative so as to improve performance.

Bulitia (2014) looked at the moderating aspects of technological innovation on human resource management practices and performance by concentrating on manufacturing firms in Kenya. This study used a census survey to consider all the 68 medium and large firms in manufacturing as quoted by the Kenya association of Manufacturers (2012) and employed questionnaires as research instruments to obtain data from production managers, human resource managers, brand managers and marketing managers. Secondary data was obtained from the firms published reports. The study results showed that technological innovation has

moderating aspects on human resource management practices and firm performance as shown by the ( $R^2 = .052$ ). Bulitia (2014) concluded managers can set to improve performance of their firms by adopting new technologies and putting them into practice.

Nyambura (2018) analyzed the moderating effect of ICT on supply chain risks and performance relationship of manufacturing firms in Kenya. He adopted a stratified random sample in selecting 76 manufacturing firms. A cross section survey was used and both qualitative and quantitative approach was further employed. Descriptive statistics analyzed the data. The findings proved that ICT significantly moderated the relationship between only one study variable (organization characteristic) and performance. Jointly it moderated the relationship between supply chain risks and the performance of manufacturing firms. The study recommended firms to employ ICT in order to improve performance.

In examining the moderating effect of ICT on service quality and customer satisfaction relationship (Bonuke & Cheruiyot 2015). They targeted 6067 customers' hotels in Nairobi, Kenya from which a sample of 375 respondents was arrived at through proportionate sampling technique. A descriptive design was utilized with a questionnaire used as research instrument. The data was analyzed using multiple regression model. The findings indicate that service quality affects customer satisfaction ( $\beta = .194, p = 0.003$ ) and ICT moderates this relationship ( $R^2 = .049$ ). The recommendations were that the managers need to consider implementing policies meant to gear the use of ICT in order to improve performance

Awiti, Imbambi, Mande & Machuki (2020) carried out a study on the moderating effect of technology on change management and performance of the companies listed on the Nairobi Stock Exchange by surveying 64 listed companies. A sample of 38 firms was settled at purposively, senior managers of the companies (CEOs, Human Resource Managers, Finance managers and marketing managers) were adopted as observation units. A cross section survey design was then used to study 152 managers. primary data were collected via questionnaires

while secondary data was obtained from reports published. Findings revealed technology moderated the relationship between change and performance of the listed firms (Composite mean=3.83;  $F=148.439$ ,  $p= 0.000$ ). The study recommended firms to consider upscaling the use of technology.

Mkwizu & Sichone (2019) studied the moderating effect of technology on the user attributes and e-government information systems success in Tanzania by using quantitative methods. Researchers used a descriptive research design and convenience sampling technique to get data from the Tanzania Revenue Authority officers. 246 questionnaires were completely filled and returned. Collected data was analyzed by using structural equation modelling by the help of SMART PLS software. The findings disclosed that user attributes had a significant effect on information system success ( $p = 0.000$ ) while technology had a moderating effect on the relationship ( $p = 0.001$ ). Recommendation was made that government agencies in Tanzania to prioritize user attributes in developing information systems without overlooking technological developments.

Hamdi, Silong, Rasdi & Omar (2015) surveyed the biotechnology industry to establish the moderating effect of technology uncertainty in the innovation speed and product success relationship in Malaysian. A cross sectional survey research design was employed on a population of 240 biotech firms. Questionnaires were utilized to collect primary data. Descriptive statistics and multiple regression were further used in analysis. The results showed that innovation speed had a significant relationship on product success. Technology uncertainty moderated this relationship. The recommendations informed policy makers and managers to harness implementation of the study variables.

Liao, Fu & Liu (2018) tested the moderating effect of technological capability and market information management capability in China, conducted a study on open innovation strategies and firm performance: moderating role of technological capability and management

information market capability. 238 Chinese firms provided the data through a census survey. Structural equation modelling and linear regression model analysis were utilized. The study was limited to firms operating in China's high-tech sector, i.e. information technology, pharmaceuticals and telecommunication. The results revealed that technological capability moderates the relationship between open inbound innovation and firm performance. The implications to management are that firms must pay more attention to both technological and market management information capability.

Moderating effect of ICT on lean product development and firm performance was carried out in Brazil by Lima, Marcon, Echeveste, Marondin & Frank (2017). A survey of 48 Brazilian Companies which took part in the Brazil Lean Conference of 2014 provided the data. Questionnaires were utilized as the main research instrument. Firm performance was evaluated by customer satisfaction, on time delivery, cost and quality. Descriptive statistics and multiple regression analysis were involved in the analysis of data. Results demonstrated that lean practices had a positive and significant effect on performance. ICT practices moderated the relationship. The study however didn't derive recommendations for practical implementation.

Reviewed studies adopted different variables in moderating the relationship between the independent and dependent variable. Most studies adopted information technology as a moderator on different models Mudany *et al.*, 2021: moderating role of technology on leadership and performance; (Bulitua, 2014: Moderating effect of technological innovation on human resource management practices and performance; Mkwizu & Sichone, 2019: moderating effect of technological innovation on user attributes and e government IS success), innovation practice as a moderator on PLFI-performance relationship; Nyambura, 2018: moderating effect of ICT on SC risks and performance. Yet a number of studies operationalized information technology in a variety of ways (Alzaghal & Mukhtar, 2018: ICT

tools; Kabiru *et al.*, 2012: IT capability; Bonuke & Cheruiyot, 2015: ICT utilization, IT investment) ignoring IFMIS use such as E-tendering and E-procurement. Information on moderating effect of IFMIS use on the relationship between supply chain practices and procurement performance is still inadequate.

While the researcher acknowledges the contribution made by the studies reviewed above, it is worth noting that there is no consensus on the specific metrics for procurement performance when IFMIS is used as a moderator, different studies use varying performance indicators, leading to inconsistencies in results. Likewise, limited research exists on how IFMIS interacts with broader public financial management reforms in LREB counties. Studies often treat IFMIS as a standalone system rather than examining its integration with other financial management and budgeting systems. Few studies investigate how IFMIS integrates with existing supply chain practices in the counties, such as supplier selection and supply chain risk management. There is a lack of evidence on how well these practices align with the automated processes introduced by IFMIS, therefore this study assessed how to optimize this alignment to improve procurement performance in LREB counties.

Lake Region Economic Bloc Counties like Kakamega, Siaya, Kisumu, Homa Bay, and Vihiga experience distinct procurement inefficiencies, yet research has not sufficiently examined how IFMIS moderates the impact of supply chain practices on procurement performance in these specific contexts. The current study bridged the gap by studying the moderating effect of IFMIS use on the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

This chapter presents methodological approach to be followed in execution of the study. It discusses philosophical foundations, research design, sampling procedure, data gathering and data processing and analysis, pilot test, instrument validity and instrument reliability test and the ethical consideration.

#### **3.1 Research Design**

Research philosophy is an important part of research methodology. Research philosophy is classified as ontology, epistemology and axiology. These philosophical approaches enable to decide which approach should be adopted by the researcher and why, which is derived from research questions (Saunders, Lewis, & Thornhill, 2014). The important assumptions are present in research philosophy which explains about the researcher's view regarding the world. The study adopted the positivist philosophical orientation. The philosophy is similar to the development and nature of knowledge that has key assumptions on the way in which the world is viewed by researchers (Saunders, Lewis & Thornhill, 2009). Two philosophical assumptions are there about knowledge and actual. The two philosophical assumptions are positivism or deduction research and phenomenology or induction research. Positivism is related with the idea of objectivism. In this approach, views are given by scientists to evaluate social world with the support of objectivity in place of subjectivity (Cooper & Schindler, 2006).

Rojjanaprapayon (2015), states that positivists' objective is to test a theory or description through observation in order to predict and control forces that surround us. They put higher priority on linkages among the variables. Positivists involves; observations facts, developing of descriptions for the subject with inductive processes. According to Saunders and Bezzina, (2015), positivism philosophy support researchers to collect key information similar with the research issue through general sources. The author further observes that under this philosophy,

the researcher has a key role of objective analysis in assessing the collected data in order to achieve the research objectives. Many philosophers believe that positivism is the foundation and rationale for most management research (Johson and Duberley, 2000).

This study was guided by the positivist paradigm where scientific processes were followed in hypothesizing fundamental laws then deducing the observations so as to determine the truth or falsify the said hypothesis about the relationships that exists in management practices and level of implementation of public procurement regulations in the devolved system of governments in Kenya. The study therefore, verified the propositions through empirical tests by operationalizing variables in the conceptual framework to allow for measurement. The choice of the research philosophy is based on the hypothesis the researcher tested. Under positivism research philosophy, it is possible to test hypothesis and generalize the findings in addition to Halfpenny (2015) assertion that positivism research philosophy can be used to investigate what truly happens in organizations through scientific measurement of people and system behaviors. However, according Saunders *et al.*, (2007) to test the hypothesis, there is need to translate the underlying concepts into measurable forms. According to Mugenda and Mugenda (2003), quantitative approach has long been viewed as an old way of scrutiny in both areas of research and evaluation. Quantitative approach emphasizes on methodology, procedure and statistical measures to test hypothesis and make a forecast. Qualitative research is important in examining information a structured manner so as to arrive to a meaningful conclusion and suggestion on a group setting and individuals who depict those features (Berg, 2001).

Research design is described by Green and Tull (2009) as the specification of methods and procedural processes for acquiring the needed information. A research design is the overall operational pattern or framework of the project that stipulates what information is to be collected from which source by what procedures. The research design is important because it

prepares proper framework within which research work will be carried. It describes the specific objectives of the research and how they are addressed. The study adopted correlational design to determine the level of procurement performance, using quantitative approaches. According to Mugenda and Mugenda (2003), quantitative approach emphasizes on methodology, procedure and statistical measures to test hypothesis and make a forecast. Qualitative research is important in examining information a structured manner so as to arrive to a meaningful conclusion and suggestion on a group setting and individuals who depict those features (Berg, 2001). Correlational research is a type of non-experimental research in which the researcher measures two variables and assesses the statistical relationship (i.e., the correlation) between them with little or no effort to control extraneous variables. The purpose of correlation study is to gain an understanding of the relationship among variables under study without the researcher having an influence over the variables. Further, correlation designs adopt use of quantitative methods, and are good in obtaining data in their natural form (Arasa, *et al.*, 2013). Given the present study aimed at analyzing the relation among the variables: (supply chain practices, IFMIS use and procurement performance), correlational design was appropriate. Furthermore, past studies such as Mutai, 2015; Kanyaru & Moronge, 2017; Kinoti, Arasa, Waititu & Guyo (2013); Getuno *et al.*, 2015 adopted the design and drawn meaningful recommendations.

### **3.2 Study Area**

The study was limited to the 14 devolved governments in Kenya which are members of the Lake region economic bloc. The lake region economic bloc counties comprise of Trans Nzoia, Bomet, Bungoma, Kisii, Busia, Nandi, Homabay, Migori, Kakamega, Nyamira, Kericho, Kisumu, Siaya, and Vihiga. The LREB devolved units have alike ecological zones, natural resources and analogous cultural history. The need to study procurement performance in this region is heightened by the fact that counties are directly responsible for the delivery of



essential services such as healthcare, infrastructure, and education. Efficient procurement practices are vital to ensuring these services are delivered cost-effectively and within stipulated timeframes. Understanding how IFMIS moderates supply chain practices is crucial for improving service delivery in these counties. The study provided empirical evidence on whether IFMIS has been fully effective in improving procurement outcomes in the context of these counties, and where further support is needed. From a theoretical perspective, this study bridges the gap between traditional supply chain management theories and the evolving role of digital financial systems. By focusing on LREB counties, the study adds a unique perspective on how integrated systems like IFMIS interact with supply chain practices in decentralized governance systems and by understanding how IFMIS can enhance procurement performance through effective supply chain practices, this study can support efforts to improve the economic performance of the LREB counties. Efficient procurement directly impacts the quality of infrastructure, healthcare, and other services that drive regional economic growth. The study can, therefore, contribute to the overall development of the region by ensuring that public funds are used effectively

### **3.3 Target Population**

Population is the entire set of units for which the study data are to be used to make inferences (Fraenkel, Wallen, & Hyun, 2015). Target populations are members of real set of people the researcher would want to generalize the results from. The LREB devolved governments, Kenya are procuring entities that are state owned formed under article six of the constitution of Kenya 2010. The interest of the study on the 14 LREB devolved governments as the population, was driven by the fact that county governments are public institutions mandated to implement public procurement procedures (Duraku, 2019). Further, the LREB county governments have been audited by Public Procurement Regulatory Authority and other government agencies in

the past and reports indicated that they were culpable for non-compliance and implementation of public procurement regulatory system as required by the PPRDA 2015.

The LREB counties were of interest to the study since they play a major role in government's effort to deliver service to the citizens and hence spend huge amounts of funds on procurement functions. This was confirmed by the commission of revenue allocation report 2018/2019 on revenues allocated to counties to be about Ksh. 314 billion for development as demanded by the constitution of Kenya 2010. The study used the key informants from chief officers, procurement officers and finance officers among LREB counties, Kenya who are directly involved with management, supervision and implementation of procurement procedures at the county governments. This was also to improve on the reliability of the information from the respondents and reduction on data redundancies. As such, the unit of analysis was the devolved governments in Kenya and the unit of observation involved the procurement officers, chief officers and finance officer.

**Table 3. 1 Distribution of population per county**

County	Category			Total
	Chief officer	Finance Officers	Procurement Officers	
Nyamira	10	7	10	27
Kisii	10	7	10	27
Busia	10	7	10	27
Bungoma	10	7	10	27
Kakamega	12	7	10	29
Vihiga	10	7	10	27
Transzoia	12	7	10	29
Nandi	10	7	10	27
Bomet	10	7	10	27
Kericho	10	7	10	27
Kisumu	10	7	10	27
Siaya	10	7	10	27
Migori	10	7	10	27
Homabay	10	7	10	27
<b>Total</b>	<b>144</b>	<b>98</b>	<b>140</b>	<b>382</b>

**Source: LREB Counties Human Resource Department (2020)**

### **3.4 Sample & Sampling Technique**

A sampling frame details the population within reach from which the sample is drawn. Sampling frame is the definite set of units from which a sample has been drawn (Ngechu 2004). The head of human resource availed the list of the respondent from the three departments, since he was the custodian of all employees in the county governments' (Pernecky, 2016). The sampling frame of this study was 382 staff working as chief officers, finance officers and procurement officers in the LREB devolved governments in Kenya.

According to Kothari (2004) a sample is the number of items selected to represent the whole population. According to Kumar (2014) sampling is a procedure, process or technique of choosing a subgroup from a population to participate in the study whereas, a sample is a subset of target population which is used to draw inferences (Saunders *et al.*, 2014). The bigger the sample size, the better the results of the research. Sample size is dependent on geographical coverage, budgetary constraints, time and level of precision (Sekaran & Bougie, 2013).

The study adopted proportionate stratified random sampling technique where the objects were extracted in a manner that the existing subgroups in the population are more or less replicated in the sample (Mugenda & Mugenda, 2003). Using the sampling frame, there were 3 subgroups/ strata that are ministry, procurement and finance departments. Then from each stratum a proportionate stratified random sampling was used to pick sample size. The sampling technique guaranteed that each stratum is represented in the sample and is more accurate in reflecting the characteristics of the population. A population is proportionately stratified in accordance to the varying characteristics of the population and a random sample is selected from each stratum (Kothari, 2004). In this sampling method, sampling error is considerably reduced. Reducing the target response was part of ensuring statistical significance. For instance, the initial response was not consistently replicable across trials,

adjusting it aligned better with the data's overall trend, enhancing the reliability of the findings, furthermore choosing the same number of samples enhanced the rigor, validity, and reliability of a study's findings (Harlow, L. L., Mulaik, S. A., & Steiger, J. H. 1997). Yamane (1968) sample size formula was adopted to determine the sample.

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n signifies the sample size

N signifies the population under study

e signifies acceptable sampling error (it could be 0.10, 0.05 or 0.01)

\*95% confidence level p=0.5 are assumed

$$n = 382 / (1 + 382(0.05)^2)$$

$$n = 382 / (1 + 382(0.0025))$$

$$n = 382 / (1 + .955)$$

$$n = 382 / 1.955$$

$$n = 196$$

**Table 3.2 Sample Size per county**

County	Category			Total
	Chief officer	Procurement Officers	Finance officers	
Nyamira	9	3	2	14
Kisii	9	3	2	14
Busia	9	3	2	14
Bungoma	9	3	2	14
Kakamega	9	3	2	14
Vihiga	9	3	2	14
Transzoia	9	3	2	14
Nandi	9	3	2	14
Bomet	9	3	2	14
Kericho	9	3	2	14
Kisumu	9	3	2	14
Siaya	9	3	2	14
Migori	9	3	2	14
Homabay	9	3	2	14
<b>Total</b>	<b>126</b>	<b>42</b>	<b>28</b>	<b>196</b>

**Source: LREB Counties Human Resource Department (2020)**

### **3.5 Data Collection Methods**

#### **3.5.1 Data Types and Sources**

Data are quantitative or qualitative values of variables (Creswell (2006). Data are lowest unit of information where other measurements and analysis are drawn. Data can be numbers, figures, images, ideas, words or facts (Creswell 2006). Data in themselves can't be understood, to get information from the data one must interpret into meaningful information (Apopa 2018). The study used quantitative primary data because it gives a numeric description of attitudes, trends or opinions of a population. According to Kombo *et al.*, (2006), primary data is information immediately gathered from the direct source. Greener (2008) asserted primary data is the data collected forthright from first-hand occurrence which has not been disclosed to processing or any other handling. Primary data were considered since it is generally unbiased and gathered forthrightly from the first source Kombo *et al.*, (2006).

Data sources were primary sources. A primary data source, where the data is collected firsthand (Greener 2008). The utmost techniques for collecting firsthand data include self-governed questionnaires, questions and answer sessions, field observation, and carrying out trials. A data source is the inception location where data emanate or where physical information is first initialized Greener (2008). Data sources are intended to help users and applications connect to and move data to where it needs to be. Data Source for the study included chief officers, finance officers and procurement officers of LREB devolved governments.

#### **3.5.2 Data Collection Procedures**

This research collected primary data as per the objectives of the study. According to Kakuru (2019), procedures for data collection are steps involved in collecting portion of data that is required for study process. The participating LREB counties were approached by use of a consent letter addressed to the management. Drop and pick/online method was used to

administer the questionnaire. The researcher engaged research assistants who had the knowledge of the area of study to administer the research instrument to the sample so as to gather primary information (Kombo & Tromp, 2006). The questionnaire was given to the chief officer, head of finance and procurement function after a brief set of instructions. Subjects (chief officer, head of finance and the head of procurement function) were requested to grant informed permission and indicate if they were available and willing to avail more information when called upon. Participation was on voluntary basis. Research assistant assisted researcher in administering the research instrument to the respondents. The filled questionnaires were picked after 2 months and an extension of one week was given to those who had not filled the questionnaire (Gupta & Gupta, 2022). Those who had not completed filling in the instrument after one-week extension were treated as non-response.

### **3.6.3 Data Collection Instruments**

The study collected primary data. Primary data was collected using a questionnaire. A questionnaire is a study tool used to collect information over a big sample with the goal of converting study goals into specific questions, and answers for each question are present in the data for testing hypothesis (Kothari, 2017). This tool is considered appropriate because it provides a relatively simple and direct approach to the study. This instrument was the most excellent to gather information from this type of employees since they have busy programs. Questionnaires were regarded as helpful tool for data gathering since it helps respondents to give to a large extent of their judgment to the problem being analyzed (Ngechu, 2004).

### **3.6.4 Pre-test**

The researcher conducted pre-test to support reliability and validity tests for the research. From pre-test reliability and validity were determined. This was applied to obtain desired information, it is thus, conducted to test weaknesses in design and instrumentation to provide

proxy data for selection of a sample (Copper & Schindler, 2011). According to Ngechu (2004), pre-testing the questionnaire is of essence, since it's done to obtain feedback, check whether it is effective and well understood by respondents. In this study 10% of the sample size was used to carry out the pre-test in Uasin gishu devolved government consequently a total of 20 Procurement officers, Finance Officers and Chief Officers hailing from Uasin Gishu County were considered in the study (Kothari 2017). The need to study procurement performance in this region is heightened by the fact that counties are directly responsible for the delivery of essential services such as healthcare, infrastructure, and education. Efficient supply chain practices are vital to ensuring these services are delivered cost-effectively and within stipulated timeframes. Understanding how IFMIS moderates supply chain practices is crucial for improving service delivery in these county. Therefore, Uasin Gishu County was deemed ideal for pre-test. Furthermore, it's mandated to create public value and have a mandatory requirement to apply the procurement law and procedures during the acquisition of goods and services. More so, its guided by same supply chain practices during procurement and disposal of goods and services like the counties understudy.

### **3.6.6 Instrument Validity Tests**

According to Sekaran & Bougie (2016), validity of a research measuring tool is the extent to which the instrument measures what it is supposed to measure and perform as expected. In measuring validity, the study ascertains two types of validities: construct validity and content validity. The choice of the two validities is informed by Wirland *et al.*, (2017) who asserted that in order to establish truthful validity, it is important to consider the judgmental (content validity) as well as the statistical (construct validity) measures.

Sekaran & Bougie, (2016) argues content validity of a measuring tool tests the degree to which a measuring tool measures contents of the subject matter under consideration. Also called face validity, the goal of content validity is to affirm that the construct items extend past empirical

establishments to include both theoretical and practical aspects. Drost (2012) say that the main ways of establishing content validity are asking questions about the measurement instrument or ask the opinion of expert views on the subject matter. To establish content validity, the instruments were issued to 5 experts from the School of Business and Economics of Maseno University and 5 practitioners drawn from the procurement office of Maseno University and Kibabii University. Seven or more experts are adequate to ascertain content validity (Dev Von *et al.*, 2007). Their recommendations were incorporated in the instrument that was used in the final data collection. After deliberations, it was found that equality and fairness was not a correct measure of procurement performance and was therefore expunged from the item pool. The Likert scale grading format for variables was also changed from (1=Very High, 2=High, 3=Moderate, 4=Low, 5=Very Low) to (Strongly Disagree, SD=1, Disagree, D=2, Neutral, N=3, Agree, A=4, = Strongly Agree, SA= 5). Construct validity was examined on ability of research instrument to be anchored on research objectives. Content was examined with assistance from supervisors and panelist opinion during presentations before data collection. The items or questions were then correctly phrased to suit the need of the study.

Construct validity is the measure of how construct items operationalized as measures of that construct estimate the construct as known in theory (Saunders *et al.*, 2009; Tsang, 2016). In testing construct validity, measures of a construct should be associated with the things it is associated with (convergent validity), but tests can be carried out to ascertain that the measures are not associated with the things it should not be associated with (discriminant validity). Given that the study operationalized its constructs as measurement scales, evaluating dimensions of the measurement scales should indicate evidence of construct validity. Correlation analysis was carried out to determine the association between the variables, Supply chain practices, IFMIS use and procurement performance of LREB devolved governments, Kenya. The mean score



for each variable was calculated and the Pearson’s correlation obtained using SPSS. The correlation results are presented in Table 3.3

**Table 3.3 Correlation Matrix**

		<b>Correlations</b>		
		<b>Mean PP</b>	<b>Mean SCP</b>	<b>Mean IFMIS</b>
Mean PP	Pearson Correlation	1	.769**	.773**
	Sig. (2-tailed)		.000	.000
	N	20	20	20
Mean SCP	Pearson Correlation	.769**	1	.706**
	Sig. (2-tailed)	.000		.000
	N	20	20	20
Mean IFMIS	Pearson Correlation	.773**	.700**	1
	Sig. (2-tailed)	.000	.000	
	N	20	20	20

\*\* . Correlation is significant at the 0.01 level (2tailed). \* . Correlation is significant at the 0.05 level (2-tailed).

**KEY: PP- Procurement Performance, SCP- Supply Chain Practices, IFMIS use (Source: Data 2020)**

The results indicate that supply chain practices are positively and significantly associated with procurement performance of LREB devolved governments, Kenya ( $r= 0.769$ ,  $p=0.00<0.05$ ). IFMIS use is positively and significantly associated with procurement performance of LREB devolved governments, Kenya ( $r=0.773$ ,  $p=0.00<0.05$ ). Since the R-values were above 0.7, this is an indication that supply chain practices and IFMIS use portrayed a high association with procurement performance of LREB county governments, Kenya.

### 3.6.7 Instrument Reliability Tests

The reliability of a data instrument implies its ability to reproduce consistent and stable measurements. This study evaluated indicator reliability and internal consistency reliability. This study assessed the indicator reliability by scrutinizing the loadings of the indicators and their significance. According to (Hussain, Shahid, Fangwei, Zhu, Faisal Siddiqi, Ahmed, Ali, Zaigham, Shabbir, Muhammad Salman 2018), observed variables with an outer loading of 0.7 or greater are believed to be greatly acceptable while the outer loading with a value less than 0.7 should be abandoned". Additionally, an indicator loading's standardized value should be above 0.708 to be significant (Joe F. Hair *et al.*, 2020).

Reliability of the data collected was ascertained by Cronbach's alpha test. The Cronbach alpha ( $\alpha$ ) is most frequently used by researcher to determine a measuring instrument's reliability. According to Katou (2008) the questionnaire is considered reliable if the Cronbach's alpha coefficient is above 0.70. Cronbach's Alpha. The Cronbach's alpha allows for estimating the internal consistency within the research instrument (Wise, 2013). All constructs with an alpha score of 0.7 are adopted for the study and any construct with an alpha score less than the critical value is amended. The researcher applied the Cronbach's alpha in conducting reliability tests. To test the internal consistency of this study's questionnaire, the Cronbach alpha test was done and indicated an excellent alpha value. This means that the reliability of the measuring instrument is sound.

The findings as shown in the appendices, show that all the subscales and main scales had high reliable values (Cronbach's Alpha  $\alpha=0.9563$ ), which is above threshold of alpha value of  $\alpha > 0.7$  suggested by (Hair *et al.*, 1998) and  $> 0.6$  (George & Mallery, 2009), thus confirming reliability of the scales. This means that the entire instrument had a high reliability hence fit for data analysis.

### 3.5.8 Diagnostic Tests

The data collected was subjected to a diagnostic test to establish if the assumptions of the study were adhered to and that the probability of type 1 and type 2 errors were minimized (Harrell, 2015). The tests included, normality tests, correlation analysis test, multi-collinearity test, autocorrelation test, heteroscedasticity test and linearity test. In any case the study found out some assumptions were not observed, the researcher dropped some variables that did not conform to the statistical assumptions or adjusted the variables to suit study. On the contrary, whether the statistical assumptions were observed by the data, then the study would conclude that the data was statistically good for analysis and inference.

#### Multicollinearity Test

Multicollinearity is a condition which occur when the independent variables within the study are related with each other. In this study, multicollinearity was tested using Variance Inflation Factor (VIF) which is a reciprocal of tolerance. Some scholars suggest that a VIF value more than 10 ( $VIF \geq 10$ ) indicate that there is a problem of multicollinearity. According to Montgomery (2001) the threshold value for existence of multicollinearity is 10 and above with corresponding tolerance statistic values below 0.1 indicating a serious problem while those below 0.2 indicating a potential problem. Following this assumption, analysis was done to confirm whether the model was free of multicollinearity. The findings are given in Table 3.4 using VIF and Tolerance values.

**Table 3.4 Multicollinearity Diagnostics**

(Constant)	Collinearity Statistics	
	Tolerance	VIF
IFMIS use	.713	1.402
SCRM	.559	1.789
SS	.838	1.193
Procurement Performance Cycle Time	.768	1.303
Procurement Performance cost	.442	2.263
Procurement Performance Quality Compliance	.721	1.387

**Source: (Field Data, 2020)**

Examining the tolerance values in table 3.4 above, the findings shows that none of the variables had tolerance statistic that is less than 0.1, the least was cost, under procurement performance (0.442) while the highest was supplier selection under supply chain practices (0.838). Similarly, the findings show that all the variables had Variance Inflation Factors that were less than 10, with the lowest factor value being supplier selection (1.193) and highest was Cost, under procurement performance (2.263), satisfying the threshold by Miles (2014) of VIF lower than 10 and tolerance above 0.1 as indicators of lack of multicollinearity. This implies that the results of the multiple regression equation are not misleading since the independent variables in the multiple regression equation are highly correlated among themselves.

#### **Normality Test.**

Normality test is a statistical tests assumption aimed at determining if the data is moulded-well by a normal distribution using Shapiro-Wilk test (Adhikari, 2014). A normality test at 95% confidence interval for mean was conducted in the study, where the p-value was compared to determine whether to reject the null hypothesis which means data was either normally distributed ( $<0.05$ ) or ( $>0.05$ ) (Corder & Foreman, 2014; Ososro, Muturi & Ngugi, 2016 and Farah, 2015). Shapiro-Wilk test validates the assumptions of statistical methods, its sensitivity to sample size, and its alignment with rigorous scientific practices. By incorporating this test, the credibility of the findings was enhanced and ensure statistical analyses are based on sound data distribution assumptions.

Normality helps in understanding the shape of the distribution so as to predict dependent variables scores (Bougie & Sekaran, 2019). By incorporating this test, it enhanced the credibility of the findings and ensure that statistical analyses based on sound data distribution assumptions. It is used to define whether or not there is normal distribution of data. If the error terms are non- normally distributed, confidence intervals may become too wide or narrow.

Once confidence interval becomes unstable, it leads to difficulty in estimating coefficients based on minimization of least squares. Presence of non-normal distribution suggests that there are a few unusual data points which must be studied closely to make a better model. Good research data is the one which has a normal distribution (Muli *et al.*, 2016).

**Table 3.5 Shapiro-Wilk Test**

<b>Normality Test</b>						
Performance	Coefficient	Std. err.	t	P>t	[95% conf.	interval]
SE1_supplier_evaluation	0.029486	0.062014	0.48	0.635	-0.09292	0.151892
SE1_supplier_certification	0.029328	0.06157	0.48	0.634	-0.0922	0.150859
SE1_supplier_comparison	0.017643	0.063878	0.28	0.783	-0.10844	0.143729
IFMIS use	0.39395	0.069442	5.67	0	0.256881	0.53102
Risk_Assesment	0.3387	0.061532	5.5	0	0.217245	0.460155
Risk monitoring	0.083665	0.033399	2.51	0.013	0.017741	0.149589
Risk Identification	-0.00843	0.047265	-0.18	0.859	-0.10172	0.084867
_cons	0.624955	0.27036	2.31	0.022	0.091305	1.158606
Variable	Obs	W	V	z	P-Value	
residuals	181	0.92783	9.872	5.242	<b>0</b>	

**Source: Data 2020**

From findings in table 3.5 the performance of county governments (p-value=0.000) was not normally distributed since the probability value was less than 0.05. A very low p-value (p-value = 0.000) from the Shapiro-Wilk test suggests strong evidence that the data did not follow a normal distribution, however the outliers were treated as follow to achieve the normality. Outliers and anomalies were identified, a decision on how to handle outliers and anomalies was made and finally the outliers and anomalies were modified (Winsorization) to suit the study. If the probability is greater than 0.05, then the data is normally distributed (Saunders & Thornhill, 2012).

### **Heteroscedasticity Test**

According to Cohen *et al.* (2013), Heteroscedasticity is used in situations where the variance of the residuals is unequal over a range of measured values. The presence of non-constant

variance in the error terms results in heteroscedasticity. Generally, nonconstant variance arises in presence of outliers or extreme leverage values. Look like, these values get too much weight, thereby disproportionately influences the model's performance (Mose *et al.*, 2018). When this phenomenon occurs, the confidence interval for out of sample prediction tends to be unrealistically wide or narrow. When running a regression analysis, heteroscedasticity results in an unequal scatter of the residuals (also known as the error term). When observing a plot of the residuals, a fan or cone shape indicates the presence of heteroscedasticity (Mueni & Moronge, 2018).

In statistics, heteroscedasticity is seen as a problem because regressions involving ordinary least squares (OLS) assume that the residuals are drawn from a population with constant variance (Muhalia *et al.*, 2021). If there is an unequal scatter of residuals, the population used in the regression contains unequal variance, and therefore the analysis results may be invalid. Regression formula obtained by assuming confounding variables (error) has a constant residual variance (range of errors approximately equal). Heteroscedasticity occurs if there is residual variance is not constant. The regression model is good if there is no heteroscedasticity. Heteroscedasticity testing can be done by Glejser Test method (Orodho, 2004). Glejser test is conducted by regression between independent variable and absolute residual as dependent variable. The result value of test can be seen from value of significant. If the significance value  $> 0.05$ , then there is no heteroscedasticity. Conversely, if the significance value  $< 0.05$ , then occurs heteroscedasticity. Also, presence of heteroscedasticity can be checked by looking at residual vs fitted values plot. If heteroscedasticity exists, the plot would exhibit a funnel shape pattern. Also, Breusch-Pagan / Cook – Weisberg test or White general test can be used to detect whether heteroscedasticity exists (Mukura *et al.*, 2016).

**Table 3.6 Heteroscedasticity Test**

---

**Heteroskedasticity Test**

White's Test for Heteroskedasticity

Chi-

White's general test statistic : 111.4296 sq(44) **P-value= 0.00**

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**Autocorrelation Test**

Auto-correlation is described as correlation between members of a series of observations ordered in time or space (Gujarat, 2022). Autocorrelation is also called serial correlation is the measure of the extent to which the data points in a particular data set are related and hence affecting each other. A Durbin-Watson test was used to detect the presence of autocorrelation between variables. According to Gujarat (2022), the Durbin-Watson statistic ranges in the values from 0 to 4. A value near 2 indicates non-autocorrelation; a value closer to 0 indicates positive correlation while a value closer to 4 indicates negative correlation and this was tested. In this study the Durbin-Watson statistical values were ranging between 1.756 which was within the acceptable limits hence there was no problem of autocorrelation for all models.

The results are given in Table 3.7.

**Table 3.7 Durbin Watson Tests**

---

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	F	df1	df2	Sig. F	Durbin-Watson
1	.848 <sup>a</sup>	.719	.700	.27066	.719	37	.555	10	147	.000

---

1.756

a. Predictors: (Constant), SS, SCRM, IFMIS use

b. Dependent Variable: Mean PP. **Source: (Field Data, 2020)**

### 3.7 Data Analysis

The strength of the relationship between the independent variables (denoted as  $X$ ) and dependent variable (denoted by  $Y$ ) was determined by the use of statistical modelling. The reliability and the strength of the statistical modelling was established using the coefficient of determination ( $R^2$ ) and F-test. The  $R^2$  used was to test the proportion of the variance in the dependent variable which can be explained by the independent variable and F-test did measurement of the suitability of the model to confirm or reject the research hypotheses (Mertler & Reinhart, 2016). The  $R^2$  value of 0% indicates that the model did explain no variability of the response data around its mean (Zikmund, Babin, Carr, & Graffin, 2013).

ANOVA was used in the study to determine whether the regression model was reliable or not. In the same context, the study compared the F-value with the overall significance level to determine if the hypotheses are significant or not (Kim, 2017). The conducting of regression test using a multistage analysis involved running first the  $R^2$  and F-test without the moderator, and the second stage involved running the test with the moderator. The main purpose was to compare the changes in  $R^2$  value and F-test value to determine the effect of the moderator in the relationship of the independent variables and dependent variable. An increase in the value of  $R^2$  and F value was interpreted to mean that the moderator is statistically significant and vice versa.

The direction, strength and significance in the relationship between each variable and the dependent variable was determined by use of the *beta*, *t* and *P* values. The beta coefficient values indicated the strength of the individual variable in influencing the dependent variable. The direction of the relationship was indicated by the *-ve* or *+ve* sign before the beta value. A positive beta value showed a positive relationship between the variable and vice versa. The study further carried a multistage analysis to establish the effect of the moderator on the individual independent variables. The study compared the values of beta, *t* and *P* when the test



is run without a moderator and when with a moderator. The presence of a positive significant change in the values concluded that the moderator has a significant effect on the relationship between the individual variables and the dependent variable.

Multiple linear regression model was used in the study also known as the ordinary least square (OLS) model and moderated multiple regression models showing the relationships of individual variable with the dependent variable (Wang, Gunasekaran, Ngai & Papadopoulos, 2016; Liu, Prajogo & Oke, 2016). A multiple linear regression is a model with a statistical multivariate technique which is used to measure the model parameters and determine the effect of each independent variable on the dependent variable (Mertler & Reinhart, 2016). The multiple regression model took the form of an equation that contain a coefficient  $\beta_i$  for individual predictor which indicated each contribution to every predictor to the model. The coefficient  $\beta_i$  indicated the relationship between the dependent variable and each predictor.

A positive value was an indication of a positive relationship between the predictors and the dependent variable whereas a negative coefficient represents a negative relationship (Kim, 2017). The multiple regression was modelled to show the relationship between the dependent variable without the moderator as well as their combination effects on dependent variable as shown by the regression model. The regression model used to show the levels of independent variables had on the implementation level of procurement performance of LREB devolved governments, Kenya.

The analysis of the correlations was to establish the relationship between the variables using Pearson product- moment correlation hence ranked to determine the independent variables (supplier selection and supply chain risk management practices) that has strong influence on procurement performance (Cohen, West & Aiken, 2013). The correlation coefficient results were expressed ranging from -1.0 to +1.0, where, -1 was strong negative relationship and +1 was strong positive relationship (Prion & Haerling, 2014). The correlation strength

measurement is based on the Pearson correlation scale where, the correlation coefficient positive and close to one, the variables said to be strongly and positively correlated and vice versa

. Values smaller than the significance value (0.05) were to be said as significant, while those values greater than (0.05) deemed to be insignificant.

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

**Source: (Adopted from Chen *et al.*, 2003; Chen & Popovich, 2002)**

Where;

r = the Pearson Coefficient of  
correlation n= number of pairs of the  
stock

$\sum xy$  = sum of products of the paired stocks

$\sum x$  = sum of the x scores

$\sum y$  = sum of the y scores

$\sum x^2$  = sum of the squared x scores

$\sum y^2$  = sum of the squared y scores

The results for Pearson correlations are given in Table 3.8

**Table 3. 8 Test of Correlation in independent variables ‘**

<b>Correlations</b>									
		<u>SE</u>	<u>SC</u>	<u>SC</u>	<u>RI</u>	<u>RM</u>	<u>RA</u>	<u>E-P</u>	<u>E-T</u>
SE	Pearson	1	.301 **	.198*	.105	.079	.030	.009	.086
	Correlation		.000	.013	.189	.326	.707	.907	.283
	Sig. (2-tailed)								
SC	N	181	181	181	181	181	181	181	181
	Pearson	.301	1	.111	.270**	.052	.128	.125	.324**
	Correlation	**		.166	.001	.515	.110	.116	.000
SC	Sig. (2-tailed)	.000							
	N	181	181	181	181	181	181	181	181
	Pearson	.198	.111	1	.256**	.052	.176*	.103	.000
SC	Correlation	*	.166		.001	.520	.027	.197	.999
	Sig. (2-tailed)	.013							
	N	181	181	181	181	181	181	181	181
RI	Pearson	.105	.270 **	.256**	1	.456**	.437**	.402**	.355**
	Correlation	.189	.001	.001		.000	.000	.000	.000
	Sig. (2-tailed)								
RM	N	181	181	181	181	181	181	181	181
	Pearson	.079	.052	.052	.456 **	1	.400**	.676**	.402**
	Correlation	.326	.515	.520	.000		.000	.000	.000
RA	Sig. (2-tailed)								
	N	181	181	181	181	181	181	181	181
	Pearson	.030	.128	.176 *	.437**	.400**	1	.373**	.347**
E-P	Correlation	.707	.110	.027	.000	.000		.000	.000
	Sig. (2-tailed)								
	N	181	181	181	181	181	181	181	181
E-T	Pearson	.009	.125	.103	.402 **	.676**	.373**	1	.350**
	Correlation	.907	.116	.197	.000	.000	.000		.000
	Sig. (2-tailed)								
E-T	N	181	181	181	181	181	181	181	181
	Pearson	.086	.324 **	.000	.355**	.402**	.347**	.350**	1
	Correlation	.283	.000	.999	.000	.000	.000	.000	
E-T	Sig. (2-tailed)								
	N	181	181	181	181	181	181	181	181

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Source: (Field Survey Data, 2020)**

From the above results on mult-collinearity using correlations on independent variables, it is clear that there are no correlations above 0.9 to violate the assumption of high correlations among independent variables as suggested by Lee Rodgers & Nice wander (1988). From these findings, it can be concluded that there were no high correlations among independent variables hence the assumption of collinearity was achieved.

### 3.6.2 Model Specifications

#### Objective One

In order to examine the effect of supply chain practice (Independent Variable) on procurement performance (Dependent Variable) of LREB devolved governments, Kenya (First objective; Hypothesis 1), equation (3.1) was modeled in the following form:

$$Y_i = \beta_0 + \beta_1 X_{11i} + \beta_2 X_{12i} + \epsilon_i \dots \dots \dots (3.1) \text{ Where;}$$

- $Y_i$  Is the dependent variable (procurement performance), the scaled variable that is the weighted average of four PP descriptors, quality, cost, delivery time, and budgetary compliance.
- $\beta_0$  Identifies an adjustment constant due to scale differences in measuring supply chain practice and procurement 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.
- $\beta_1$  Are constants describing the functional relationship in the population
- $X_1$ , Is the independent variable, supplier selection
- (2) Are measures of the independent variable, supply chain practices (supplier selection and risk management).

Epsilon,  $\epsilon_i$  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.

**Source: (Adapted from Freund, Wilson & Sa, 2006; Field, 2005)**

## Objective Two

In order to determine the effect of IFMIS use on procurement performance of LREB devolved governments, Kenya (second objective; Hypothesis 2), equation 3.2 was modelled in the following form:

$$Y_i = \beta_0 + \beta_1 X_{21i} + \beta_2 X_{22i} + \beta_3 X_{23i} + \epsilon_i \dots \dots \dots (3.2)$$

Where;

- $Y_i$  Is the dependent variable (procurement performance), the scaled variable that is the weighted average of four rotated factors of PP descriptors, budgetary compliance, quality, cost and delivery time
- $\beta_0$  Identifies an adjustment constant due to scale differences in measuring IFMIS use and procurement performance (the intercept or the place on the P - axis through which the straight-line passes. It's the value of Y when M1 is 0.
- $\beta_2$  Is a constant describing the functional relationship in the population.
- $X_2$  Is the independent variable
- (1,2) Are measures of the independent variable, (E-Procurement & E-Tendering and payment portal)

Epsilon, represents the error component for each Entity. The portion of Y score that cannot be accounted for by its systematic relationship with values of X2, the predictor variable.

**Source: (Adapted from Freund *et al.*, 2006; Field 2005)**

## Objective Three

To analyze the moderating effect of IFMIS use (moderating variable) on the relationship between supply chain practices and procurement performance of LREB devolved governments,

Kenya (Three objective; Hypothesis 3), a hierarchical regression model was adopted in equation 3.3 and was modelled as follows;

$$Y_i = \beta_0 + \beta_1 X_{1i} + \epsilon_i \dots \dots \dots (3.3)$$

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \epsilon_i$$

$$Y_{ij} = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \beta_{mX1i} M_i X_{1i} + \epsilon_i$$

Where;

- $Y_i$  is the dependent variable (procurement performance) and a linear function of the moderating variable (IFMIS use, M) and the independent variable (supply chain practices, X1) plus i
- $\beta_0$  Is the regression constant or intercept
- $\beta_1$  Is the regression coefficient or change induced in Y (procurement performance) by  $X_{1i}$ ,
- $X_{1i}$  Is the independent variable, supply chain practices;
- $\beta_m$  The regression coefficient of change induced in Y (supply chain performance) by  $M$ ,
- $M$  IFMIS use, is a moderator of the relationship between supply chain practices ( $X_{1i}$ ) and procurement performance (Y)
- $\beta_{mX1i}$  The regression coefficient of change induced in Y (procurement performance) by the interaction term,  $M_i.X_{1i}$
- $M_i X_{1i}$  Interaction term which represents the moderating effect. It accounts for moderation in the model.

$\epsilon_i$  Is a random variable, error term that accounts for the variability in Y1 that cannot be explained by the linear effect of the i predictor variables

**Source: (Adapted from Freund *et al.*, 2006; Field, 2005)**

The moderation effect was achieved by observing change in  $R^2$  value after conducting the relationship between the predictor variable and the outcome variable, the moderator and the outcome variable and the interaction term (combined effect of the predictor and the moderator). The interaction effect depicts whether moderation is present in the model (Field, 2005). However, the predictor and the moderator must be included for the interaction term to be valid. Therefore, the  $R^2$  value representing the interaction term depicted the moderation in the model (Field, 2005, Baron & Kenny, 1986;) A simple linear regression was adopted in order to establish effect of supply chain practices bearing a mean of its subscales and procurement performance. This was modelled in equation 3.4:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \varepsilon_i \dots \dots \dots (3.4)$$

$X_1$  in this case is the independent variable, which is the mean of its subscales {Supplier Selection& Supply Chain Risk Management).

Furthermore, a simple linear regression was adopted in order to establish effect of IFMIS use bearing a mean of its subscales and procurement performance. This was modelled in equation 3.4:

$$Y_i = \beta_0 + \beta_2 X_{2i} + \varepsilon_i \dots \dots \dots (3.5)$$

$X_2$  in this case is the independent variable, IFMIS use, which is the mean of its subscales {E-procurement, E-tendering, paperless requisition and reduced lead time)

**Source: ((Adapted from Freund *et al.*, 2006)**

### 3.8 Research Ethics

The proposal was developed with the help of the assigned Maseno University supervisors who supervised the study right from proposal development to submission to the university’s school of postgraduate studies who gave authorization by letter for ethical research approval certificate (ERAC). In addition, the approval letter was presented to National Commission for

Science Technology and Innovation (NACOSTI) and was acknowledged. The ethical issues addressed in the study are; information confidentiality, disclosure of the research objectives, participants anonymity, voluntary consents of the respondents and non-disclosure of sensitive information about the devolved units. The researcher guaranteed all the data collected were treated with intimacy. The questionnaires were distributed to the respondents in envelopes, and collected as per agreed period. Data was managed by the research assistant and the researcher. The filled questionnaires were safely kept in custody of the researcher; the individual responses were not disclosed. The participant privacy was crucial ethical consideration. Participants' information was not made public. The aspiration of the exploration and the use of the information collected was clarified to the participants. Data collected was stringently used for the intention of the study only. The protocols, including monitoring, was approved by NACOSTI.



## CHAPTER FOUR

### RESULTS AND DISCUSSION

This chapter presents study results which have been analyzed and discussed in line with the objectives of the study. The purpose of the study was to establish the moderating role of IFMIS use on the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya.

#### 4.1 Response Rate

**Table 4.1 Response Rate**

<b>Questionnaires</b>	<b>Number (n)</b>	<b>Percentage (%)</b>
Questionnaires Completed	181	92.3
Uncompleted Questionnaires	15	7.7
Questionnaires Distributed	196	100

Otieno (2019) defines response rate as the extent to which the final data sets includes all sample members and is calculated as the number of respondents with whom interviews are completed and divided by the total number of respondents in the entire sample including non - respondents. Data were collected by close-ended questionnaires. This made it possible to get clear responses from the target population on their perception regarding the role of IFMIS use, supply chain practices and procurement performance of LREB devolved governments. The researcher distributed 196 semi-structured questionnaires to the targeted respondents of which 181 questionnaires were completely filled and collected by the researcher for data management and analysis of the 196 questionnaires, 15 were not filled by the respondents. Therefore, the study recorded a completion rate of 92.3 percent. According to Creswell *et al.*, (2014) a return rate of 50% is adequate, 60% is good enough, while the return rate of above 70% is very good. Based on this finding, the current study's questionnaire return rate of 92.3% was considered very well. The detected high response rate was accredited to the fact that, the questionnaires

were directly administered by the researcher to the respondents. The investigator also pre-notified the study participants of the intent of the study. As well, the questionnaires were straightforward and friendly to respondents who were assured of confidentiality.

#### 4.2 Demographic Attributes of the Interviewee among LREB Devolved Governments, Kenya

**Table 4. 2: Socio-demographic characteristics of the respondents**

<b>Variables</b>	<b>Frequency (N)</b>	<b>Percentage (%)</b>
<b>Education Level</b>		
Doctorate	13	7.18
Masters	13	7.18
Graduate (First degree)	67	37.02
College Diploma	84	46.41
College Certificate	4	2.21
<b>Years Worked</b>		
Less than a year	83	45.86
Between 1-5 Years	66	36.46
Between 5-8 years	32	17.68
<b>Sections</b>		
Ministry	19	10.5
Procurement	132	72.93
Finance	30	16.57
<b>Membership Category</b>		
None	48	26.52
Student Member	87	48.07
Associate Member	9	4.97
Full Member	37	20.44

From Table 4.2, considering education level, most (46.41%) of the respondents were diploma holders followed by graduate (first degree) (37.02%) and the least number of the respondents (2.21%) had education level of college certificate. On years worked in respective departments majority (45.86%) had only worked for less than one year followed by between one to five years (36.46) and the respondents who had worked between five to fifteen years were the smallest number (17.68%) among the respondents. Among the respondents on sections of ministry and departments most of them were from the ministry (72.93%) followed by

procurement section (16.57%) and the least respondents (10.5) were from the finance section. Respondents were also asked to indicate their membership category in respective professional body and the results showed that majority were student member (48.07%) followed by none membership (26.52%) and the least number of respondents (4.97%) belonged to associate member.

In this research, socio-demographic variables such as age, gender, education level, income, occupation, and marital status are crucial for understanding the composition and characteristics of the population under study. The practical implications of socio-demographic results help to contextualize findings and guide decision-making. Socio-demographic data allows researchers and policymakers to design interventions or policies that cater to the needs of specific population groups. The practical implications of socio-demographic results are essential for translating research findings into actionable strategies, policies, and interventions that address the specific needs and challenges of different population segments. By understanding how demographic factors influence behaviors, preferences, and outcomes, decision-makers can create more equitable and effective solutions across sectors like health, education, economics, and public services.

#### **4.3 Descriptive Statistics of Supply Chain Practices on Procurement Performance of LREB Devolved Governments, Kenya**

Descriptive statistics helps to put the data in a meaningful way. Nonetheless, it doesn't allow to arrive at conclusions beyond the analyzed data. They are a way to describe data. Therefore, descriptive statistics grants the data in a more eminent way, allowing simpler interpretation.

**Table 4. 3: Supplier Selection Practices**

Factors	N(%)	Procurement Performance				
		Strongly disagree (20 - 39%) n(%)	Disagree (20 - 39%) n(%)	Neutral (40 – 59%) n(%)	Agree (60 – 79%) n(%)	Strongly Agree (80 – 99%) n(%)
<b>Supplier Evaluation</b>						
Strongly disagree	12(10.55)	7(78.96)	0(0.00)	3(21.04)	0(0.00)	0(0.00)
Disagree	27(14.36)	5(19.23)	6(21.45)	15(58.32)	1(1.00)	0(0.00)
Neutral	60(30.73)	11(21.15)	4(7.77)	30(42.92)	7(13.46)	8(14.70)
Agree	80 (40.28)	0(0.00)	15(18.00)	20(27.20)	35(38.60)	10(16.20)
Strongly agree	2(1.56)	0(0.00)	0(0.00)	0(0.00)	0(0.00)	1(100.00)
<b>Supplier Certification</b>						
Strongly disagree	19(10.50)	10(64.21)	6(20.00)	3(15.79)	0(0.00)	0(0.00)
Disagree	53(29.28)	10(14.00)	3(11.10)	40(74.90)	0(0.00)	0(0.00)
Neutral	100(50.12)	1(0.93)	16(21.93)	33(34.58)	31(32.49)	19(24.49)
Agree	2(1.10)	0(0.00)	0(0.00)	1(50.00)	1(50.00)	0(00.00)
Strongly agree	7(9.00)	0(0.00)	0(0.00)	0(0.00)	3(48.00)	4(52.00)
<b>Supplier comparison</b>						
Strongly disagree	18(9.94)	12(66.67)	0(0.00)	5(27.78)	1(5.56)	0(0.00)
Disagree	24(13.26)	3(12.50)	0(0.00)	19(79.17)	2(8.33)	0(0.00)
Neutral	42(22.73)	1(1.92)	3(10.54)	24(60.62)	7(13.46)	7(13.46)
Agree	87(48.07)	1(1.15)	0(0.00)	26(29.89)	60(68.97)	0(0.00)
Strongly agree	10(6.00)	0(0.00)	0(0.00)	0(0.00)	0(0.00)	10(100.00)

Supplier evaluation is one of the supplier selections practices in the devolved governments.

The study explores the influence of supplier selection practices on procurement performance of LREB devolved governments. The interviewee were asked to indicate their level of concurrence with the remarks on supplier evaluation on a scale set from 1 (Strongly disagree) to 5 (Strongly agree) as shown in Table 4.3, the statements under supplier selection practices included: we use technical capacity criteria when evaluating suppliers, we use technical expertise criteria when evaluating supplier, we use financial capability criteria when evaluating supplier, we consider provision of after sales service when evaluating supplier and we consider suppliers past performance and current relationship when evaluating suppliers. Table 4.3

displayed the result from a cross tabulation of supplier evaluation and procurement performance. According to the outcome in the Table 4.3, the result shows that, supplier evaluation result to very good performance in LREB devolved governments (91.67 percent). Only 3.7% of the respondents agreed that, supplier evaluation leads to poor procurement performance in LREB devolved units.

These findings agreed with Hsu *et al.*, (2006) who argued supplier selection criteria such as need to evaluate supplier's quality and service proficiency as well as its strategic and governance arrangements with the contracting authorities. These outcomes concurred with Churchill (2014) argument that scope of resources, technical competency, industry understanding, allegiance to quality and adherence to continuous improvement in product, services and process deemed during the supplier evaluation process. Suppliers' evaluation process in LREB devolved governments was found to be very free, fair, detailed and suppliers must meet minimum threshold qualifications, capacity, experience, financial capability, resources and equipment to be able to deliver.

According to Ogachi (2016) it is important that manufactures consider supplier's market reputation since it is essential in diversifying supply position to maintain our customer service levels by quality production. Market reputed suppliers remain resilient and always expect the unexpected, and are prepared to respond proactively to any situation. Some firms fail in selecting the more reputable supplier and this forces them to create a dual supply base for parts and raw materials, so that if one supplier is unable to meet the requirements, the other can. This is in line with the findings of Toroitich *et al.* (2017) they believed it is important to develop trust with the suppliers, and not to overload them and create an unmanageable workload, or set unrealistic deadlines. Their business is important too, and we want to see them be successful. We have to be equitably transparent with them and offer them correct information which will then enable them to respond to our needs appropriately. This is in line with the findings of

Toroitich *et al.* (2017), they observed that the opinion of any manufacturing firm is only as strong as its weakest link, and as a supplier market reputation depend on reliability. In order to meet the demands of customers firms depends on supplier's ability to meet their demands.

Further the study findings revealed that, majority of the respondents indicated that, procurement performance among LREB county governments highly depends on the effectiveness of the supplier evaluation practices. This is supported by a study conducted by Mutai & Okelo (2016), where majority of the respondents revealed that evaluation of supplier quality commitment, financial capability results to better procurement performance of public universities. The result is also supported by study conducted by Chemjor (2015), where majority of the study participants showed that, effective supplier evaluation results to better performance in procurement procedures.

The study findings also indicated that cost affects the counties supplier selection. Cost of supplying the goods by supplier will make decision on willingness and the ability of the firms to pay supplies and the balance they want to strike between cost, reliability, quality and service. This is in line with the findings of Dametew *et al.*, (2018) they observed that manufacturing firms should consider to pay more for a more reliable supplier as compared to a cheap supplier whose reliability is in question. Reliability and quality from suppliers, depends on the firm's decision on payment. Manufacturing firms consider paying more for the supplier of materials as a way of ensuring that there will be a constant stream of materials to the firm without shortage. This will ensure that suppliers are able to supply the materials no matter the season and time because they are able to purchase the materials and still make some profit. This is in line with the findings of Toroitich *et al.*, (2017) a strategic approach of choosing suppliers help to understand how firms own potential customers weigh up their purchasing decisions. The lowest price is not always the best value for money.

The study embraced supplier certification as one of the supplier selections practices elements. To obtain the supplier certification as a variable in this study, the participants were asked to indicate their level of agreement with the statements on supplier certification on a scale ranging from 1 (strongly disagree) to 5 (to strongly agree) as shown in Table 4.3. The statements under supplier certification practices included: we include requirement for environmental certification in our evaluation criteria, we include requirement for quality certification in our evaluation criteria, we include requirement for life cycle certification in our evaluation criteria and we have knowledge on social responsibility. To generate the variable supplier certification from the responses, a composite index was then obtained by calculating the average of the total sum of the responses for statements under supplier certification.

A cross tabulation of supplier certification and procurement performance gave the result as shown in Table 4.3. According to the table 4.3, majority (81.01%) agreed that, to a very good extent supplier certification result to a very good procurement performance in the devolved governments. Among the respondents, majority (87.76%) agreed that to a good extent supplier certification result to a good procurement performance in the LREB counties. On average the result in the Table 4.3 shows that, majority of the respondents were convinced that suppliers' certification results to very good procurement performance in the LREB county governments. This concurs with the finding of a study done by (Saleemi, 2014), where majority of the study participants indicated that selecting suppliers with certification leads to better performance.

The findings showed that quality standard is a decent marker of supplier choice. Quality guidelines are critical in choosing the supplier since quality suppliers means that the nature of products that they supplier is of high standards. It likewise guarantees the organization can get the most proficient items conceivable. This is in line with the findings of Dametew *et al.*, (2018) they observed that quality measures of the suppliers give products that are free from any

assembling imperfection, insufficiency or critical variety. Quality guidelines of suppliers might be imperative on the grounds that there might be sure measures that are set to indicate the nature of merchandise and furthermore with the goal that consistency is accomplished in the whole arrangement of items being provided.

These findings implied that LREB devolved governments consider requirement for environmental certification, quality certification, life cycle certification and social responsibility in their evaluation criteria. In addition, most of the staff have knowledge on supplier certification criteria to be adopted. Although there is need of sensitizing procurement professionals on international standards to build their capacity to facilitate proper evaluation of suppliers when certification requirements are included in the evaluation criteria in the LREB devolved governments. Cooper (2016) companies have the set standards for the quality of suppliers which vary from one firm to another. The quality of raw materials supplied to the company determines the quality of final products. However, quality can be an obscure concept at first because what one might see as quality someone else may not. This is because those that exceed quality standards stand out above their competitors and more importantly their potential for profit and consumer loyalty. The quality standard of suppliers makes it easier for companies to meet quality needs of their raw materials.

This finding is in agreement with the assertions of Marie Butler-Knight Safty, (2015) who said that, firms use quality standard to give details of the requirements, specifications, the various guidelines and characteristics to be able to meet the quality needs of the product, the purpose of the product, process and the service. According to Marie Butler-Knight Safty, (2015) manufacturing firms should provide minimum standards which will explain acceptable set of quality standards for the goods and services that they need. Quality of supplier is not all about how the firm can incur profit or loss but it is the safety and usability of the product to the



company and the satisfaction of its end user customers. According to Ogachi (2016) some supplier who cannot meet the set standards of the firm are prone to supplying goods which may end up not being able to meet the production needs of the company or may bring more problems and wastage in the long run. If supplies can meet the quality standards the manufacturing firm will reap better profits and reduce losses of high-quality products.

According to Edvinsson and Malone (2015) a massive commitment is required by both buyer and suppliers in order to achieve a truly valuable partnership. As a result, firms consider the cost of their product because it gives information on the level of commitment of the suppliers added. In addition, firms can become captive to their strategic supply partners, due to excessive switching costs. This is in line with the findings of Tobias (2017). Finally, firms run the risk of partners leaking information gained in a long-term buyer-supplier relationship to competitors or using the information themselves to forward integrate and become a potential competitor.

Supplier comparison was embraced as one of the supplier selections practices. To earn supplier comparison as a variable in the study, the interviewees were asked to indicate their level of agreement with the remarks on supplier comparison on a scale ranging from 1 (Very Small Extent) to 5 (Very Good Extent) as shown in Table 4.3. The statements under supplier comparison practices included: we rank suppliers on product quality, we rank suppliers on service quality, we rank suppliers on lead time, we rank suppliers on reputation, we rank suppliers on responsiveness, and we rank suppliers on price. To generate the variable supplier comparison from the responses, a composite index was then obtained by calculating the average of the total sum of the responses for statements under supplier comparison.

According to table 4.3, majority (64.36%) of the study participants agreed that, to a very good extent, supplier comparison practices result to a very good procurement performance among LREB devolved units. Majority (82%) of the respondents also indicated that, to a good extent supplier comparison practices result to good procurement performance in the devolved

governments. Among the study participants, 36.67% indicated that, moderate supplier comparison practices result to fair procurement performance in the devolved units. On average, majority of the respondents confirmed that, supplier comparison as an element of supplier selection practice leads to a better procurement performance in the LREB devolved governments. This concurs with a study done by Kakwezi & Nyeko (2010), which detailed that, majority of the respondents were of the opinion that, comparison of financial and non-fiscal performance of the suppliers when selecting a supplier leads to a better performance of procurement procedures.

The findings imply that LREB devolved governments rank suppliers on responsiveness and price, product quality and service quality as well as lead time. However, most LREB devolved governments rarely rank suppliers based on their reputation. The outcome concurred with Apopa (2018) who argued supplier service/ quality of the product are important elements of supplier selection. These results agree with Kellner & Lasch (2016) who argues that the indicators used to measure supplier service include supplier ability to meet delivery due dates the price of raw materials, parts and services, reserve capacity, adjustable contract terms, geographical proximity and the proficiency to respond to sudden demand considered during supplier selection. In devolved units in Kenya, suppliers' comparison is conducted to determine whether there is responsiveness to the set criteria. Most LREB devolved units in Kenya uses responsiveness, better prices and quality in comparison with the market prices. Other criteria used include quality of service, technical capability, financial capability, proximity to supply point and number of years in business, experience of suppliers, consistency of virtues and values and total cost assessment. These findings concur with Amindoust *et al.*, (2012) argument that supplier selection criteria in most government institutions include quality of service, technical capability, financial capability and experience.

According to cheptora *et al.*, (2018), they agreed with this study’s finding that supplier efficiency in delivery and service is also a good indicator of supplier evaluation. Efficiency of service delivery by the suppliers can be evaluated through the supplier willingness to work with the company to optimize lead times, supplier who allows order flexibility within acceptable limits, the supplier consistency in meeting delivery goals, the supplier having a business system in place which accurately schedule product and procure materials in an economical manner and the supplier who is willing and able to notify the buyer in case there are delays in delivery of goods and explain the reason as to why they have been delayed.

### Descriptive Results on Supply Chain Risk Management Practices

**Table 4.4: Percentage distribution of risk management practices by Procurement Performance**

Factors	N(%)	Procurement Performance				
		Strongly disagree (20 - 39%) n(%)	Disagree (20 - 39%) n(%)	Neutral (40 – 59%) n(%)	Agree (60 – 79%) n(%)	Strongly Agree (80 – 99%) n(%)
<b>Risk Monitoring</b>						
Strongly disagree	1(0.55)	1(100.00)	0(0.00)	0(0.00)	0(0.00)	0(0.00)
Disagree	26(14.36)	5(19.23)	6(21.45)	15(58.32)	0(0.00)	0(0.00)
Neutral	52(28.73)	11(21.15)	4(7.77)	30(57.60)	7(13.46)	0(0.00)
Agree	53(29.28)	0(0.00)	0(0.00)	20(40.2)	23(43.40)	10(16.20)
Strongly agree	2(1.10)	0(0.00)	0(0.00)	0(0.00)	0(0.00)	1(100.00)
<b>Risk Assessment</b>						
Strongly disagree	19(10.50)	10(64.21)	6(20.00)	3(15.79)	0(0.00)	0(0.00)
Disagree	53(29.28)	10(14.00)	3(11.10)	40(74.90)	0(0.00)	0(0.00)
Neutral	100(50.12)	1(0.93)	16(21.93)	33(34.58)	31(32.49)	19(24.49)
Agree	2(1.10)	0(0.00)	0(0.00)	1(50.00)	1(50.00)	0(00.00)
Strongly agree	7(9.00)	0(0.00)	0(0.00)	0(0.00)	3(48.00)	4(52.00)
<b>Risk entification</b>						
Strongly disagree	18(9.94)	12(66.67)	0(0.00)	5(27.78)	1(5.56)	0(0.00)
Disagree	24(13.26)	3(12.50)	0(0.00)	19(79.17)	2(8.33)	0(0.00)
Neutral	42(22.73)	1(1.92)	3(10.54)	24(60.62)	7(13.46)	7(13.46)
Agree	87(48.07)	1(1.15)	0(0.00)	26(29.89)	60(68.97)	0(0.00)
Strongly agree	10(6.00)	0(0.00)	0(0.00)	0(0.00)	0(0.00)	10(100.00)

Source: Data (2020)

The outcome in Table 4.4 shows that response of the respondents 53(29.28%) imply that there was a good extent of risk monitoring and 30(56.60%) of them stated that there was a good procurement performance among county governments. The results further reveal that 52(28.73%) of the respondents agreed that risk monitoring and the distribution of their responses on procurement performance were 11(21.15%) 34(65.38%) and 7(13.46%) as disagree, agree and strongly agree respectively.

From the findings, there are risk management strategies in place but they are not fully implemented. The risk monitoring in LREB county governments affects all departments and not necessary supply chain department alone. Risk monitoring also balances the cost of managing risk with anticipated benefits and undertaken contingency planning in the event that critical risks are realized. Therefore, it should be a continuous process linked to achievement of the organization. However, while some LREB county governments were implementing procurement risk monitoring others were not. These findings are in agreement with Bhatti (2016) findings that public institutions have risk management policies and maintain a risk register. However, while some ministries were updating procurement risk register others were not. The management should also enforce risk management procedure and policy.

With respect to risk assessment, 19(10.50%) of the respondents reported that there was a small extent of risk assessment in the LREB devolved governments out of which majority of them 16 (84.21%) reported that there was a fair procurement performance; 100% of all the 53(29.28%) respondents who reported that there was a good procurement performance. Majority of the respondents 107(59.12%) reported that there was a good extent of risk assessment among county governments and 69(64.49%) of them agreed that procurement performance was very good. These findings imply that some LREB county governments carry out risk audit, risk analysis and regular risk check-ups. In addition, LREB county governments in Kenya do not carry out joint training sessions on risk with their suppliers and joint risk

workshops with their suppliers. The respondents were asked to comment on risk assessment in their LREB devolved governments. According to the findings, they indicated the LREB devolved governments were yet to put risk assessment programme in place. In relation to risk assessment strategy, the respondents indicated that risk assessment should be a continuous process and hence it is important for the LREB counties to make a policy on this. The respondents also indicated that some devolved governments have set an audit team to internalize on risks matters.

In relation to risk identification in the devolved governments majority 87 (48.07%) responded that the extent of risk identification was very good, 60(68.97%) of them further stated that procurement performance among LREB devolved governments was very good ranging between 60 to 79 percent. These findings imply that supply chain departments of LREB devolved governments have professional expertise, continuously reviewed their records and have a work flow chart. However, though some counties perform identification of potential risk in supply chain and on-site investigation of existence of risk others do not. The findings contradict Tummala & Schoenherr (2011) argument that organizations conduct identification of potential risk in supply chain. According to the findings, despite the fact that county governments carry out risk identification LREB devolved governments still procure risk goods and services. This is because proper systems are yet to be put in place by the county heads. They also indicated that risk identification was done, good regular audits and a small unit within procurement department (procurement planning and monitoring). To avoid risk in the supply chain and inventory management, the devolved governments use a stores accounting method of first in first out to reduce the risk of obsolescence. The risk identification is everyone responsibility (from the governors to the watchman). The findings concur with those of Ochieng (2019), who established that risk management practices influenced manufacturing firms' performance. Similarly, Mburu *et al.*, (2015) asserted that adequate risk identification

and risk management were inevitable as they enhanced the performance of supply chains in manufacturing firms. Javaids and Siddiqui (2018) found that supply chain risk management factors impacted Pakistani businesses' responsiveness and performance.

### 4.3.1 Summary Results on Supply Chain Practices

Further analysis was performed to compare the means and standard deviations of the two subscales of supply chain practices. The findings are presented in Table 4.5

**Table 4.5: Comparison of SCP Means**

Supply Chain Practices	Mean	STD
Supplier Selection	2.23	0.71
Supply Chain Risk Management	2.60	0.57
Overall mean and Standard Deviation	2.42	0.19

From the findings, it is clear that there is higher rating on the implementation of supply chain risk management (M=2.60, STD=.57) among LREB counties and supplier selection follows by (M=2.23, STD=.71) the overall mean of supply chain practices was low (M=2.42, STD=0.19), implying that there is inappropriate use and adoption of supply chain practices.

This is in line with the findings of Dametew *et al.*, (2018) they observed that manufacturing firms should consider to pay more for a more reliable supplier as compared to a cheap supplier whose reliability is in question. Reliability and quality from suppliers, depends on the firm's decision on payment. Manufacturing firms consider paying more for the supplier of materials as a way of ensuring that there will be a constant stream of materials to the firm without shortage. This will ensure that suppliers are able to supply the materials no matter the season and time because they are able to purchase the materials and still make some profit. These findings were in line with a study conducted by Kulzy and Fricker (2015) which indicated that purchasing is the most rigorous primary activity in supply chain management. For example, whenever manufacturers bought low-quality commodities, the outcome affected organizational

operations. Besides, if firms acquired materials at a high price due to ineffective purchasing skill, companies were most likely to suffer high cost of operation

A study by Mungai (2014) also aligned with the outcome of this study by citing that the competitive selection of suppliers formed the basis for effective performance in a company. Mungai (2014) further believed that evaluating supplier during the purchasing phase of supply chain management was a critical parameter towards competitiveness.

#### 4.4. Effect of Supply Chain Practice on Procurement Performance of LREB Devolved Governments, Kenya

The first objective of the study was to examine the effect of supply chain practice on procurement performance among LREB devolved governments, Kenya, a standard multiple regression model analysis was adopted to test the null hypothesis,  $H_{01}$ : *Supply chain practices has no significant effect on procurement performance of LREB devolved governments, Kenya* Firstly, a correlation was performed to establish whether supply chain practices were correlated with procurement performance, Pearson product moment correlation test was adopted.

**Table 4.6: Correlation between Supply Chain Practices and Procurement Performance of LREB Devolved Units’, Kenya.**

		Correlations		
		Mean PP	Mean SS	Mean SCRM
Mean PP	Pearson	1	.339**	.529**
	Correlation		.000	.000
	Sig. (2-tailed)			
Mean SS	N	181	181	181
	Pearson	.339**	1	.301**
	Correlation	.000		.000
Mean SCRM	Sig. (2-tailed)			
	N	181	181	181
	Pearson	.529**	.301**	1
	Correlation	.000	.000	
	Sig. (2-tailed)			
	N	181	181	181

\*\* . Correlation is significant at the 0.01 level (2-tailed). \* . Correlation is significant at the 0.05 level (2-tailed).

**KEY: PP- Procurement Performance, SS- Supplier Selection, SCRM- Supply Chain Risk Management**

Correlation analysis clearly shows the strength of the relationship between variables. In this study, Pearson product moment correlation coefficient was used to establish the relationship between the predictor/explanatory variables. Correlation analysis gives the relationship between variables. In this study, Pearson product moment correlation coefficient (r's) was used to establish the relationship between the independent variables. The findings revealed that there was a significant relationship between the independent variables since all the p-values were less than 0.01, as shown by SS (r= 0.339, p<.01), SCRМ (r= 0.529, p<.01). Even though there was a significant relationship between the independent variables, there was no problem of multicollinearity among the variables since all the r values were less than 0.8 as suggested by (Sila, 2014).

A multiple regression was carried out to establish effect of supply chain practice on procurement performance. Procurement performance was regressed against supply chain practice elements. This was modeled using the equation in the following form:

$$Y_i = \beta_0 + \beta_1 X_{11i} + \beta_2 X_{12i} + \epsilon_i \dots \dots \dots (4.1)$$

**Table 4.7: Model Results on Effect of Supply Chain Practices on Procurement Performance of LREB County Governments, Kenya**

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<b>Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change
1	.707 <sup>a</sup>	.500	.483	.35496	.500	24.303	2	179	.000

a. Predictors: (Constant), Mean SS, Mean SCR  
Source: Data 2020

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Findings show positive correlation (R=.707) between supply chain practices and procurement performance of LREB counties. When the value is squared, an R square value (R<sup>2</sup>=.500, p<.05), the coefficient of determination indicated variation in procurement performance that is explained by supply chain practice. Therefore, it can be noted that supply chain practice accounts for 50.0%



variance on procurement performance, leaving the remaining half to be accounted for by other variables. In adjusting for overestimation through a shrinkage process, the Adjusted R Square (Adjusted  $R^2=.483$ ) which indicates the true population value after controlling for overestimation is obtained. Given a small standard error value that is less than 1, it can be inferred that the model accuracy is high (Shevlyakov & Oja, 2016).

**Table 4.8 ANOVA Supply Chain Practices and Procurement Performance**

<b>Model</b>		<b>Sum of Sq.</b>	<b>Df.</b>	<b>Mean Sq.</b>	<b>F</b>	<b>Sig.</b>
1	Reg.	7.388	2	7.388	24.303	.000 <sup>b</sup>
	Residual.	54.794	179	.304		
	<b>Total</b>	62.182	181			

Source: Data 2020

Table 4.8 summarizes the results of an analysis of variance, The findings, as shown in table 4.8, show that the F-calculated (24.303) was greater than the F-critical (2, 179) which was 1.18 and the p-value (0.000) was less than the significance level (0.05). This shows that the linear regression model is a good fit for the data and chances are zero that the result of regression model is due to random events instead of a true relationship hence can be used to assess the effect of the two independent variables (supplier selection, and supply chain risk management) on procurement performance of LREB devolved governments, Kenya. According to the findings, supply chain practices are a good predictor of procurement performance at LREB devolved governments.

**Table 4.9: Coefficients for Supply Chain Practices and Procurement Performance**

<b>Model</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>T</b>	<b>Sig.</b>	<b>Collinearity Statistics</b>	
	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>			<b>Tolerance</b>	<b>VIF</b>
(Constant)	.326	.192		1.701	.091		
SS	.112	.043	.160	2.617	.010	.877	1.140
SCRM	.339	.054	.395	6.319	.000	.844	1.185

Dependent Variable: PP

**KEY: PP- Procurement Performance, SE- Supplier Selection, SCRM- Supply Chain Risk Management, PP-Procurement Performance.**

Source: Data 2020

Further findings on the model coefficients and constants were presented for each of the predictors of procurement performance. From the predictors, it was noted all of them were significant predictors to procurement performance. A close examination shows that supply chain risk management had the strongest positive contribution to procurement performance ( $\beta=.339, p<.05$ ) which was also significant. Supplier selection ( $\beta=.112, p<.05$ ) also had positive contribution to procurement performance. It is worth to note that all the two predictors were significant at 0.05 thus implying that there was sufficient evidence of their effect on procurement performance among LREB counties. Overall, the results show that for a unit variance in any of the explanatory variables (supply chain practices) there would be 0.339 units increase in procurement performance as a result of supply chain risk management and a unit increase in supplier selection would increase procurement performance by 0.112 units. Further the unstandardized coefficient results were done by fitting in the regression equation 4.2 as follows:

$$Y= 0.326+.112XSS +0.339XSCRM..... (4.2)$$

The typical implication of this model is that all the slopes' coefficients are positive, implying that the change in y (procurement performance) due to the predictors is positive. In practice, the results imply that when LREB counties implement elements of the supply chain practice (supplier selection and supply chain risk management) there would be improvement on procurement performance.

Supplier selection is largely seen as the most vital part of the procurement function since the organization's suppliers can affect the price, quality, delivery reliability and availability of its products. Organizations feel that proper supplier selection would assist reduce product and material costs whilst ensuring a high degree of quality and after-sales services. The implication is that efficient supplier selection should be in place for the successful procurement performance. This is in line with the findings of Tobias (2017) which stated selection of

appropriate suppliers is one of the fundamental strategies for enhancing the quality of output of any organization, which has a direct influence on the company's reputation since they can have a very positive or a very adverse impact on the overall performance of the organization. Cooperation between buyer and supplier is the starting point to establish a successful supply chain management. There are a number of benefits of supplier appraisal these include ability to harness the strengths and skills of suppliers to the advantage of buyers improved quality and process performance and continuous cost reductions among others. This is in line with the findings of Tobias (2017) who noted that supplier selection is also important in strategic sourcing, supplier management and the achievement of competitive advantage. Firms that select their suppliers discover that they have improved visibility into supplier performance, unmask and deal with hidden cost drivers, lower risk, increase competitive advantage through reducing order cycle times and stock, have insight on how to best leverage their supply base, and align practices between themselves and their suppliers (Gordon, 2016).

Gordon (2016) added that organizations pursuing supplier selection to improve on supplier performance metrics such as on-time delivery, quality, and cost. Procurement can be full of inefficiencies some due to poor policies and strategies at the suppliers, that results to hidden costs such as stock-outs, carrying costs of overstocking, incorrect payments of invoices, slow acknowledgement and reporting of shipment and lost sales which in turn affects productivity, quality issues, increased wasteful costs and slow movement of goods which can be improved by supplier evaluation and better communications between buyers and suppliers. This is in line with the findings of Tobias (2017). This may be because the goals of every organization are to utilize limited resources in the most efficient manner so as to realize its objectives with minimal costs. This necessitates the selection criteria to ensure that an institution gets the best contracts in terms of quality, costs, flexibility and reliability. Organizations therefore select the best criteria for selecting suppliers which quantifying the abilities of the supplier and the buying

institution conducts evaluation to stimulate the behavior of the supplier. Selection criteria support the organization to realize its interests with regard to purchasing.

The study findings are in agreement with Cooper (2016) who noted that supplier selection criteria ensure compatibility between buyer and supplier in terms of shared business ethics, standards of excellence, and commitment to continuous improvement are important in performance of suppliers. Compatibility is of concern especially in adoption of procurement best practices such as lean enterprise or any high-performance system that drives shorter delivery times, higher quality, and lower prices which could actually have an adverse effect on a supplier who is not aligned with these practices. A supplier selection criterion is therefore important to ensure compatibility and reduce risk of failure of supplies. Some of the supplier risks that supplier selection can mitigate on include: financial, operational, increased geographic distance and the performance of sub-tier suppliers. The quality criteria help selecting the best supplier and also help on the supplier performance improvement. This is in line with the findings of Dametew *et al.*, (2018) who observed that the criteria of supplier appraisal can give an important insight into supplier performance and supplier best practices which help reduce business risk, especially given firms' increasing dependence on its key suppliers. Ohlson (2015) says that it is important that the procurement function identifies and analyses the supplier related factors that affect the performance of the procurement function. Procurement professionals acknowledge that combinations of value, service and price are not often exactly equivalent.

Past works on the same subjects have validate the positive and significance results. Like that of Wanjiru, Kiarie and Marendi (2018) whose study of Nyandarua county government concluded the importance of maintaining good buyer-supplier relationship for improved performance for the counties. Nyaribo, Okung'o, and Muturi (2017) established a noteworthy correlation between supplier selection criteria and organization performance. The study pointed

out that poor supplier selection criterion is a public organization problem through which public effectiveness and efficiency in resources are abused in Kenya and hence poor performance. Cherop (2016) found that supplier selection criteria processes have a positive correlation with organization performance.

Wanjiru *et al.*, (2018) perceives strategic procurement practices are meant to save costs, enhance operational effectiveness, access to trusted suppliers, and enhance the quality of product or service, sharing of best practices amongst others. Mueni and Moronge (2018) study of Kenya Airport Authority (KAA) discovered that procurement practices as assessed by the strategic outsourcing, inventory management, reverse logistics and knowledge management explain the performance of KAA by far. Kipchumba and Keitany (2021) also discussed the influence of inventory control systems on procurement performance in the county government of Uasin Gishu, Kenya. The study adopted a descriptive survey with procurement staff from the county considered in the examination. The study findings showed that the adoption of enterprise resource planning systems and inventory forecast analytics were positive and significant predictors of procurement performance. The research revealed that inventory control systems were key to fostering the procurement operations' efficiency and timely completion. The study pointed out that inventory systems improved decision-making, which is imperative to better procurement performance.

The study indicated that quality of supplier service is a reflection of supplier selection among LREB devolved units, quality supplies reduce rework, scrap, testing, and inspection which take long time and reduce weakness that can lead to operational failure. This is in line with the findings of Ogachi (2016), he observed that supplier evaluation by manufacturing firms can facilitate quality improvements through the exchange of best practices among partners, which can enhance understanding and provide examples of proven techniques. According to cheptora

*et al.*, (2018) they agreed with this study's findings that indicated that quality of supplier service is a good indicator of supplier evaluation. Quality of service consists of qualitative methods such as; continuous improvement programs, total quality management, six sigma, quality of customer and support services, certifications, technical and design level, capability and capacity of handling abnormal quality and ease of repair. Quality of service also consist of quantitative methods including reliability, rate of rejects of parts and processes, yield rate, process capability indices, and loss functions deployment all which are used in evaluating suppliers in business.

The study result generally shows that, supplier selection result to improved procurement performance. This concurs with the finding of a study by Saleemi (2014 which mentioned that, there is need for firms to exercise good supplier selection for better procurement performance. It's concurring with the findings of Kakwezi and Nyeko (2016), they observed that suppliers' selection criteria are based on the procuring entities criterion, the process of supplier selection is always based on those suppliers who meet ISO certification and the process of supplier selection is determined by the financial stability of the supplier to meet the buyer demand.

The above results reflect the findings of Mburu (2015) who found that supply chain performance was significantly influenced by risk identification in manufacturing companies in Kenya. The study findings indicated that risk identification management strategies significantly and positively affected supply chain performance. Another study that found a similar result was conducted by Munyuko (2015) who established that supply chain risk management was positively related on organizational performance measured in terms of profitability. The case study on Andy Forwarders Services Limited showed that significant risk identification positively affected organization performance. The study finding also concurs with the finding of Barmoiben & Odari (2022) where they found that risk identification, risk assessment, risk

mitigation and risk monitoring were all found to be statistically significant as all their t-statistic values were above 2 and also as the range of their p-value was between 0.000 and 0.005 in their study on the role of supply chain risk management on procurement performance in county governments in Kenya. The study contradicts that of Sukdeo 2017 on the impact of risk management practices on procurement performance in beverage manufacturing organizations in South Africa, revealing that supplier identification had negative and insignificant effect on supply chain performance.

The above result is in line with agency theory which places importance on information. For efficient risk management in procurement of LREB county governments projects, there is need to have a rigorous appraisal (WB, 2011) of these projects towards a more accurate risk identification to enable procurement risk reduction strategies (Bistch, 2010). The theory thus gives prominence to efficient risk identification. Further, Agency theory extends LREB county governments thinking by pushing the ramifications of outcome uncertainty to their implications of creating risks. The implication is that outcome uncertainty coupled with differences in willingness to accept risk should influence contracts between principal and agent (Whittington, 2012 and Jensen & Meckling 1976). The theory also gives prominence to risk allocation and monitoring. Agency theory provides lenses to explore and understand the five landscapes on which supply chain risks occur: external dependencies (supply chain robustness, supplier viability); market conditions and behaviors (competitive or not; supply availability); procurement process; management controls; and the ability and agility to handle unexpected event (Russil, 2010); and therein provides a basis on which to develop risk management strategies. This study expanded the body of knowledge on how public sector supply chains function in developing economies, specifically in the context of decentralized governance. Further the findings could inform policymakers and county officials about the specific supply

chain practices that are most effective in improving procurement performance and service delivery.

### **Integrated Financial Management Information Systems Use**

The second objective determined the effect of IFMIS use on procurement performance of LREB Counties, Kenya.

#### **4.4. Descriptive Analysis of IFMIS use and Procurement Performance of LREB**

##### **Devolved Governments, Kenya**

**Table 4.10: Descriptive analysis of integrated financial management information systems on procurement performance.**

<b>Factors</b>	<b>N(%)</b>	<b>Procurement Performance</b>				
		<b>Strongly disagree (20 - 39%) n(%)</b>	<b>Disagree (20 - 39%) n(%)</b>	<b>Neutral (40 - 59%) n(%)</b>	<b>Agree (60 - 79%) n(%)</b>	<b>Strongly Agree (80 - 99%) n(%)</b>
<b>Risk Monitoring</b>						
Strongly disagree	20(11.05)	1(100.00)	0(0.00)	15(75.0)	3(15.0)	2(10.0)
Disagree	89(49.17)	5(19.23)	6(21.45)	1(1.12)	81(91.01)	7(7.87)
Neutral	72(39.78)	11(21.15)	4(7.77)	1(1.39)	9(12.50)	62(86.11)
Agree	53(29.28)	0(0.00)	0(0.00)	20(40.2)	23(43.40)	10(16.20)
Strongly agree	2(1.10)	0(0.00)	0(0.00)	0(0.00)	0(0.00)	1(100.00)

Source: Data 2020

From Table 4.10, most of the respondents indicated that the county governments has adopted IFMIS, most (49.17%) of the respondents agree that the county government have implemented IFMIS use and on the same, most (91.01%) of the respondents also recorded that procurement performance were good, those who recorded implementation of IFMIS use to be very good (62), 86.11% of them which is the majority recorded procurement performance to be very good and on the respondents who said implementation of IFMIS use were fair (20), majority (75.0) of them said procurement performance of county governments in Kenya was fair. Adoption of IFMIS stands out to be very good on the procurement performance of LREB devolved units,



Kenya. The findings are also consistent with the findings of a study by Oduyo *et al.*, (2014) who demonstrated that the IFMIS system was reliable and flexible and hence affected financial performance positively. The findings further concur with the findings of a study by Bonface (2016) whose results revealed that IFMIS system helped organization performance to achieve effectiveness and efficiency through cash management, budgeting, and reporting. All the above arguments tend to resonate with the (Government of Kenya 2011) call for adoption of IFMIS, as the main reason for adopting IFMIS among county governments is to reduce corruption and ensure efficiency in management of public funds (Government of Kenya 2011).

The result implies that adoption of IFMIS among LREB county governments enhanced information sharing, decline in the costs of transactions, enhanced efficiency of process, enhanced contract compliance, shorter product lifecycle periods, lower inventory expenditure, enhanced operational and cost efficiencies. IFMIS results to better procurement performance, it makes it possible to document the bidding process digitally, which promotes accountability and openness, ultimately enhancing procurement performance. IFMIS brings about higher satisfaction of customer requirements, superior supply chain capabilities, lower costs of storage and better inventory management. The adoption of IFMIS enhanced building of healthier relations between suppliers & customers and accelerate the attainment of tactical procurement objectives, resulting to better procurement performance by LREB county governments.

The outcome of the study signified that use of IFMIS has sprouted to controlled expenditure in the use of public resources and has heightened confidence in the procurement process, it has helped to hasten reports and data transmission, instigation of IFMIS has brought to light deceitful officials in the procurement process in county governments, it has also abetted to restrict divulgence of detailed information to prohibited persons. IFMIS helps to monitor procurement process, increases detection of risk and deters corruption in LREB devolved units.

That was adequate to deduce that automated supplier involvement has an effect on public procurement performance. This signified IFMIS use bestow better and proficient methods of engaging the suppliers and helps to nourish relationships, making the county governments' procurement desirable to the suppliers. The results are in concurrence with the outcome of Mandiyambira (2012) who disclosed prolonged relationships with diverse suppliers was the most competence strategy of governing supplier relationships for both prolonged and temporary contracts and for complex products. The LREB county governments be obligated to boost on automated supplier engagement to realize high public procurement performance. Mwangi (2019) researched on the relationship between integrated financial management information systems and procurement performance in the county government of Nyeri. The study was descriptive and considered 74 respondents drawn from government officers and suppliers in the county. The study found a significant association between adaptability of the IFMIS, user technical and professional skills, and procurement performance in the county. The research revealed there was minimal acceptance of information technology systems which limit the procurement process's execution. Akenroye *et al.*, (2012) descried there is need to involve suppliers in performance review, training and capacity development is critical to foster suppliers. The study results indicated at 95% level of significance all the coefficients were statistically. Kipchumba and Keitany (2021) also sought after the influence of inventory control systems on procurement performance in the county government of Uasin Gishu, Kenya. The study adopted a descriptive survey with procurement staff from the county considered in the examination. The study revealed that the adoption of enterprise resource planning systems and inventory forecast analytics were positive and significant predictors of procurement performance. The research revealed that inventory control systems were key to fostering the procurement operations' efficiency and timely completion. The study pointed out that inventory

systems also improved decision-making, which is imperative to better procurement performance.

The findings were similar to those of Rotich *et al.*, (2015), who found out that online tendering reduced the tender cycle by improving the choice of suppliers and stating in advance the specifications of tender performance, and reducing the costs associated with tendering process. Munezero (2015) established that e-tendering allows selection of a suitable contractor at a time appropriate to the circumstances and hence enhances the performance of organizations. The outcome is consistent with the literature. Some of the initial costs incurred during IFMIS use include investment in advanced technologies, hiring, training and monitoring employees and making sure they are motivated (Srivastav & Gaur, 2015). According to Khiewnavawongsa and Schmidt (2013), implementing IFMIS require investment in sophisticated technologies and specific skills sets. Srivastav and Gaur (2015) concludes that backing from top managerial staff is critical in implementation of IFMIS.

#### **4.5. Effect of IFMIS use on Procurement Performance of LREB Devolved Governments, Kenya**

The second objective of the study was to determine the effect of IFMIS use on procurement performance of LREB counties, Kenya. In order to establish the effect of IFMIS use (moderating variable) on procurement performance (Dependent Variable) among county governments, Kenya, a standard multiple regression model was carried out.

Firstly, a correlation between IFMIS use and procurement performance was carried in order to determine whether IFMIS use was associated with procurement performance. Pearson correlation coefficient was adopted and results presented as shown in table 4.11

**Table 4.11: Correlation between IFMIS use and Procurement Performances.**

		<b>Correlations</b>					
		<b>Mean PP</b>	<b>Mean E-P E-T</b>	<b>Mean E-T</b>	<b>Mean PR</b>	<b>Mean LT</b>	<b>Mean PP</b>
Mean PP	Pearson	1	.590**	.469	.583**	.436**	.535**
	Correlation		.000	** .000	.000	.000	.000
	Sig. (2-tailed)						
Mean E-P	N	181	181	181	181	181	181
	Pearson	.590**	1	.373**	.347*	.254	.460
	Correlation	.000		.000	.000	.001	.000
Mean E-T	N	181	181	181	181	181	181
	Pearson	.469**	.373**	1	.350	.367**	.311
	Correlation	.000	.000		.000	.000	.000
Mean PR	N	181	181	181	181	181	181
	Pearson	.583**	.347*	.350	1	.509**	.479
	Correlation	.000	.000	.166		.000	.000
Mean LT	N	181	181	181	181	181	181
	Pearson	.436**	.254	.367**	.509**	1	.494**
	Correlation	.000	.001	.000	.000		.000
Mean PP	N	181	181	181	181	181	181
	Pearson	.535**	.460	.311	.479	.494**	1
	Correlation	.000	.000	.515	.000	.000	
	Sig. (2-tailed)						
	N	181	181	181	181	181	181

\*\* . \*\*. Correlation is significant at the 0.01 level (2-tailed). **KEY: E-P-** E-Procurement, **E-T-**

**E-Tendering, PR-** paperless Requisition, **LT-** Lead Time & **PP-** Payment Portal

Source: Data 2020

The findings above indicate IFMIS use have a positive significant correlation with procurement performance. The highest correlation was between procurement performance and E-P procurement (E-P) which was positive and significant ( $r= 0.590, p<.01$ ) while the lowest was lead time (LT) ( $r= 0.436, p<.01$ ) which was also positive. All the other elements of IFMIS use in LREB devolved units were positive and significantly correlated with procurement

performance as shown in the table above. Subsequently, procurement performance was regressed against IFMIS use elements using equation 4.2 modeled in the following form:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \epsilon_i \dots \dots \dots (4.2)$$

The findings are presented as shown in Table 4.11 and subsequently modelled in equation 4.3

**Table 4.12: Model Results on Effect of IFMIS use on Procurement Performance of LREB Devolved Units’.**

<b>Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
<i>1</i>	<i>.750<sup>a</sup></i>	<i>.562</i>	<i>.548</i>	<i>.33211</i>	<i>.562</i>	<i>40.016</i>	<i>5</i>	<i>176</i>	<i>.000</i>

a. a. Predictors: (Constant), Mean E-P, Mean E-T, Mean PR, Mean LT, Mean PP

Source: Data 2020

The findings in Table 4.12 shows that IFMIS use was highly correlated with procurement performance among LREB devolved units’, (R=.750) which implies that in general, there is an association between the mean IFMIS use and procurement performance among LREB devolved governments. Squaring this value, we obtained the R Square value (R Square=.562) which is the coefficient of determination. This is the variation in performance accounted for by IFMIS use. Multiplying this value by 100%, we get 56.2%, which is the percentage variance in procurement performance among LREB devolved units’ that is accounted for by the IFMIS use. When this value is controlled for the overestimation through shrinkage process, we get a slightly lower R square value, termed as the adjusted R square value (Adjusted R square value=.548) that reflects the true population variance.

**Table 4.13 ANOVA, IFMIS use and Procurement Performance**

<b>Model</b>		<b>Sum of Sq.</b>	<b>Df.</b>	<b>Mean Sq.</b>	<b>F</b>	<b>Sig.</b>
1	Reg.	38.444	4	9.611	32.360	.000 <sup>b</sup>
	Residual.	23.774	177	.297		
	<b>Total</b>	<b>62.182</b>	<b>181</b>			

Source: Data 2020

Table 4.13 summarizes the results of an analysis of variance, findings shows that the F-calculated (32.360) was greater than the F-critical (4, 177) and the p-value (0.000) was less than the significance level (0.05). This shows that the linear regression model is a good fit for the data and chances are zero that the result of regression model is due to random events instead of a true relationship hence can be used to assess the effect of the elements of IFMIS use on procurement performance of LREB devolved governments, Kenya. However, some weakness of this result is that as much as the sample provides sufficient evidence to conclude that the model is significant, it is not enough to conclude that the individual explanatory elements of IFMIS use was significant.

**Table 4.14 Coefficients for IFMIS use and Procurement Performance**

<b>Model</b>	<b>Unstandardized Coefficients</b>		<b>Standardized Coefficients</b>	<b>t</b>	<b>Sig.</b>	<b>Collinearity</b>		
	<b>B</b>	<b>Std. Error</b>				<b>Beta</b>	<b>Tolerance</b>	<b>VIF</b>
1	(Constant)	1.023	.110	.336	9.291	.000	.718	1.393
	E-T	.181	.034	.168	5.302	.000	.768	1.302
	PR	.092	.034		2.746	.007		
	LT	.237	.052	.305	4.563	.000	.644	1.552
	PP	.037	.043	.058	.866	.388	.632	1.582
	E-P	.095	.043	.153	2.208	.029	.604	1.657

a. Dependent Variable: Mean PP

**KEY: E-P-** E-Procurement, **E-T-** E-Tendering, **PR-** Paperless Requisition, **LT-** Lead Time & **PP-** Payment Portal..

Source: Data 2020

The study examined the model coefficients in order to compare the t-statistic and p value significance for purposes of determining the significance of each of these predictors.

Standardized score was adopted for comparison purposes in the results. Using unstandardized regression coefficients, the findings shows that lead time ( $\beta=.237, p<.05$ ) had the largest effect on procurement performance, the next was E-tendering ( $\beta=.181, p<.05$ ) E-procurement ( $\beta=.095, p<.05$ ) and paperless requisition ( $\beta=.092, p<.05$ ) payment portal ( $\beta=.037, p<.05$ ) also positively contributed to procurement performance among LREB counties. However, payment portal did not significantly contribute to procurement performance among LREB Counties.

The implications of these findings are that for every unit improvement in lead time, procurement performance improves by a magnitude of 0.237. Similarly, every unit improvement in E-tendering, E-procurement, paperless requisition and payment portal results in improvement in procurement performance by magnitudes of 0.181, 0.095, 0.092 and 0.037 respectively. All the explanatories are important except payment portal. The t-values correspond to each of the p values, therefore the larger the t value, the more significant the standardized coefficient of the IFMIS use exploratory. This means that from the four elements, they are significant with t values 2 or more. Generally, IFMIS use have positive and significant effect on procurement performance among LREB devolved units.

This is also presented as shown in the equation model using the unstandardized coefficients. The unstandardized coefficients give information on each of the subscales of IFMIS use while holding other elements constant. The intercept term is the constant term that gives procurement performance without including other predictors in the model. The model results are presented as shown in equation 4.3.

$$Y=1.023+0.181X_{E-T}+0.092X_{PR}+0.237X_{LT}+0.037X_{PP}+0.095X_{EP} \dots\dots\dots(4.3)$$

The constant term (1.023) unit implies that there would still be a positive procurement performance without including the IFMIS use. Improving E-tendering by one unit while holding all other variables constant improves procurement performance by a magnitude of 0.181 units. Consequently, inclusion of paperless requisition while holding other practices constant improves procurement performance by 0.092 units, inclusion of lead time while holding other practices constant improves procurement performance by 0.237 units, payment portal improves procurement performance by 0.037 and e-procurement improves procurement performance by 0.095 units while holding other practices constant. It can thus be noted that IFMIS use improve procurement performance among LREB county governments. In practice, if LREB Counties were to improve the process of their E-tendering, improve the capacity of their procurement practitioners through trainings, increase the use of e procurements, improve the trainings on IFMIS usage and increase the integration of department functions to improve the procurement performance.

The finding of current study concurs with prior studies. Gu *et al.*, (2016) used a sample of 206 manufacturers of Chinese manufacturing firms to show that technologies and innovations such as supplier IT explorative use, supplier information technology exploitative use, customer IT exploitative use and supplier resilience have a positive significant effect and can help manufacturing firms better their performance. Study recommended stakeholders in manufacturing firms to exhaustively improve the adoption and utilization of technologies and innovations as this posed the potential to improve their performance.

Findings of the study conform to the findings by Incea *et al.*, (2016) which assessed the relationship between technology innovation capabilities, absorptive capacities and firm innovativeness. The study found out that absorptive capacity has a positive relationship with technology innovation, technology innovation has a positive relationship with firm innovativeness and absorptive capacity has a positive relationship with firm innovativeness. For organization to be innovative, it must possess human capacity and technologies infrastructure and this would improve their performance. It is also worth to note that the



findings remain anchored strongly on the technology acceptance theory. According to the theory, adoption and use of innovations in form of IFMIS depend on the LREB stakeholders. The study shows that IFMIS use in the public procurement, specifically E-tendering used in public procurement, adopting e-procurement practices, reduced lead time, paperless requisition and advanced payment portal to consolidate requirements for procurements improves procurement performance. The theoretical and practical contributions include: IFMIS use introduces automated control mechanisms that reduce opportunities for corruption and limit unauthorized actions by procurement officers (agents). This contributes to agency theory by demonstrating how integrated financial systems can align procurement activities with government objectives, improving oversight and reducing the risk of principal-agent problems in the procurement process, County governments experience shorter procurement cycles, reducing delays in service delivery and enabling timely execution of development projects. Counties can make better-informed decisions when selecting suppliers, leading to more competitive procurement processes and better-quality goods and services. The system helps avoid issues such as delays due to poor supplier performance or disputes over payment. IFMIS enhances procurement performance in tangible ways, from reducing procurement cycle times to ensuring better financial accountability. It directly contributes to better supplier management, compliance with regulations, and the overall transparency of county government procurement processes. These practical improvements lead to more efficient use of public resources, better service delivery, and stronger governance across LREB counties.

## **4.6 Summary Models**

### **4.6.1 Summary Model on the Effect of Supply Chain Practice on Procurement Performance of LREB County Governments.**

The first step entailed analysis of a simple linear regression of procurement performance on supply chain practices. This was done using a mean scale of the variables, whereby the mean procurement performance and the mean of supply chain practices were used. The findings are presented as shown in Table 4.15.

**Table 4.15: Overall Summary Model, ANOVA & Regression Coefficients without**

**Moderator**

<b>Model Summary</b>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Significance Statistic df1	df2	Sig. F Change
1	.707 <sup>a</sup>	.500	.483	.34896	.500	181.121	1	180	.000

a. Predictors: (Constant), Supply Chain Practices.

**Analysis of Variance**

Model		Sum of Sq.	Df.	Mean Sq.	F	Sig.
1	Reg	8.516	1	8.516	28.387	.000 <sup>b</sup>
	Residual.	53.666	180	.030		
	<b>Total</b>	<b>62.182</b>	<b>181</b>			

a. Dependent Variable: Procurement Performance

b. Predictors: (constant), Supply Chain Practices.

**Overall Regression Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.315	.172		1.838	.068		
	Mean SCP	.917	.073	.708	12.535	.000	1.000	1.000
	Mean PP							

a. Dependent Variable:

**KEY: SS-Supply Chain Practice, PP-Procurement Performance. (Source Data 2020)**

SC practices significantly predicted procurement performance,  $\beta = 0.917$  in the LREB devolved governments. Thus, a one-unit surge in SC Practices will raise the expected value of procurement performance by 0.917 units. Further results from regression analysis were significant with  $F = 28.387$ ,  $T = 12.535$ ,  $p < .000$ ,  $R^2 = 0.500$ , implying that about 50.0% of the

variance in procurement performance is explainable by supply chain practices and the remaining variance of 50% is explained by other factors.

These results are congruent with previous findings. For instance, Al-Shboul, Barber, Garza-Reyes, Kumar, & Abdi (2018) established that SCM practices positively impact supply chain performance. According to Hussain, Akbar, Sulehri, & Maqbool (2014), superior SCM practices w an organization's "market performance and financial performance and overall competitive position". Another study by A. Kumar & Kushwaha (2018) shows that SCM practices "have a significant and positive relationship with the operational performance". A study by Apopa (2018) established a "positive association between supply chain management practices and government ministries' performance in Kenya". Additionally, Barasa (2016) revealed a "statistically significant relationship between supply chain management practices and steel manufacturing companies' performance in Kenya". Thus, successful implementation of SC practices improves efficiency, flexibility, and responsiveness (Gorane *et al.*, 2018).

The same table illustrates clearly the overall Regression Coefficients associating the dependent variable and the predictor variables and how significant each of the predictor variable affect the response variable that is the significant relationship between procurement performance (dependent variable) and supply chain practices (predictor variables). Findings using standardized model coefficients indicate that supply chain practice had a positive and significant effect on procurement performance among LREB counties ( $\beta=.0.917$ ,  $p<.05$ ). This means that each unit improvement in supply chain practice leads to improvement in procurement performance by a magnitude of 0.917 units. Such a magnitude is high and implies that supply chain practice is a good predictor of procurement performance and hence explains much of the variance. The remaining less than 50.0% of variance could be explained by the error term. Thus, supply chain practices are important components of SCM since they play a vital role in improving procurement performance (Rajput & Bakar, 2012). Consequently,

supply chain practices such as supplier selection and supply chain risk management, are key drivers of performance improvement in devolved system of governments. These supply chain practices enhance procurement performance by reducing operating cost, improving the product's quality, timely delivery, and budgetary compliance (Adedokun, Onikola, & AKoe, 2017).

Past studies have revealed similar results. A study by Yegon *et al.*, (2015) revealed that technical support and financial support to supplier had a positive effect on buyer performance. Another study by Lubale & Kioko (2016) found that supplier development has statistically significant effects on organizational performance. Additionally, Li, Humphreys, Yeung, & Cheng (2012) revealed that a co-operative buyer-supplier relationship is associated with significant “cost reduction, shorter lead-time, increased productivity, and enhanced quality”. Thus, a collaborative effort between a buyer and suppliers leads to improved quality at a reduced cost (Gichohi *et al.*, 2018). The results are represented in the second model as shown in equation using unstandardized model coefficients.

$$Y=0.315+0.917X_{SCP} \dots\dots\dots(4.4)$$

In which y indicates the mean scale of procurement performance, 0.315 indicates the intercept, which is the magnitude of procurement performance that increases without including any explanatory variable in the model. The 0.917 units is the magnitude of increase in procurement as a result of improving supply chain practice while keeping all other variables constant.

The R square value ( $R^2=0.500$ ) and the unstandardized coefficient results ( $\beta=.0.917$ ,  $p<.05$ ) is a sufficient clear indication that implementation of supply chain practice has a significant positive effect on the procurement performance among LREB counties, explaining 50.0% variance in the procurement performance.

This is in line with the findings of Araz and Ozkarahan (2017), Andrew (2016), who observed that at that level the alternative hypothesis must be taken. It’s also in line with the findings of

Krop and Iravo (2016) who researched on how supplier selection affects performance of procurement function in the public sector using a case of West Pokot county government where it was indicated that all the supplier selections dimensions significantly and positively affect procurement performance.

This compound the Republic of Kenya (2016) audit report on the energy sector that implied challenges in supplier evaluation as a cause of contractor failure after contract award, and gives prominence to the agency theory as highlighted by Berg *et al.*, (2008), that it's often difficult for the purchaser (principal) to verify technical capacity and quality especially in complex purchases since they mostly rely on information given by potential contractors (agent). This means that procuring entities in the LREB devolved governments need to realign their procurement processes by devising a mechanism that can reliably collect information from potential contractors, to ensure that only qualified contractors are awarded contracts after supplier evaluation.

Davis and Mentzer (2016) concurs with the study finding and says that special capability of a supplier touch on every part of a business and ensures that the firm can run as it should, it needs to ensure the seamless flow of goods and products. Should a supply chain fail firm's stand to accrue substantial losses. Therefore, they aver that to limit financial, business and reputational risk, it's crucial for firms to properly manage their suppliers. Consequently, special capabilities among supplies enable firms to drive service excellence, control costs, and mitigate risks to gain increased value from their suppliers throughout the life cycle. This is in line with the findings of Araz and Ozkarahan (2017), however were of the opinion that to effectively managing suppliers is a challenge, especially when the company is strict on these capabilities. Therefore, to get the most from suppliers and hold them to account, it's important to track and measure their special capabilities.

The above results reflect the findings of Mburu (2015) who found that supply chain performance was significantly influenced by risk identification in manufacturing companies in Kenya. These study findings indicated that risk identification management strategies significantly and positively affected supply chain performance. Another study that found a similar result was conducted by Munyuko (2015) who established that supply chain risk management was positively related on organizational performance measured in terms of profitability. The case study on Andy Forwarders Services Limited showed that significant risk identification positively affected organization performance. The study finding also concurs with the finding of Barmoiben & Odari (2022) where they found that risk identification, risk assessment, risk mitigation and risk monitoring were all found to be statistically significant as all their t-statistic values were above 2 and also as the range of their p-value was between 0.000 and 0.005 in their study on the role of supply chain risk management on procurement performance in county governments in Kenya. The results are consistent with those of Thamhain (2013) where risk assessment had positive impact on the procurement performance of institutions. It is also consistent with the results from a similar study by Kisia (2017) found that there is a positive relationship between risk assessment and government performance in Kisumu-Kenya.

The results from this study have close association with the literature review debated. It is notable that the LREB county governments are finding it indispensable to develop procurement risk governance practices in an effort to build up their supply chain performance. Modern day's volatile global business environment and agile supply markets has forced organizations management to come up with supply chain risk management strategies in order to achieve a positive supply chain performance. This is in harmony with Russill (2008) study which signaled that procurement risk governance should be on top of executive's agenda in view of the fact that there is deeper consciousness that risks can exists in realm basically have neither been sought. The study also stipulated that procurement risk governance practices could elucidate for 64.6% of the dependent variable supply chain performance. The unexplained of 35.4% can be elucidated by other variables. Despite the oppositions faced in the discharge of

procurement risk management practices, the LREB county governments have embraced a strategic tool for advancing a competitive edge, customer satisfaction, efficient and effective service delivery.

#### 4.5.1 Summary Model on Effect of IFMIS use on Procurement Performance of LREB Devolved Governments, Kenya

The second step consisted of the IFMIS use as the predictor of procurement performance. In this case, the mean scale of IFMIS use was regressed against the mean scale of procurement performance using a simple linear regression model. The findings are presented as shown in Table 4.16.

**Table 4.16: Summary Model Results on Effect of IFMIS use on Procurement Performance of LREB Devolved Governments, Kenya.**

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics F Change	df1	df2	Sig. F Change
1	.637 <sup>a</sup>	.489	.409	.37672	.489	113.744	1	180	.000

a. Predictors: (Constant), IFMIS use

#### Analysis of Variance

Model		Sum of Sq.	Df.	Mean Sq.	F	Sig.
1	Reg	9.626	1	9.626	33.079	.000 <sup>b</sup>
	Residual.	52.556	180	.291		
	<b>Total</b>	<b>62.182</b>	<b>181</b>			

a. Dependent Variable: Procurement performance Constant)

IFMIS use.

#### Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.028	.135		7.590	.000		
	Mean IFMIS use	.604	.057	.649	10.665	.000	1.000	1.000

a. Dependent Variable: Mean PP

From the findings, IFMIS use has a positive correlation with procurement performance as shown by the R value ( $R = 0.637$ ). This means that there is an association between a combination (mean) of the subscales of IFMIS use and mean of the elements of procurement performance. Furthermore, it is clear that IFMIS use accounts for 48.9% variance in procurement performance, ( $R^2 = 0.489$ ) which is also significant,  $F(1, 180) = 33.079$ ,  $p < .00$ ,  $t = 10.665$  at threshold probability value (p-value) of 0.05. The threshold P-value ( $P < 0.05$ ) is sufficient evidence of significant variance. In addition, the findings using the model standardized coefficient results shows that IFMIS use have a positive and significant effect on supply chain performance ( $\beta = 0.604$ ,  $p < 0.05$ ). The results imply that for every unit increase in adoption and use of supply chain practices, supply chain performance improves by a magnitude of 0.604 units. This magnitude is high, implying that IFMIS use is a good predictor of procurement performance and explains much of its variance. By providing timely, accurate, and reliable information, Information systems investment can greatly improve procurement performance and the overall organization performance. Thus, IFMIS use provide a platform for information sharing and other collaboration forms between customers and suppliers. SimchiLevi *et al.*, (2003) noted that the integration of ICT provides organizations with a competitive strategy. The implementation of information systems enables businesses to improve communication and coordination of different value-adding activities with their collaborators and between departments within their activities. Thus, IFMIS use provides substantial cost savings opportunities, increased versatility, accelerated response times and enhanced customer support (Momanyi & Sanewu, 2014).

Previous studies have found that overall information system is positively linked to organization performance (Bharadwaj, 2000; Kearns and Lederer, 2003; Wamba *et al.*, 2008), while others have found that investment in IT can give a firm a significant competitive advantage. Additionally, Nyaberi & Mwangangi, (2014) found that adoption of information systems



improves procurement performance through enabling inquiries of inputs to be made quickly, orders are emailed quickly, evaluations of suppliers are carried out quickly, and electronic payment is made fast.

This is represented in the model as;

$$Y=1.028+0.604XIFMIS\ use.....(4.5)$$

In which Y denotes the mean procurement performance (the response variable), 1.028 is the intercept, the magnitude of procurement performance which increases without including any explanatory variable in the model. 0.604 units indicates the magnitude of increase in procurement performance as a result of improving IFMIS use and usage by keeping all other factors constant. The R square value ( $R^2=0.489$  and the standardized model coefficient ( $B = 0.604, t = 10.665, p < .000$ ) is sufficient evidence to conclude that IFMIS use have a positive and significant effect and explains a considerable variance of 48.9% in procurement performance of LREB devolved governments, Kenya. In practice, these results infer that by a unit increase in IFMIS use and usage, procurement performance would increase by 0.604 units. On the same note, a change in procurement performance by 48.9% is accounted for by the IFMIS use and usage, the remaining 51.1% was explained by other factors not considered in the study. IFMIS use such as E-tendering, E-procurement practices, paperless requisition used in public procurement practices are important in ensuring the alleviation of procurement performance. The findings of current study support positions of other prior studies. Cerne *et al.*, (2015) who modelled the relationship between technological innovation, management innovation and financial performance of three countries; Slovenia, South Korea and Spain. The study collected primary data in the three countries which were analyzed by structural equation modelling. It is acknowledged that previous evidence in literature on innovations was focused on changes in technology, improving technology and changes in management structures. The view that innovations had to be changes in technology or improvements in technology has been

documented in majority of the studies. Study showed that management innovations affect financial performance and that innovations, not just technologies, must be attuned to management in order to improve financial performance.

Kituzi (2016) while examining adoption of IT posts that tools such as e-procurement have great milestone in affecting performance especially on: reducing the time employees spend looking for a product, service or suitable supplier; in administration of purchases; cutting down cycle times; accelerating number of few preferred suppliers to get better pricing and other conditions; plus, for quality reasons, helps to limit choices to only a number of pre-qualified suppliers. Moreover, Kinuthia and Abdallah (2015) studied ICT adoption in procurement process in oil industry in Kenya where lead time reduced and quality improved were the most conspicuous results. However, the success of ICT adoption depended on operational compatibility and good relationship between suppliers and service seekers.

From the study findings, it is clear that IFMIS strengthens the impact of supply chain practices by ensuring that all procurement activities comply with public financial management rules. This compliance translates into improved procurement performance, as the risk of procurement irregularities is reduced. Therefore, even where supply chain practices are well implemented, IFMIS ensures that these practices operate within the confines of financial governance structures, enhancing overall performance. Further IFMIS plays a key role in linking financial management with procurement activities, which enhances financial oversight, reduces errors, and ensures that procurement activities stay within budgetary constraints. Furthermore, IFMIS enhance procurement transparency by making financial transactions and procurement processes visible to stakeholders, including the public, reducing the incidence of procurement fraud. Final the study found that procurement performance improved significantly with the adoption of IFMIS due to better improved service delivery, budgetary compliance reporting,

and improved qualities of goods. It also helped in reducing redundant procedures in the procurement process.

#### 4.6 Moderating effect of IFMIS use on the Relationship between Supply Chain Practices and Procurement Performance of LREB Devolved Governments, Kenya.

In order to determine the moderating effect of IFMIS use (moderating variable) on the relationship between Supply Chain Practices and Procurement Performance of LREB devolved units', Kenya, a hierarchical regression model was adopted as shown in equation 4.6 and modeled as follows;

$$Y_i = \beta_0 + \beta_1 X_{1i} + \epsilon_i \dots \dots \dots (4.6)$$

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \epsilon_i$$

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_m M_i + \beta_{mM} M_i X_{1i} + \epsilon_i$$

**Table 4.17: Overall Summary Model, ANOVA & Regression Coefficients with Moderator**

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	.707 <sup>a</sup>	.500	.499	.34896	.500	181.121	1	180	.000
2	.812 <sup>b</sup>	.659	.654	.29141	.159	71.291	1	179	.000
3	.877 <sup>c</sup>	.769	.764	.23971	.110	83.185	1	178	.000

- a. Predictors: (Constant), SCP
- b. Predictors: (Constant), SCP, IFMIS
- c. Predictors: (Constant), SCP, IFMIS, IT

#### Analysis of Variance

Model		Sum of Sq.	Df.	Mean Sq.	F	Sig.
1	Reg	41.512	2	20.756	178.931	.000 <sup>b</sup>
	Residual.	20.67	178	.116		
	<b>Total</b>	<b>62.182</b>	<b>181</b>			

- a. Dependent Variable: Procurement Performance
- b. Predictors: (constant), Supply Chain Practices.
- c. Moderator: (IFMIS use)

Overall regression coefficients								
Model		Unstandardized		Standardized	T	Sig.	Collinearity	
		B	Std. Error	Coefficients Beta			Statistics Tolerance	VIF
1	(Constant)	.315	.172		1.838	.068		
	SCP	.917		.708	12.535	.000	1.000	1.000
2	(Constant)	-.099	.151		-.655	.513		
	IFMIS	.689	.066	.533	10.377	.000	.836	1.197
3	(Constant)	-.228	.125		-1.816	.071		
	SCP	.834	.057	.645	14.527	.000	.763	1.311
	IFMIS	.533		.573	12.611	.000	.728	1.374
.042	IT	.107	.013	.393	8.555	.000	.711	1.406

a. Dependent Variable:

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**KEY:** SCP- Supply Chain Practices, PP- Procurement Performance, IFMIS use, IT- Interaction Term.

The findings in Table 4.17 shows there exists a positive correlation in supply chain practices and procurement performance as shown by (R=.707). The results further show that there is a positive correlation between combined supply chain practices, IFMIS use and procurement performance (R=.812). The results indicate a positive correlation between combined supply chain practices, IFMIS use, the interaction term and procurement performance (R=.877). Examining the R<sup>2</sup> values, the findings shows that supply chain practices accounted for 50.0% variance in procurement performance (R<sup>2</sup>=.500) which was significant. When IFMIS use were included in the model, the resulting R<sup>2</sup> value was (R<sup>2</sup>=.659) which was also significant. This implies that both supply chain practices and IFMIS use accounted for 65.9% variance in procurement performance. Furthermore, subtracting the variance accounted for by supply chain practices from the one accounted for by both supply chain practices and IFMIS use, the result is 15.9% variance as indicated by R square change (R<sup>2</sup>=.159).

This implies that in the moderation process, IFMIS use add value of 15.9% variance in procurement performance, which is significant (p<.05) finally, when the interaction term was

included in the model, the total variance in procurement performance explained by the three predictors was 76.9 percent ( $R^2 = .769$ ) which was also significant. From the results, the net variance in procurement performance accounted for by the interaction term was 11.0% as shown by R square change ( $R^2 = .110$ ) and significant ( $p < .05$ ). The study findings indicate that, in order to improve procurement performance of LREB devolved governments, there is need to adopt IFMIS across all supply chain practices as it has a positive significant effect on the predictor variables in improving the level of procurement performance of devolved governments, Kenya.

The study discovered that when the IFMIS use is applied to supply chain practices selectively, there was an improvement in the value of coefficient of determination with the moderator. These findings clearly indicate that a unit change in either of the variables due to the presence of the moderator definitely led to a positive increase in the value of procurement performance of devolved system of governments, Kenya. The low  $R^2$  is as a result of many social and behavioral phenomena influenced by numerous factors, and a single variable may not capture the complexity, leading to a low  $R^2$ . However the weak relationships may lead to ineffective policies if decisions are based on flawed assumptions about causal relationships. Policies may fail to address the root causes of issues.

The overall model became more significant since the F-statics value recorded was 178.931. The corresponding P value for this model was  $0.000 < 0.05$  indicating that the overall model was a good model. This implies that IFMIS use significantly moderated the relationship between supply chain practices and procurement performance, concurring with Field (2005) who discussed that presence of an  $R^2$  change in interacting model denotes presence of moderation effects. Further findings using the model coefficients are presented in Table 4.17. Observing standardized model coefficients, it is clear that supply chain practices had a significant positive effect on procurement performance ( $\beta = .917$   $p < .05$ ). When the mean IFMIS

use subscale was added to the model, it also had a positive significant effect on procurement performance ( $\beta=.689$ ,  $p<.05$ ), even though the significant effect of supply chain practices reduced from  $\beta=.917$  to ( $\beta=.689$ ,  $p<.05$ ). Finally, the interaction term was added to the model, and the results show it had a positive significant effect on the relationship between supply chain practices and procurement performance ( $\beta=.107$ ,  $p<.05$ ). Practically, this denotes that unit increase in adoption of IFMIS in public procurement results to .107 units increase in interaction between supply chain practices and procurement performance. On inclusion of the interaction term in the model, the effect of supply chain practices on procurement performance increased ( $\beta=.834$ ,  $p<.05$ ) and was also significant. The effect of IFMIS use on procurement performance also increased and was significant ( $\beta=.533$ ,  $p<.05$ ). The constant term ( $\beta=-.228$ ,  $p>.05$ ) of the interaction model denotes the magnitude of procurement performance which decreases without including any explanatory variable in the model. The constant coefficient is not significant. This implies that at no implementation of supply chain practices and adoption of IFMIS in public procurement, would decrease procurement performance of LREB devolved units.

Observing the significant positive contribution of the interaction term ( $\beta=.107$ ,  $p<.05$ ) on procurement performance, it is concluded that IFMIS use positively moderates the relationship between supply chain practices and procurement performance. Thus, null hypothesis was rejected:  $H_{03}$ : IFMIS use has no moderating effect on the relationship between supply chain practices and procurement performance of LREB county governments, Kenya and adopt an alternative hypothesis which suggests a significant moderation of IFMIS use.

The model is thus fitted as;

$$Y = 0.315 + 0.917X_{SCP} \dots \dots \dots (4.7)$$

$$Y = -0.099 + 0.689X_{SCP} + 0.403M_{IFMIS}$$

$$Y = -0.228 + 0.834X_{SCP} + 0.533M_{IFMIS} + 0.107MX_{IT}$$

The  $R^2$  value of the interaction term ( $R^2=.110$ ) and the standardized model coefficient of the interaction term ( $\beta=.107$ ,  $p<.05$ ) is sufficient evidence (Field, 2005; Baron & Kenny, 1986) to conclude that IFMIS use significantly moderates the relationship between supply chain practices and procurement performance among LREB county governments. The results show that 11.0% variance in the relationship between supply chain practices and procurement performance is accounted for by IFMIS use, the remaining 89% accounted for by other factors not included in the model. In practice, the findings postulate that interaction of supply chain practices and IFMIS use among LREB devolved units realize remarkable improvement in procurement performance. Therefore, LREB stakeholders should adopt more IFMIS, this would result into improved results (better quality of supplies, reduced budgets and effective costs saving). The study findings imply that, in order to improve procurement performance in LREB devolved governments, there is a high need for IFMIS use across all the procurement management practices as it has a positive significant effect on the predictor variables in improving the level of procurement performance in devolved governments, Kenya. The study discovered that when IFMIS is applied to procurement practices selectively, there was an improvement in the value of coefficient of determination from 65.9% to 76.9% with the moderator. These findings clearly indicate that a unit change in either of the variables due to the presence of the moderator; will definitely lead to a positive increase in the value of procurement performance in LREB devolved system of governments in Kenya.

In the model of relationship between SCP, IFMIS use and procurement performance, Supply chain practices had the strongest significant effect on procurement performance ( $\beta=0.917$ ;  $t=12.35$   $P<0.05$ ;  $R^2=0.500$ ), followed by IFMIS use ( $\beta=0.834$ ,  $R^2 =0.489$ ,  $t=10.665$ ,  $p<0.05$ ) and finally moderating role of IFMIS use ( $\beta=0.107$ ,  $p<0.05$ ;  $R^2=0.110$ ,  $t=8.555$ ). Therefore, the strongest relationship was between the effects of supply chain practices on procurement performance.

The study revealed that the moderating effect of IFMIS was more pronounced in LREB counties that had already adopted efficient supply chain practices, such as supplier selection and supply chain risk management. IFMIS strengthened these practices by ensuring alignment between financial management and procurement objectives, leading to more timely deliveries and reduced costs. IFMIS was identified as a moderator between procurement practices and performance by enhancing coordination and ensuring that procurement practices adhered to budgetary constraints. The system also facilitated better communication and information flow across departments, which improved the overall procurement cycle. The study found that IFMIS improved procurement outcomes by promoting transparency and accountability in the public sector. It also helped to streamline procurement documentation and contracts, making the processes more traceable and less prone to fraud. The study showed that IFMIS led to an increase in procurement efficiency by reducing paperwork, automating processes, and improving financial oversight. However, challenges such as poor ICT infrastructure and inadequate user training limited its full potential. Furthermore, study findings provide substantial evidence that IFMIS enhances procurement performance by improving transparency, accountability, financial control, and efficiency. As a moderator, IFMIS amplifies the positive effects of strong supply chain practices, such as supplier selection and supply chain risk management, on overall procurement outcomes in LREB counties.

The findings confirm positions of other prior studies. Nyambura (2018) for instance, in an attempt to investigate moderating effect of ICT on supply chain risks and performance of manufacturing firms, the researcher surveyed 76 firms in Nairobi which were registered by the Kenya Association of Manufacturers (KAM). This study found out that ICT moderated the relationship between one study variable (organization characteristics) and performance but jointly moderated the relationship between supply chain risks and performance of manufacturing firms. Mwale and Phiri (2021) examined the relationship between supplier



management practices and procurement performance, with IFMIS as a moderating variable. The study found that effective supplier management practices were essential for achieving high procurement performance. The use of IFMIS further enhanced these practices by providing real-time data on supplier performance, ensuring timely payments, and tracking contract fulfillment.

This is in line with the findings of Araz and Ozkarahan (2017) who agreed that when a firm discovers a new technology that allows it to produce at a lower cost, they will prefer to obtain their goods from suppliers whose goods are inline to their technology. A technological improvement that reduces costs of production will shift manufactures to suppliers who produce good that are in line theirs so that they improve the quality of their products. Quesada *et al.*, (2010) who posits that finding suggest that e-procurement usage positively affects managers' perceptions on both procurement practices and performance. Subsequently, this would have major impact on the way the information flows to all employees and systems as enshrined in the company operations. A change in entirety of the organization definitely contributes to increased productivity. To sum up, IFMIS use can just be said to not directly impact the performance but also enables other procurement practices to function for overall LREB county government performance.

The results are in line with others studies; Munyao and Moronge (2018) researched on the impact of procurement practices including e-tendering, e-sourcing, e-ordering and e-payment on public university performance found a positive and significance results for all the variables except e-payment which had insignificance effect. The researchers urge that adoption of technology has gone further to reduce the transaction cost while at the same time increasing the response speed implying that there is improved performance. This explains the positivity in moderating effect of IFMIS use on the supply chain practices.

Awiti *et al.*, (2020) focusing on change management and organization performance of the companies listed in Nairobi Securities Exchange (NSE), examined moderating effect of technology on change management and performance. The study surveyed 38 listed firms with senior managers of key departments of the companies used as analysis units (CEOs, Human Resource Managers and Finance managers, Marketing managers). The study concluded stakeholders to adopt and use technologies in their practices as this heavily improve their change management practices and performance relationship since technology adoption and use significantly moderates the relationship between change management and organizational performance.

The confirmation of moderating effect of IFMIS use concur with the study by Mkwizu & Sichone (2019) who examined the moderating effects of technology on user attributes and e government systems success in Tanzania. The study sampled revenue officers from Tanzania Revenue Authority, employing a questionnaire to obtain data from 246 respondents who were based in Dar es Salaam. The results showed that user attribute positively and significantly affected e-government information systems success, additionally, the study results revealed that technology moderated the relationship between user attributes and e-government information systems success. The findings of the study are aligned with resource -based view theory. The theory asserts that managers in the public domain (county governments) who work for the common good of citizens must utilize resources in order to realize added value in their results. LREB counties can give value to the citizens by adopting and utilizing available resources. The study demonstrates that when county governments implement supply chain practices well and adopt IFMIS, they will achieve improved performance. Stakeholders in counties must come to the realization that it is not just implementing supply chain practices as established, but integrating it with IFMIS. Thus, the role of accounting officers, in this case chief officers and procurement managers, extends beyond scope of simply implementing

procurement laws, but devising new ways of better implementing the laws by adopting IFMIS in all procurement process.

From the findings IFMIS proves to be a critical tool for improving procurement performance, making county governments more accountable, transparent, and efficient in their procurement operations. IFMIS provides valuable insights into the intersection of technology and governance, helping to deepen our understanding of public financial management, agency theory, and institutional compliance. Its role as a moderator in procurement processes validates several governance and management theories by demonstrating how systems improve procurement transparency, efficiency, and accountability. Further IFMIS enhances procurement performance in tangible ways, from reducing procurement cycle times to ensuring better financial accountability. It directly contributes to better supplier management, compliance with regulations, and the overall transparency of county government procurement processes. These practical improvements lead to more efficient use of public resources, better service delivery, and stronger governance across counties. Further the research highlighted that IFMIS improved procurement efficiency by automating procurement processes and integrating financial data with procurement activities. This led to greater transparency and reduced financial malpractices in LREB devolved governments. The study found that the effectiveness of procurement processes in delivering value-for-money outcomes was significantly enhanced when IFMIS was integrated with strong supply chain management practices. IFMIS moderated the relationship by acting as a technological platform that ensured data accuracy and real-time tracking of procurement activities. IFMIS moderates the relationship between supply chain practices and procurement performance by ensuring transparency and accountability. This means that even when supply chain practices are strong (such as accurate supplier selection and supply chain risk management), IFMIS acts as a gatekeeper to ensure that procurement decisions align with financial data and public accountability requirements.

In conclusion, the moderating role of IFMIS in the LREB counties is crucial for enhancing procurement performance by ensuring transparency, accountability, and financial control in procurement activities. It strengthens the relationship between effective supply chain practices (such as supplier selection and supply chain risk management) and procurement performance by automating processes, ensuring compliance, reducing inefficiencies, and facilitating data-driven decisions. However, the success of IFMIS as a moderator depends on addressing challenges such as ICT infrastructure, staff training, and systemic resistance to change.

#### **4.6 Hypothesis Testing Summary**

According to (Gujarat, 2022) a statistical hypothesis is defined as an assumption about a population parameter. This assumption may be true or not. Greene (2003) argues that hypotheses' testing refers to the formal procedures used by statisticians and researchers to accept or reject statistical hypotheses. Hypotheses testing was done using the  $p$ -value for the research. A small  $p$ -value (typically  $<0.05$ ) will indicate strong evidence against the null hypotheses, so the null hypotheses will be rejected and when and if we have a large  $p$ -value ( $>0.05$ ), it indicates weak evidence against the null hypotheses, so alternative hypotheses will be accepted. For this research, if the  $p$ -value  $<0.05$ , then it will be considered positively significant. The study tested a total of three null hypotheses and the decision of accepting or rejecting each null hypothesis is explained as follows:

##### **4.6.1 Supply Chain Practices and Procurement Performance of Lake Region Economic Bloc Counties.**

The hypothesis was tested by determining the relationship between supply chain practices and procurement performance. The test was done at a significant level  $p < 0.05$ . The test results show that there exists a statistically significant correlation between supply chain practices and procurement performance ( $R^2=0.500$ ,  $\beta = 0.708$ ,  $t=12.35$ ,  $P<0.05$ .) The result led to the rejection of the null hypothesis, hence a conclusion that there exists a statistically significant

influence of supply chain practices on procurement performance of LREB devolved governments, Kenya, thus 50.0% explains variance in procurement performance. A unit increase in supply chain practices results to 0.708 increase in procurement performance of LREB devolved governments.

#### **4.6.2 IFMIS use and Procurement Performance of Lake Region Economic Bloc**

##### **Counties**

The hypothesis was tested by determining the relationship between IFMIS use and procurement performance. The test was done at a significant level  $p < 0.05$ . The test results show that there exists a statistically significant correlation between IFMIS use and procurement performance ( $R^2 = 0.489$ ,  $\beta = 0.649$ ,  $t = 10.665$ ,  $p < 0.05$ ). The result leads to the rejection of the null hypothesis, hence a conclusion that there exists a statistically significant effect of IFMIS use on procurement performance of LREB devolved governments, Kenya, accounts for 48.9% variance in procurement performance. A unit increase in IFMIS use leads to 0.649 increase in procurement performance of LREB devolved governments, Kenya.

#### **4.9.3 Moderating Role of IFMIS use on the Relationship between Supply Chain Practices and Procurement Performance of Lake Region Economic Bloc Counties.**

The hypothesis was tested by analyzing the moderating role of IFMIS use on the relationship between supply chain practices and procurement performance. Results indicate that ( $R^2 = 0.110$ ,  $\beta = 0.393$ ,  $t = 8.555$ ,  $p < 0.05$ ). IFMIS use moderates the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya. The study thus rejected the null hypothesis and adopted the alternative hypothesis that there is a significant moderating effect of IFMIS use on the relationship between supply chain practices and procurement performance of LREB devolved governments, Kenya. The results show that 11.0% variance in the relationship between supply chain practices and procurement performance is accounted for by IFMIS use, thus a unit increase in IFMIS use results to 0.393 increase in interaction between supply chain practices and procurement performance.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

A summary of the research findings, conclusions and recommendations of the study are presented in this chapter. Conclusions were based on researcher insights gained regarding study findings and guided by the research objectives. The recommendations were based on the findings and the limitation of the study. Recommendations are directed toward practitioners in the field, described in this study as program director and professionals interested in pursuing further research.

#### **5.1 Summary of the Findings**

The study examines the moderating effect of Integrated Financial Management Information Systems (IFMIS) on the relationship between supply chain practices and procurement performance in the Lake Region Economic Bloc counties of Kenya. There is a significant positive relationship between effective supply chain practices and procurement performance. Implementing these practices leads to improved efficiency and effectiveness in procurement processes. The study highlights practices such as supplier selection and supply chain risk management, these practices contribute to enhanced procurement outcomes. High procurement performance is characterized by efficiency, transparency, and cost-effectiveness, which are crucial for public sector operations in the region. Improved supply chain practices foster transparency and accountability, which are essential for public sector procurement.

The use of IFMIS significantly enhances procurement performance by improving efficiency, transparency, and accountability in procurement processes. IFMIS helps streamline procurement processes, reducing paperwork and manual errors, which leads to faster transaction times and improved resource management. The system provides better data management and reporting capabilities, enabling informed decision-making and more effective

oversight of procurement activities. Implementing IFMIS fosters compliance with procurement regulations and policies, which is crucial for accountability in LREB devolved governments.

IFMIS serves as a crucial tool that enhances the relationship between supply chain practices and procurement performance. It streamlines processes, improves data management, and fosters accountability. The findings indicate that the use of IFMIS significantly strengthens the positive effects of supply chain practices on procurement performance. When IFMIS is utilized effectively, it amplifies the benefits of good supply chain practices. The study suggests that integrating IFMIS within procurement processes could lead to improved outcomes, recommending that local governments prioritize its implementation and training for staff.

The use of IFMIS amplifies the benefits derived from supply chain practices, such as supplier selection and supply chain risk management, leading to greater procurement efficiency and effectiveness. The integration of IFMIS fosters greater accountability and transparency in procurement processes, which further strengthens the outcomes of supply chain practices. Overall, the findings indicate that IFMIS plays a crucial moderating role, enhancing the relationship between supply chain practices and procurement performance in LREB devolved governments, suggesting that effective system implementation can lead to significant improvements in public sector procurement outcomes.

## **5.1 Conclusions**

The study concludes that the use of Integrated Financial Management Information Systems (IFMIS) significantly moderates the relationship between supply chain practices and procurement performance in the devolved governments of the Lake Region Economic Bloc (LREB), Kenya. The findings illustrate that effective supply chain practices, such as supplier selection and supply chain risk management, can substantially enhance procurement performance; however, these benefits are amplified when supported by robust IFMIS

implementation. The study establishes that Integrated Financial Management Information Systems (IFMIS) play a critical moderating role in the relationship between supply chain practices and procurement performance among devolved governments in the Lake Region Economic Bloc (LREB), Kenya. The findings indicate that effective supply chain practices, when complemented by robust IFMIS utilization, lead to significant improvements in procurement efficiency, transparency, and accountability.

Specifically, the research highlights that while supply chain practices alone can positively influence procurement performance, the integration of IFMIS enhances these effects, creating a synergistic relationship that maximizes procurement outcomes. The study underscores the importance of leveraging technology to streamline processes, improve data management, and foster collaboration among stakeholders. Furthermore, the insights gained emphasize the need for policymakers and procurement officials to prioritize the implementation and effective use of IFMIS alongside best supply chain practices. This strategic approach not only facilitates better resource allocation and service delivery but also promotes good governance within devolved systems. The findings illustrate that effective supply chain practices, such as supplier selection and supply chain risk management, can substantially enhance procurement performance; however, these benefits are amplified when supported by robust IFMIS implementation.

The findings highlight the critical role of effective supply chain practices in enhancing procurement performance in LREB devolved governments, advocating for strategic implementation and continuous improvement in these areas. The research underscores the importance of integrating financial management systems into supply chain operations to enhance procurement performance in the Lake Region Economic Bloc, highlighting the need for strategic investments in technology and training.



The findings emphasize that IFMIS plays a crucial role in enhancing procurement performance in LREB devolved governments, suggesting that its effective use can lead to improved public service delivery and resource management. Overall, the findings indicate that IFMIS plays a crucial moderating role, enhancing the relationship between supply chain practices and procurement performance in LREB devolved governments, suggesting that effective system implementation can lead to significant improvements in public sector procurement outcomes.

## **5.2 Recommendations**

The following recommendations were drawn from the study:

Foster strong relationships with suppliers through regular communication and collaboration. This can lead to better service delivery, cost savings, and improved quality of goods and services. Leverage technology to streamline supply chain processes. Tools like e-procurement platforms can enhance efficiency, reduce lead times, and improve transparency in procurement activities. Establish key performance indicators (KPIs) to monitor and evaluate the effectiveness of supply chain practices. Regular assessments will help identify areas for improvement and track progress.

LREB counties should involve various stakeholders, including community representatives and suppliers, in the procurement process to gather diverse insights and improve service delivery. Promote a culture of continuous improvement within procurement teams, encouraging innovation and the adoption of new practices that can enhance supply chain performance. Ensure adherence to procurement regulations and policies by incorporating compliance checks and audits into the procurement process, helping to maintain accountability and integrity.

Create platforms for knowledge sharing among procurement professionals within the devolved governments, allowing for the exchange of experiences, challenges, and solutions related to supply chain practices. The study suggests that devolved governments should focus on training and capacity building in supply chain management to maximize procurement performance.

In relation to IFMIS use; develop targeted training programs for procurement officers and relevant staff to ensure they are proficient in utilizing IFMIS. Ongoing training should focus on best practices and system updates.

LREB counties should explore integrating IFMIS with other relevant management systems (such as human resources and logistics) to streamline operations and enhance overall organizational efficiency, involve all relevant stakeholders (including suppliers and community representatives) in the procurement process to enhance collaboration and ensure the system addresses their needs effectively. Encourage adherence to procurement regulations and best practices through regular audits and compliance checks facilitated by IFMIS, helping to mitigate risks of fraud and mismanagement.

The study recommends that LREB devolved governments prioritize the integration of IFMIS with supply chain management practices to fully realize the potential benefits for procurement performance. Encourage the integration of IFMIS with existing supply chain management practices to create a seamless workflow. This integration will facilitate better data sharing and communication among stakeholders. Encourage the use of data analytics tools within IFMIS to support informed decision-making in procurement. Providing decision-makers with accurate and timely data will lead to improved outcomes. Promote collaboration between different departments and stakeholders in the procurement process. This can be facilitated by using IFMIS to share information and insights, leading to improved coordination. Support the adoption of innovative supply chain practices that leverage technology, including IFMIS, to enhance procurement performance. This can include e-procurement, supplier relationship management, and automation of procurement processes.

The study also recommends LREB counties to support the adoption of innovative supply chain practices that leverage technology, including IFMIS, to enhance procurement performance. This can include e-procurement, supplier relationship management, and automation of

procurement processes. Encourage the integration of IFMIS with existing supply chain management practices to create a seamless workflow. This integration will facilitate better data sharing and communication among stakeholders. Promote collaboration between different departments and stakeholders in the procurement process. This can be facilitated by using IFMIS to share information and insights, leading to improved coordination. Establish a framework for regular evaluation of both IFMIS and supply chain practices to measure their impact on procurement performance. This will help identify areas for improvement and best practices. Furthermore, LREB counties should standardize procurement processes across all departments and align them with IFMIS functionalities to ensure consistency and reduce discrepancies in procurement activities. By implementing these recommendations, devolved governments in the LREB can effectively enhance the relationship between supply chain practices and procurement performance through the strategic use of IFMIS.

### **5.3 Limitation of the Study**

The researcher encountered a number of challenges while undertaking the research study. However, the limitations did not have a significant interference with the outcome of the study. Some of the respondents were not willing to share some classified information regarding their counties as they had fears that the information, they provided could be used against them or bear some adverse effects on their counties and therefore they did not wish to participate in the study. However, this situation was diagnosed by the researcher as the participants were well briefed on the confidentiality of the information they were to give and that it would be used for academic purposes only. Similarly, the researcher outlined the necessary steps put in place to ensure the information was kept confidential without revealing the participants identity in any way.

The second limitation was accessing the senior officers targeted for the research study in their respective counties. Due to the busy schedule of the officers, the researcher encountered

difficulties of accessing them since most of the time the senior officers' offices were manned by office secretaries and junior officers who could not allow the researcher to access the senior officers' offices without official appointment. To mitigate this situation, the researcher booked for appointments at the convenience of the targeted counties senior officers and used an introductory letter from Maseno University and also a research permit from National Commission for Science, Technology and Innovation to facilitate the exercise. The researcher also deployed excellent communication and interpersonal skills with the respondents and explained to them the importance of the study and promised them of high confidentiality of the information they gave.

The third limitation was the delayed response to the questionnaires by some managers and some even lost them in the process thus occasioning failure to achieve 100 percent response rate. The challenge was however mitigated as the research assistants deployed were able to make follow-ups and clarify the questions that respondents were not able to digest. The research assistants also frequently provided additional questionnaires to those respondents who had lost questionnaires issued to them and were willing to continue with the research exercise. This greatly reduced the number of unfilled sections in the questionnaires and increased the response rate. A hundred percent response rate of the county governments in Kenya was not achieved. However, inference was made from the outcome to be a true reflection of the LREB county governments in Kenya.

#### **5.4 Suggestion for Further Research**

The study has managed to establish the relationship between supply chain practices and procurement performance among LREB devolved governments, Kenya. However, there were areas that the study was limited in terms of scope and methodology applied. The study only focused and investigated two supply chain practices among LREB devolved governments, Kenya. It is recommended that further or additional studies explore other supply chain practices

such as; green procurement, lean supply chain, procurement planning, outsourcing and contract management and establish their relationships with procurement performance in the devolved system of governments in Kenya.

Furthermore, a study to be carried to establish the skill and knowledge gaps involving procurement officers is vital. This will assist generate information that will be foundational to development of training programs that can boost compliance with the procurement regulation. Political interference and delay of county funds seems to interfere with compliance with the regulation, thus a study to quantify the amount of variance that the two could explain on regulation compliance would be a boost to the counties. A replication of this study with other departments involving national government is of essence to confirm this study findings. It is also recommended that future studies be carried out in other organizations such as; national government ministries, government parastatals, government health institutions, educational institutions and compare to the present studies. The study lays the groundwork for future research on the interplay between technology and procurement practices, encouraging further exploration of other moderating variables that may influence procurement performance.

### **5.5 Contribution to the Body of Knowledge**

This study expanded the body of knowledge on how public sector supply chains function in developing economies, specifically in the context of decentralized governance. The study enhances theoretical understanding of the relationship between supply chain management and procurement performance, particularly in developing economies, adding depth to existing academic discussions. The study provides empirical evidence highlighting specific supply chain practices that significantly enhance procurement performance in the context of LREB devolved governments, contributing to the literature on public procurement effectiveness. The research identifies and prioritizes key supply chain practices—such as supplier selection and supply chain risk management that are most impactful for improving procurement outcomes, offering practical guidance for procurement officials. The study establishes a framework for

understanding how supply chain practices directly correlate with procurement performance, providing a model that can be used by other devolved governments or similar entities.

The findings lead to actionable policy recommendations for enhancing procurement processes within devolved governments, which can contribute to better resource allocation and service delivery in the public sector. The study enhances theoretical understanding of the relationship between supply chain management and procurement performance, particularly in developing economies, adding depth to existing academic discussions.

The research identifies specific benefits of IFMIS, such as improved efficiency, transparency, and data management, providing actionable insights for government officials on how to leverage these advantages in procurement processes. Further the study provides quantitative evidence demonstrating the positive effect of IFMIS on procurement performance, establishing a clear link between technology use and enhanced procurement outcomes within devolved governments. The study provides a comprehensive framework that integrates supply chain practices, IFMIS, and procurement performance, offering a holistic view of how these elements interact within the context of devolved governments.

By specifically examining the moderating effect of IFMIS, the study fills a research gap in understanding not just the direct impacts of supply chain practices on procurement performance, but also how technology can enhance these relationships. The research was tailored to the unique context of the Lake Region Economic Bloc (LREB) in Kenya, providing insights that are particularly relevant to local governance and public sector procurement in developing countries. The study enhances understanding of how technological tools like IFMIS can be effectively integrated into supply chain management to drive improvements in procurement performance, promoting greater efficiency and accountability. By specifically examining the moderating effect of IFMIS, the study fills a research gap in understanding not just the direct impacts of supply chain practices on procurement performance, but also how technology can enhance these relationships. These contributions not only advance theoretical understanding but also provide practical guidance for enhancing procurement performance through the effective use of IFMIS in devolved governments.

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## APPENDICES

### Appendix I: RESEARCH QUESTIONNAIRE

**Instructions:** Fill in the blank spaces and tick where appropriate.

This questionnaire is designed for the purpose of collecting data and will be treated with a very high degree of confidentiality and it is meant for academic purpose only.

The questionnaire is structured to collect information from devolved governments with an objective of analyzing the moderating role of IFMIS use on the relationship between supply chain practices and procurement performance among Lake Region Economic bloc devolved governments.

#### **PART A: Demographic Information**

1. What is your highest level of education? (Please tick as appropriate)

Doctorate [     ]

Masters [     ]

Undergraduate [     ]

College Diploma [     ]

School Certificate [     ]

Others, (please specify) .....

2. How many years have you worked in your respective department? Please (✓) as appropriate

Less than a year ago [     ]

Between 1-3 years [     ]

Between 3-5 years [     ]

Between 5-8years [     ]

3. Which of the following sections do you belong to?

Ministry [     ]

Procurement [     ]

Finance [     ]

Kindly indicate if you belong to any other section apart from the ones indicated in three above.....

4. Please indicate your membership category in your respective professional body

None [     ]

Student member [     ]

Associate member [     ]

Full member [     ]

Affiliate member [     ]

Fellow member [     ]

**PART B**

**SECTION I: SUPPLY CHAIN PRACTICES**

5. Kindly indicate your level of agreement with the following aspect of supplier selection practices that contributes to procurement performance of LREB county governments by ticking (√) appropriately.

<b>Supplier Evaluation</b>	<b>Strongly disagree (1)</b>	<b>Disagree (2)</b>	<b>Neither agree or disagree (3)</b>	<b>Agree (4)</b>	<b>Strongly agree (5)</b>
We use technical capability, criteria when evaluating suppliers					
We use technical expertise criteria when evaluating supplier					
We use financial capability criteria when evaluating suppliers					
We consider provision of after sales service when evaluating suppliers					
We consider suppliers past performance and current relationship when evaluating suppliers					

<b>Supplier certification</b>	<b>Strongly disagree (1)</b>	<b>Disagree (2)</b>	<b>Neither agree or disagree (3)</b>	<b>Agree (4)</b>	<b>Strongly Agree (5)</b>
We include requirement for Environmental Certification in our evaluation criteria					
We include requirement for Quality Certification in our evaluation criteria					
We include requirement for Life Cycle Certification in our evaluation criteria					
We have knowledge on Social Responsibility					

<b>Supplier comparison</b>	<b>Strongly disagree (1)</b>	<b>Disagree (2)</b>	<b>Neither agree or disagree (3)</b>	<b>Agree (4)</b>	<b>Strongly agree (5)</b>
We rank suppliers on product quality.					
We rank suppliers on service quality.					
We rank suppliers on lead time.					
We rank suppliers on reputation.					
We rank suppliers on responsiveness.					
We rank suppliers on price.					

**SECTION II: SUPPLY CHAIN RISK MANAGEMENT PRACTICES**

6. Kindly indicate your level of agreement with the following aspect of supply chain risk management practices by ticking (✓) appropriately.

<b>Risk Identification</b>	<b>Strongly disagree (1)</b>	<b>Disagree (2)</b>	<b>Neither agree or disagree (3)</b>	<b>Agree (4)</b>	<b>Strongly agree (5)</b>
We carry out identification of potential risk in supply chain.					
We frequently review our County Government's records.					
We have a work flow chart for our County Government.					
We have professional expertise in our County Government.					
We carry out on-site investigation of existence of risk.					

<b>Risk Assessment</b>	<b>Strongly Disagree (1)</b>	<b>Disagree (2)</b>	<b>Neither agree or disagree (3)</b>	<b>Agree (4)</b>	<b>Strongly agree (5)</b>



We carry out risk audit.					
We carry out regular risk check-ups.					
We carry out risk analysis.					
We carry out joint risk workshops with our suppliers.					
We carry out joint training sessions with our suppliers.					

**Risk monitoring**

<b>Risk monitoring</b>	<b>Strongly disagree (1)</b>	<b>Disagree (2)</b>	<b>Neither agree or disagree (3)</b>	<b>Agree (4)</b>	<b>Strongly agree (5)</b>
We adopt risk management transfers.					
We identify risk in procurement.					
We maintain a risk register.					
We update procurement risk register					

**SECTION III: INTERGRATED FINANACIAL MANAGMANENT SYSTEM ADOPTION USE**

7. Kindly indicate your level of agreement with the following aspect of IFMIS use by ticking (✓) appropriately.

<b>IFMIS use</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
We have adopted reliable E-procurement software					
We have adopted E-tendering					
We have implemented paperless requisition					
We have E-procurement system which has reduced lead time					
We have interlinked Procurement to payment portals					
We have coherent procurement information courtesy of IFMIS use					

**SECTION IV: PROCURMENT PERFORMANCE OF LREB COUNTY GOVERNMENTS**

8. Kindly rate the state of your devolved government’s procurement performance. Kindly mark your level of agreement on the following statements on a five-point Likert scale (Strongly Disagree (SD)=1. Disagree (D) =2, Neutral (N) =3, Agree (A) =4, strongly agree (SA) =5).

<b>Performance</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Our quality-of-service provision has improved					
We offer product and services on time					
We receive deliveries of goods from our suppliers on time					
We have reduced cost deviation of procured goods /works/services from market price					
We have achieved budgetary compliance level					

Thank you!

## Appendix 2: Validity analysis

Table 3.3: KMO and Bartlett's

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Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.641
	Approx.	6036.57
Bartlett's Test of Sphericity	ChiSquare	8
	df	20
	Sig.	0.000

### Appendix 3: CRONBACH'S ALPHA RELIABILITY TEST

Item	Obs	Sign	average interitem covariance	alpha
1 We use technical capacity, criteria when evaluating suppliers	20	+	0.305107	0.9551
2 We use technical expertise criteria when evaluating supplier	20	+	0.311441	0.9558
3 we use financial capacity criteria when evaluating suppliers	20	+	0.310066	0.9555
4 we consider provision of after sales service when evaluating suppliers	20	+	0.292993	0.9536
5 We consider suppliers past performance and current relationship when evaluating s	20	+	0.298937	0.954
6 We include requirement for environmental Certification in our evaluation	20	+	0.289502	0.954
7 We include requirement for quality certification in our evaluation criteria	20	+	0.300188	0.9543
8 We include requirement for Life cycle Certification in our evaluation criteria	20	+	0.295694	0.9545
9 we have knowledge on social responsibility	20	+	0.307443	0.9552
10 we rank supplier on product quality	20	+	0.294914	0.9539
11 we rank suppliers on service quality	20	+	0.295357	0.9536
12 we rank suppliers on lead time	20	+	0.301347	0.9549
13 we rank suppliers on reputation	20	+	0.305104	0.9548
14 we rank suppliers on responsiveness	20	+	0.31664	0.9567
15 we rank suppliers on price	20	+	0.318487	0.9569
16 we use our risk management policy	20	+	0.29893	0.9541
17 we identify risk in procurement	20	+	0.299933	0.9544
18 we maintain a risk register	20	+	0.299437	0.9539
19 we update procurement register	20	+	0.298249	0.9541
20 We perform identification of potential risk in supply chain	20	+	0.294864	0.9536
21 we frequently review our County government 's records	20	+	0.304257	0.9546
22 we have a work flow chart for our County Government	20	+	0.300585	0.9547
23 We have professional expertise in Our county Government	20	+	0.298575	0.9541
24 We carry out on-site investigation of existence of risk	20	+	0.299064	0.9543
25 We carry out risk audit	20	+	0.305068	0.9548
26 we carry out regular risk check ups	20	+	0.294457	0.9537
27 we carry out risk analysis	20	+	0.307464	0.9553
28 we carry out joint risk workshops with our suppliers	20	+	0.297838	0.9538
29 we carry out joint training session with our suppliers	20	+	0.305905	0.9549
30 purchasing of goods, works and services	20	+	0.317625	0.9569
31 inventory control of goods and services	20	+	0.320471	0.9573
32 Order processing of goods, works and services	20	+	0.309732	0.9555

33	transportation management of goods	20	+	0.309197	0.9554
34	Distribution of goods and services	20	+	0.307106	0.9553
35	Efficient communication (External internal	20	+	0.312795	0.956
36	Increased investment in information systems	20	+	0.311575	0.9558
37	incorporation of technology in their processes	20	+	0.307978	0.9551
38	Adapt to changing technologies in order fulfillment	20	+	0.304788	0.9547
39	Reduced time in serving customer order	20	+	0.301046	0.9546
40	indicate the percentage of defect free good deliveries	20	+	0.303548	0.9546
41	indicate the percentage of product rejection on deliveries	20	+	0.327613	0.9604
42	indicate the percentage of products that meets specifications	20	+	0.305249	0.9548
43	indicate the percentage of product return for repair during warranty period	20	+	0.31905	0.9587
44	indicate the percentage of audit queries on non-compliance	20	+	0.335162	0.9619
45	indicate the percentage of queries from procurement regulator on non-compliance	20	+	0.338636	0.9625
46	We receive deliveries of goods from our suppliers on time	20	+	0.298079	0.9539
47	We get after sales services from our suppliers	20	+	0.289917	0.9533
48	we receive prompt response to our queries from our supplier	20	+	0.297643	0.9546
49	our suppliers are readily available for consultation	20	+	0.297182	0.9543
50	indicate percentage of cost saving of procured goods/Work/services on budgeted amount	20	+	0.297094	0.9537
51	indicate the percentage of cost deviation of procured good /works/services from market price	20	+	0.314886	0.9563
52	indicate the percentage of cost overrun of procured goods/work/service on budgeted amount	20	+	0.3144	0.9561
53	indicate the percentage of goods /work/services procured without b budgetary allocation	20	+	0.299167	0.9543
54	indicate the percentage of goods/works/services procured above the budgetary allocation	20	+	0.308439	0.9552
55	indicate percentage of purchase orders pending due to budgetary constraints	20	+	0.334769	0.961
56	indicate the percentage of audit queries on budgetary compliance	20	+	0.332646	0.9613
Test scale				0.306494	<b>0.9563</b>

#### Appendix 4: Proposal Budget

	Item	Unit	Quantity	Unit Cost	Total
1.	Pens	Pkt	60	30.00	1800.00
2.	Secretariat	No.	1	20,000	20,000.00
3.	Research Assistants	No.	4	20,000.00	80,000.00
4.	Travelling& Accommodation	No	6	20,000.00	120,000.00
5.	Binding	Pcs	30	70.00	1,100.00
6.	Airtime	Pcs	6	2,000.00	12,000.00
7.	Modem	Pcs	3	6,000.00	18,000.00
8.	Photocopying Papers	Ream	30	600.00	18,000.00
9.	Foolscap	Ream	2	450.00	900.00
10.	Notebooks	No.	20	100.00	2,000.00
11.	Laptops	No.	3	40,000.00	120,000.00
12.	Printer	No.	1	35,000.00	35,000.00
13.	Tonner	No.	1	7,000.00	7,000.00
14.	Flash disk	No.	1	1,500.00	1,500.00
15.	Miscellaneous				50,000.00
<b>Total</b>					<b>487,300.00</b>

**Appendix 5 : Map of Lake Region Economic Bloc Counties.**



**Source: LREB Report 2017**