EMPLOYEE PERCEPTION OF THE MODERATING EFFECT OF INFORMATION TECHNOLOGY ON SUPPLY CHAIN INTEGRATION AND PERFORMANCE OF PUBLIC UNIVERSITIES IN WESTERN REGION, KENYA.

BY

JOB KIBIWOTT BASKWONY

A RESEARCH THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN LOGISTIC AND SUPPLIES MANAGEMENT DEPARTMENT OF MARKETING AND LOGISTICS SCHOOL OF BUSINESS AND ECONOMICS MOI UNIVERSITY

2024

DECLARATION

Declaration by the Candidate

This research thesis is my original work and to the best of my knowledge has never been presented for the award of a Master's Degree in any other University.

Signature …… Date …….
JOB KIBIWOTT BASKWONY
SBE/MLS/002/18

Declaration by Supervisors

This research thesis was submitted for examination with our approval as the University supervisors.

Signature……. Date ……
DR EDWIN KIMITEI
Lecturer School of Business and Economics
Department of Marketing and Logistics Management
Moi University

Signature……. Date ……
DR STANLEY KIPSANG
Lecturer School of Business and Economics
Department of Management Science and Entrepreneurship
Moi University

DEDICATION

I dedicated this thesis to my lovely wife Joan Jemeli Tanui, Sons: Shem and Nimrod, My daughters Sandra and Zawadi. Special thanks to my daughter Joan Koech who provided various forms of support and encouragement.

ACKNOWLEDGEMENT

I acknowledged God above everything else. I am grateful to my supervisors Dr. Edwin Kimitei, Dr. Stanley Kipsang for their guidance throughout my research work. Their professional advice was very essential for the completion of this thesis. My special thanks went to my family members, friends, and colleagues for their support and understanding. Above all, glory and honour were to God for His grace that enabled me to be where I was and for blessing the work of my hands.

ABSTRACT

Public universities in Kenya experienced poor supply chain performance due to failures in on-time product delivery by suppliers who failed to respond quickly to deliver agent shipments of item components. Organizational performance in higher education was not necessarily related to academic standards. Universities had to establish procedures to monitor the quality of graduates. The main purpose of the study was to investigate the moderating effect of information technology on the relationship between supply chain integration and organizational performance of Public Universities in Western Region Kenya. The study was guided by the following specific objectives: to investigate the effect of integration communication, customer focus integration, stakeholder collaboration, and supply chain cooperation on the organizational performance of public universities. To investigate the moderating effect of information technology on the relationship between integration communication, customer focus integration, stakeholder's collaboration, supply chain cooperation and organizational performance in Public Universities. The study adopted an explanatory survey research design. The target population of the study was 186 employees from the selected departements from three universities in the Western Region of Kenya This study adopted census method where all the respondents was included in the study since the target population was small and manageable while carrying out the study. This implies all the 186 respondents were used in this study. Data were collected using questionnaires. Data collected was analyzed using descriptive and inferential statistics with the aid of Statistical Package for Social Scientists (SPSS) version 25. Descriptive statistics included frequency, percentages, means, and standard deviations, while inferential statistics included correlation and hierarchical regressions. Frequency tables were used to present the collected data for ease of understanding and analysis. The study findings showed that integration communication had a positive and significant effect on organizational performance (β_1=0.222, p=.002). Customer focus integration practice had a positive and significant effect on organizational performance (β_2=0.303, p=.000). Stakeholder's collaboration practice had a positive and significant effect on organizational performance (β_3=0.286, p=.003). Supply chain cooperation had a positive and significant effect on organizational performance (β_4=0.224, p=.000). Information technology had a negative moderating effect on the relationship between integration communication practice and organizational performance (β=-0.051, p=.015). The information technology had a moderating effect on the relationship between customer focus integration practice and organizational performance (β=0.048, p=.029). Information technology had a moderating effect on the relationship between stakeholder's collaboration practice and organizational performance (β=0.092, p=.000). Information technology had a positive moderating effect on the relationship between supply chain cooperation and organizational performance (β=-0.086, p=.000). The study concluded that supply chain integration plays a role in the growth and competitiveness of the university. Customer wants and expectations guide the performance of public universities and acknowledged the importance of good customer relations and the appreciation of services offered by university staff. The university's involvement in enhancing responsiveness to customer demands through communications and recognized the importance of internal synergy for effective solution delivery and performance. The study recommends that public universities should invest in IT infrastructure and prioritize IT tools and systems to enhance communication and decision-making processes. It also highlights the need for IT skills training and development for staff members involved in supply chain management.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

DEFINITION OF TERMS

Customer focus integration is a business philosophy that places the customer at the center of all business development and management decisions (Ojasalo & Ojasalo 2018).

Integration communication refers to an approach used by organizations to brand and coordinate their communication efforts (Muhammedrisaevna et al., 2020).

Stakeholder's collaboration is a process through which groups with similar or different. perspectives can exchange viewpoints and search for solutions that go beyond their own vision of what is possible (Elia, Margherita & Passiante, 2020).

Supply chain cooperation refers to aligning the activities of two or more organisations in the supply chain to coordinate the supply of goods or services, creating a competitive advantage through improved service or efficiency improvements (Liao, Hu & Ding, 2017).

Supply chain Integration refers to a process where all parties involved with the fulfilment of a product are integrated into a single system (Khan & Wisner, 2019).

Supply Chain is a network between a company and its suppliers to produce and distribute a specific product or service (Min, Zacharia & Smith, 2019).

LIST OF ABBREVIATION

BSC	Balanced Score Card
CUE	Commission for University Education
ERP	Enterprise Resource Planning
FM	Facilities Management
HE	Higher Education
ICT	Communication Technology
IT	Information Technology
NGO	Non-Governmental Organisations
NIE	National Implementing Entity
NSFAS	National Student Financial Aid Scheme
OLS	Ordinary Least Square
RBV	Resource Based Theory
SCM	Supply Chain Management
SPSS	Statistical Package for the Social Sciences

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter outlines the background of the study, statement of the problem, objectives of the study, hypotheses of the study, significance and the scope of the study.

1.1 Background of the Study

Performance can be viewed as the extent to which an entity accomplishes objectives of an organization in order to achieve the overall goal (Forés & Camisón, 2016). Traditional firms used accounting measures of performance as indicators of how well the goals were being achieved. However, managers realized that financial component alone was not reliable as a single measure. More indicators were required to provide clear view of the performance. Financial measures did not also indicate the critical areas of a business that required a closer focus. Kaplan and Norton (2017) introduced the Balanced Score Card (BSC) that provided a wider view of organizational performance in terms of financial, customer, learning and growth as well as internal processes. It was further expanded BSC to include corporate social responsibility and environmental concerns to theorize a sustainable balanced score card model.

Performance of universities can be reflected better by both financial and non-financial measures of performance. This is because universities have multiple, contradictory and complex missions that include teaching, research, service to communities and revenue generation (Eneizan, Abd-Wahab & Obaid, 2016). In support of the varied goals of universities, a variety of measures have been used successfully in assessment of performance of universities in line with their objectives. Some of the measures include education mission that had indicators such as number of programs, student enrolment,

student lecturer ratio, class size, number of graduates and academic pathways (Wang & Degol, 2016).

Higher education has undergone far-reaching changes in most countries in recent years. University systems are in the midst of profound transformation and institutions are under growing competitive pressure to improve their performance (De Boer, Enders & Schimank, 2018). This tendency to introduce market mechanisms in education and extend more professional management systems to universities has translated into the appearance on the scene, unprecedented in some countries, of public universities, many as for-profit organizations (McAdam & Scott, 2017). Most of the universities were founded in the 1990s or later in response to a policy geared to enhancing performance in higher education by heightening competition. Public universities, particularly the for-profit kind, conduct research less intensively than public institutions. Their contribution to this, the public good dimension of the university mission, is consequently still scant, for their focus is on teaching (Zhang, Tian, Ni & Fang, 2020).

Organizational performance in higher education is not necessarily related to academic standards universities (colleges) must establish procedures to monitor the quality of graduates (Irmayani, Wardiah & Kristiawan, 2018). This can be done through formal survey processes or informal feedback. For example, the evaluation of the education in different universities and colleges does not clarify the reasons why some companies prefer particular graduates (Pitkänen & Lukka 2016). It may be because certain companies need to hire individuals that have received training in a particular academic field. Improvement in the quality of graduates begins with the recognition of graduates' position in the labor market and also the demands of possible employers (Sparr, Knipfer & Willems, 2017).

According to Stevens and Johnson (2016) supply chain integration is a process where all the parties involved with the fulfilment of a product are integrated into a single system. This requires significant coordination and alignment in order to ensure everyone is effectively working toward the same goal at all times. This integration includes; integration communication, customer focus integration, stakeholder's collaboration and supply chain cooperation. Having the parts required for a product show up where they are needed, when they are needed, helps to not only prevent delays in the manufacturing process, but also eliminates a lot of wasted time, storage space, and more. When done properly, supply chain integration will bring parties that are often at odds together with a single focus.

Integration communication is essential for ensuring that all parties involved in the supply chain are aligned and informed. Effective communication facilitates the swift exchange of information regarding inventory levels, production schedules, and demand forecasts. When organizations prioritize integration communication, they can achieve a more synchronized flow of materials and information, which is crucial for operational efficiency. Organizations with robust communication channels experience fewer disruptions and delays, leading to improved performance metrics such as reduced lead times and enhanced customer satisfaction (Cheruiyot, 2018). Moreover, effective communication helps in identifying potential risks early, allowing for proactive measures to mitigate them, thus contributing positively to overall organizational performance.

Customer focus integration emphasizes the importance of aligning supply chain activities with customer needs and preferences (Hendijani & Saeidi Saei, 2020). By integrating customer feedback into the supply chain processes, organizations can tailor their offerings more effectively, leading to higher customer satisfaction and loyalty.

Organizations that actively engage in customer focus integration tend to have better demand forecasting capabilities, which reduces the likelihood of overproduction or stockouts (Bernabeu, 2024). This alignment not only enhances service delivery but also fosters innovation, as organizations are more likely to develop products that meet actual market demands. Consequently, a strong customer focus integration contributes significantly to operational performance by ensuring that resources are utilized efficiently to meet customer expectations.

Stakeholder collaboration involves fostering relationships among various parties within the supply chain, including suppliers, customers, and internal teams (Ali & Haapasalo, 2023). Collaborative efforts lead to shared goals and mutual benefits, which can enhance trust and transparency across the supply chain. Effective stakeholder collaboration can reduce costs associated with logistics and inventory management while improving responsiveness to market changes (Richey et al., 2022). By working together towards common objectives, stakeholders can identify inefficiencies and streamline processes, ultimately leading to improved operational performance.

Supply chain cooperation refers to the collaborative efforts among all entities involved in the supply chain to optimize performance collectively (Sudusinghe & Seuring, 2022). This cooperation is vital for ensuring that materials arrive at the right place at the right time, thereby minimizing delays and reducing waste. Organizations with high levels of supply chain cooperation experience significant improvements in their operational metrics due to enhanced coordination of activities. Effective cooperation allows for better inventory management and resource allocation, which translates into cost savings and improved service levels. Additionally, when organizations work closely with their supply chain partners, they can collectively address challenges such as demand variability and supply disruptions more effectively.

As there are many higher education institutions, Spain has become increasingly aware of their impact on the environment. The universities have made substantial efforts to enhance their understanding of the environmental dimensions of their operations and the implications and impact of higher education activities (Salinas & Lozano, 2019). The management therefore play a catalytic role in societies' engagement with sustainability. In this line, the concept of a sustainable university is broad and includes consideration of a sustainable university as a higher education institution, as a whole or as a part, that addresses, involves and promotes, on regional or global level, the minimization of environmental, economics, societal, and health negative effects in the use of their resources in order to fulfill its main functions of teaching, research, outreach and partnership, and stewardship among other as a way to helping society make the transition to sustainable life styles (Subhash & Cudney, 2018). Therefore, management need to assume their responsibilities in education research, on-campus operations and community outreach with greater integrity and transparency. This can be reflected, for instance, in resource allocation planning and commitment to sustainable development (Worthington, Stanley & Smith, 2020).

The output performance of Malaysian public universities appeared to be incommensurate with the high amount of Malaysian public spending in higher education (Lamba & Subramanian, 2020). The public universities might be inefficient in utilizing the inputs (including the government funds), i.e., occurring of input slacks. The large amount of higher education spending from public funds and the relatively low performance warrant a careful examination on the efficiency of the public universities in Malaysia.

In Bulgaria, the higher education sector has the following characteristics, high public spending of public universities, reformation to cut public higher education funding, and

searching for mechanism to allocate limited public funding on higher education. Bulgarian public universities are less efficient as compared to private universities, and public funding of higher education is negatively related to efficiency. The current allocation of public funding is claimed to be not based on the efficiency because it was found that less efficient institutions were allocated larger funding as compared to the more efficient ones (Hock-Eam et al., 2016).

The Higher Education (HE) system in South Africa has been going through an exercise of transformation in order to redress the educational imbalances of the past. The funding of HE institutions (HEIs) was one of the changes used to transform the HE system in South Africa (Fomunyam, 2017). The transformation agenda of HE led to the expansion of HE which put serious constraints on state funding of HEIs and those from poor backgrounds accessing HE. The post-apartheid government established a mechanism of increasing access to HE by providing the National Student Financial Aid Scheme (NSFAS) to poor deserving students through integration communication and stakeholder's collaboration. This massification triggered a funding crisis, highlighting the need for improved methods of assessing and analysing efficiencies, as well as a clearer understanding of HE funding (Vincent & Chiwandire, 2019).

In Nigeria, accredited public universities grew from 3 in 1999 to 34 by August 2009, a ten-year growth of over 1133%. Ghana's accredited public universities moved from 3 in 1999 to 52 by December 2009. The percentage increase for the decade was 1733%. These two scenarios alone are enough to portray the alarming rate at which public universities are springing up (Alabdulmenem, 2017). The same could be said about their enrolment over the years. Although, public university education is rather new, it has contributed to the ever-increasing amount of enrolment in higher education in these countries.

Kenyan Universities, both Public, have embarked on a rapid expansion of their programmes and decentralization of campuses leading to rising enrolment rates despite diminishing financial resources (Bisaso, 2017). Public universities are also referred to as state universities since they are funded by the exchequer (O'Connor,2018). Over the years, the government has placed great emphasis on education whose role in promoting socio-economic and political development cannot be gainsaid whatsoever. Indeed, that is why the government has been keen to rapidly expand university which as in the recent past posed serious challenges to the leaders and managers of the universities.

Universities students demand as well as expectations have been rapidly growing. Universities students of quality education has also increased the risk of supply chain disruptions due to the diversified nature of supply chain operations. These supply chain disruptions can be harmful to institutions, as they can lead to a temporary shut-down of operations. Although there are various methods to ensure the continuous flow of products such as increasing safety stocks or use of back-up sourcing, the development of supply chain integration can more effectively reduce the impacts of supply chain disruptions (Tse et al., 2016). Therefore, the current study sought to investigate the effect of supply chain integration on organizational performance of public universities in Western Region Kenya.

1.2 Statement of the Problem

Universities are essential in the economy of the country as they are the link between the problems that the country is facing and provides the way out in order for the economy to be stable. Despite the acknowledgement of the universities in the economy, the public universities experiences a lot of challenges. For instance, there was the issue of missing marks by students, lack of adequate funding on their projects and

infrastructures, which really affected the operation and financial performance of the institutions.

Universities in Kenya had poor supply chain performance due to suppliers' failure to produce on-time products because they failed to respond swiftly to agent shipments of item components (Mwilu & Chirchir, 2013). As a result of the poor Supply Chain Management (SCM) tactics chosen, public university procurement failed to meet the bottom line of maximizing procurement efficiency and optimizing savings.

Due to insufficient supply, public university supply chain methods resulted in late delivery, as well as large stock outs, resulting in inventory waste. This was primarily due to public colleges' incapacity to forecast item, material, and equipment capacity requirements. This was in addition to the unpredictability of receiving timely goods deliveries from the supplier. As a result of inadequate supply chain integration and a lack of visibility of demand and supply information throughout the supply chain, the bullwhip effect occurred.

While many studies had been conducted on the impacts of supply chain integration, agility, and external learning on a firm's organizational performance (for example Tse et al., 2016; Zhao et al., 2013; and Khan and Pillania, 2008), there was still a problem on the organizational performance of public universities in terms of supply chain integration in the Western Region of Kenya.

Despite existing studies on supply chain integration and its effects on organizational performance, there remains a lack of focused research addressing how these dynamics specifically impact public universities in this region. The challenges faced by these institutions, such as late deliveries, stockouts, and inadequate forecasting capabilities, underscore the urgency for enhanced supply chain practices. The introduction of

information technology (IT) as a moderating variable is essential to address these challenges. IT can facilitate better communication and data sharing across the supply chain, thereby improving visibility and responsiveness. By leveraging IT solutions, public universities can enhance their procurement processes, reduce delays, and optimize inventory management. This integration not only aims to mitigate the bullwhip effect caused by poor supply chain visibility but also supports strategic decision-making through real-time data analytics. Therefore, the current study sought to fill the gap by investigating the effect of supply chain integration on the organizational performance of public universities in the Western Region of Kenya.

1.3 Objectives of the Study

The study was guided by both general and specific objectives.

1.3.1 General Objectives

To investigate the moderating effect of information technology on the relationship between supply chain integration and organizational performance of Public Universities in Western Region Kenya.

1.3.2 Specific Objectives

i. To investigate the effect of integration communication on organizational performance of Public Universities in Western Region Kenya.
ii. To assess the effect of customer focus integration on organizational performance of public universities in Western Region Kenya.
iii. To evaluate the effect of stakeholder's collaboration on organizational performance of public universities in Western Region Kenya.
iv. To establish the effect of supply chain cooperation on organizational performance of public universities in Western Region Kenya.

v. a) To investigate the moderating effect of information technology on the relationship between integration communication and organizational performance Public Universities in Western Kenya

b) To investigate the moderating effect of information technology on the relationship between customer focus integration and organizational performance Public Universities in Western Kenya

c) To investigate the moderating effect of information technology on the relationship between stakeholder's collaboration and organizational performance Public Universities in Western Kenya

d) To investigate the moderating effect of information technology on the relationship between supply chain cooperation and organizational performance Public Universities in Western Kenya

1.4 Hypotheses of the Study

H_{01} Integration communication has no significant effect on organizational performance of Public University in Western Region Kenya.

H_{02} Customer focus integration has no significant effect on organizational performance of Public University in Western Region Kenya.

H_{03} Stakeholder's collaboration has no significant effect on organizational performance of Public University in Western Region Kenya.

H_{04} Supply chain cooperation has no significant effect on organizational performance of Public University in Western Region Kenya.

H_{05a} Information technology has no significant moderating effect on the relationship between integration communication and organizational performance of Public University in Western Kenya.

H_{05b} Information technology has no significant moderating effect on the relationship between customer focus integration and organizational performance of Public University in Western Kenya.

H_{05c} Information technology has no significant moderating effect on the relationship between stakeholder's collaboration and organizational performance of Public University in Western Kenya.

H_{05d} Information technology has no significant moderating effect on the relationship between supply chain cooperation and organizational performance of Public University in Western Kenya.

1.5 Significance of the Study

The study is expected to enable public university management to improve on the management of their supply chain practices and evaluate their organizational performance in order to achieve efficiency in their supply chains. The study will highlight the weaknesses in the supply chains and enabled managers in public universities to develop measures to improve organizational performance in their supply chains. The study would have enabled an assessment to be done on how service levels could be improved with proper measurements in place.

The academic community will gain from the findings since it would have acted as a source point for empirical data on SCM practices and also identified areas for further study. The study will help the government and Commission for University Education (CUE) to promote good governance, transparency, and increased accountability in public universities.

1.6 Scope of the Study

The study sought to investigate the influence of supply chain integration on the organizational performance of public universities in the Western Region. The study variables were integration communication, customer focus integration, stakeholder collaboration, and supply chain cooperation on organizational performance. The study adopted an explanatory survey research design. The study was conducted in universities in the Western Region. The study was conducted between May 2023 and October 2023. The target population are the university employees from the selected department from the three universities in western region.

1.7 **Limitation of the Study**

The study was limited to 186 employees from three public universities in the Western Region of Kenya. This relatively small and specific sample size may limit the generalizability of the findings to other regions or types of universities. The data were collected using questionnaires, which rely on self-reported information, where respondents may provide answers they believe are expected rather than their true opinions or behavior. The study adopted an explanatory survey research design, which is typically cross-sectional. This means data were collected at a single point in time, limiting the ability to infer causality or observe changes over time.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

The chapter reviewed relevant the concept of organizational performance of public universities in kenya, the concept of supply chain integration, the concept of information technology, theoretical review, effect of supply chain integration on performance of public universities, summary of literature and gaps and conceptual framework.

2.1 The concept of Organizational Performance of Public Universities

Universities' primary objectives were to pursue and transmit knowledge. Universities could be regarded as offering three major categories of output: highly qualified manpower, research and scholarship, and various other social benefits, such as contributions to 'national culture' or valuable contributions to the life of their local communities (Giuri, Munari, Scandura & Toschi, 2019). Clearly, some of these outputs were much easier to measure than others.

Organizational performance indicators included internal measures, such as first-degree graduation rates, success rates of higher degrees, and the attraction of research funds. External measures included the acceptability of graduates in employment, staff publications, and patents. Operating measures included unit costs, staff/student ratios, and staff workloads (Nerad, 2020). Measuring the organizational performance of universities could help drive improvement in the postsecondary system. Traditional measures of institutional performance had been based on input measures, which said little about how students and institutions were performing (Hoare, 2021).

Performance measures should have been based on outcomes and linked to the government's priorities and goals. An outcomes-based performance measurement system emphasized educational quality, equity of opportunity, and financial sustainability (Weingarten et al., 2019). Furthermore, there were seven outcomes-based metrics to measure university performance: students' skills, graduate outcomes, economic and social mobility, students' transfer patterns and graduation rates, and the financial sustainability of institutions (Pitman, Roberts, Bennett & Richardson, 2019).

Organizational performance encompassed three specific areas of a firm's outcomes: financial performance, product market performance, and shareholder return. Performance was something that all education institutions strived for, regardless of their size. Small institutions wanted to grow bigger, and big institutions wanted to grow even bigger. Indeed, institutions had to grow every year at least, to accommodate the increased educational needs that had emerged over time (Holt, Carr & Barnett, 2017). Measuring performance in education was very important. If an academic institution wanted to deliver quality results, then it should have evaluated its performance. Performance was a broader indicator that could include productivity, quality, consistency, and so forth. On the other hand, performance measures could include results, behaviors, and relative measures, education and training concepts, management development, and leadership training for building necessary skills and attitudes of performance management (Singh, Darwish & Potočnik, 2016).

Organizational performance, however, meant different things to different institutions. There were many parameters an institution could have used to measure its performance. Since the main goal of most business organizations was profitability, most organizations measured their performance in terms of profits (Obeidat, 2016). However, most educational institutions were nonprofit, and their leaders could have

used one of the following criteria for assessing and measuring their performance: number of employees, number of students, resolution of conflicts, employees' and students' complaints, increased market share, financial sustainability, technology and innovation, and availability of facilities. Ultimately, the success and performance of an institution would have been gauged by how well the institution did relative to the goals it had set for itself (Temple, 2018).

The phenomenon that often distinguished good organizations from bad ones could have been summed up as organizational culture. Well-managed organizations apparently had distinctive cultures that were, in some way, responsible for performance (Mwangi & Waithaka, 2018). Every organization had a culture that exerted powerful influences on the behavior of employees and managers, and it could have been one of the most important means of improving performance in any organization. In this context, the performance of public universities would have been anchored on their ability to offer quality and relevant higher education to the learners and also provide meaningful employment to the staff and other stakeholders. Performance would have been measured through the number of students the institution was able to accommodate, attract, and retain, the ability and goodwill to resolve conflicts, the technology in place and innovations by the institution, and the availability of sufficient and conducive learning facilities (Sueldo & Štreimikienė, 2019).

2.2 The Concept of Supply Chain Integration

Supply chain integration essentially meant that the information and communication systems of all stakeholders were able to seamlessly exchange information throughout all planning, execution, and completion of transport and logistics operations throughout a product's lifetime (Manavalan & Jayakrishna, 2019). Supply chain integration was recognized as an important factor in attaining superior supply chain performance, as it

offered a host of competitive advantages, including compete transparency from supplier to customer. This could easily be achieved with the MIXMOVE cloud platform. By adding our solution on top of your existing solutions, you could get all the information you needed to make the right decisions without interfering with your existing IT landscape (Pundir et al., 2019).

Information about the goods and services being moved was as important as the goods themselves in supply chains. Without information, it was not possible to deliver the goods to the right receiver and plan operations properly. In times when sourcing was local, there was little pressure on lead times, and users had to be content with standard products (Kshetri, 2018). Today, few supply chains were local; most of them were global. Customized deliveries dominated, buyers wanted to decide where and when to have the product delivered, and they wanted to know the status of the delivery at all times. Buyers even wanted to change their mind about things after the product was competed and under transport (Kumar, Heustis & Graham, 2015).

All supply chains were integrated to some extent. One objective of increasing integration was focusing and coordinating the relevant resources of each participant on the needs of the supply chain to optimize the overall performance of the chain (Mandal, 2017). The integration process required the disciplined application of management skills, processes, and technologies to couple key functions and capabilities of the chain and take advantage of the available business opportunities. Goals typically included higher profits and reduced risks for all participants (Wong, Wong & Boon-Itt, 2015).

Supply chain integration was a continuous process that could be optimized only when OEMs, customers, and suppliers worked together to improve their relationships and when all participants were aware of key activities at all levels in the chain (Yu & Huo,

2018). First-tier suppliers could play a key role in promoting integration by guiding and assisting lower-tier suppliers. In an example of multi-tier integration, Wal-Mart thoroughly integrated P&G's Pampers product line into its supply chain. P&G, in turn, worked with 3M to integrate its production of adhesive strips with Pampers manufacturing facilities (Min, Zacharia & Smith, 2019).

A supply chain involved a series of steps to get a product or service to the customer. The steps included moving and transforming raw materials into finished products, transporting those products, and distributing them to the end-user (Andiyappillai, 2020). The entities involved in the supply chain included producers, vendors, warehouses, transportation companies, distribution centers, and retailers. The elements of a supply chain included all the functions that started with receiving an order to meeting the customer's request. These functions included product development, marketing, operations, distribution networks, finance, and customer service (Ansari & Qureshi, 2015).

2.3 The concept of Information technology.

Information technology (IT) involved the study and application of computers and any type of telecommunications that stored, retrieved, studied, transmitted, manipulated data, and sent information (Wu, Wang & Zou, 2018). Information technology involved a combination of hardware and software that was used to perform the essential tasks that people needed and used on an everyday basis. Most IT professionals worked with an organization and technically understood what they needed in order to meet their needs, showing them what the current technology was that was available to perform their required tasks, then implementing the current technology in the setup, or creating a whole new setup. Information technology in today’s world understated the scope of

the critical career field. There was much-unexpected importance in Information Technology (Tokognon, Tian & Yan, 2017).

The importance of Information Technology in business was vast. It helped each and every business sector in automating its processes and systems to target objectives, generate revenue, and reduce the inefficiency of their work (Gilchrist & Gilchrist, 2016). The value of Business information technology was increasing day by day in areas such as commercial transactions, to fulfill the demands of customers and regulatory requirements. The purpose behind Business Information Technology was to fulfill the everyday growing needs of industries and to fulfill the growing expectations of customers in every field. To maintain the balance between complex computer systems and the right practices of business, employers eyed sound business information technology (Pereira, Barreto & Amaral, 2017).

Business IT backed the companies in a hardware system, software, system, and all the changes in procedures. With proper technology management, serving customers became really easy as it helped in increasing employee engagement, gave access to information, and provided flexibility in responding to business challenges (Baiyere, Salmela & Tapanainen, 2020). To get success in any business field, there were two non-tangible things including relevant knowledge and information that were very important. Business information technology effectively combined management skills and communication technology with the competency of information. With a sound communication system and information, the company could minimize its risks, strengthen its system, and give support to its business strategies (Madakam, Holmukhe, & Jaiswal, 2019).

Information technology helped to build and grow the commerce and business sector and generated the maximum possible output (Mehmood, 2021). The time taken by different sectors to generate business was now minimized with advancements in Information technology. It provided electronic security, storage, and efficient communication. To conduct the work, Information technology needed computer applications. Computers connected IT to the different organizations of the world. It helped the employees maintain records of their numerous clients of various companies (Shao & Lin, 2016).

2.4 Theoretical Review

The study was guided by Relational Theory, transaction cost theory, and resource-based view theory.

2.4.1 Relational Theory

The study was guided by Relational Theory developed by Edgar Codd in 1970. Relational Theory posits that data can be structured in a way that allows for easy access and manipulation through a system of tables (relations). Each table consists of rows (tuples) and columns (attributes), enabling complex queries and operations on the data.

Relational Theory is built upon several foundational assumptions, including. All attributes can be combined freely into relation schemes, allowing for a comprehensive view of data. When relations are decomposed into smaller tables, they can be recombined without loss of information. Relationships between attributes dictate how they can be combined and queried. These assumptions guide the design and implementation of relational databases, ensuring that they are both efficient and effective in handling complex data relationships.

This theory argued that exchange transactions necessarily occurred in a 'social matrix' and followed characteristic 'relational patterns'. The theory suggested, therefore, that a purely economic analysis of buyer-supplier relationships, based on rational calculations of advantage in single, discrete exchanges, was likely to be of limited utility in explaining real-world behavior. Moreover, a buyer-supplier relationship could not be understood solely in terms of the contract that created its legal basis because there were also important 'relational norms' such as flexibility, solidarity, and reciprocity that derived from the social context of an exchange.

Relational theory was characterized by a view of contracts as relations rather than as discrete transactions. Thus, even a simple transaction could properly be understood as involving a wider social and economic context. For instance, if A purchased a packet of cigarettes from a shop he had never been into before and would never enter again, that seemed quite discrete. However, an almost certainly had a loyalty to a particular brand of cigarettes and expectations about quality about which he would have been prepared to complain to the manufacturer, although he had no contractual privity with the manufacturer. Other characteristics of relational contract theory were that "contract" was understood to cover economic exchange in general, not just contracts that would be recognized as legally enforceable agreements by courts in any given jurisdiction, that relations were mostly held together by their own internal values and wider social/economic factors, and, at least in relational theory in the MacNeil mold, that exchange relations were governed by a number of norms. This last was not to say that relational contract theory was normative in nature, setting out what ought to be the case properly, but rather that there were actual observable normal characteristics or factors at play in relations.

In line with this, it was also assumed that inter-firm networks might be more efficient arrangements for achieving a resource-based advantage than single firms (Dyer and Nobeoka 2000). The relational view provided a good fit with the collaborative arrangements studied, as the organizations were trying to establish an ongoing relationship that could create value that otherwise could not be created by any of the organizations independently. As the relational view had been used successfully to explore buyer-supplier relations (Chen & Paulraj 2004), the theory had the potential to shed light on buyer-buyer relationships.

In the public sector context of our study, if we substituted the concept of competitive advantage with that of "relational rent," the relational view had significance. We defined the concept of relational rent as an advantage generated collaboratively in an exchange relationship that could not be generated by either organization in isolation and could be created only through the joint idiosyncratic contributions of the specific collaborating organizations. Thus, organizations might benefit more by collaboration than by acting alone because of economies of scale, process, and/or information. Collaboration might reduce waste in the procurement system, achieve better outcomes for taxpayers, and, hence, improve the overall socioeconomic position

2.4.2 Transaction Cost Theory

The transaction cost concept was formally proposed by Ronald Coase in 1937 to explain the existence of firms. He theorized that transactions via market mechanisms incurred costs, particularly the costs of searching for exchange partners and making and enforcing contracts. The firm emerged because it had lower transaction costs than the market. However, the firm could not endlessly expand because it also had its internal (nonmarket) transaction costs, such as administrative and coordinating costs, as well as the cost of preventing opportunistic behavior among employees. The latter had emerged

as a significant subfield in NIE and more generally in economics—the principal-agent problem, which was often considerable when people were employed in large businesses and government organizations.

Transaction cost theory was based on two central assumptions regarding human behavior; these were "opportunism" and "bounded rationality." Opportunism referred to offering incomplete and/or inaccurate information during both the negotiation and implementation of economic transactions. A concrete example was contracts in which middlemen were allowed the ability to put their interests before others. After opportunism, "bounded rationality" was the other central behavioral assumption of transaction cost theory. This assumption argued that individuals tended to be rational merely in intent rather than being rational in the absolute sense due to the imperfections inherent in humans' creation and therefore in their ability to rationalize. In practice, the assumption of "opportunism" made by transaction cost theory suggested that agreements based on unreliable promises might place individuals in difficult situations, whereas the assumption of "bounded rationality" suggested that all agreements would be, without exception, incomplete agreements.

The use of information technology in SCI facilitated the reduction of coordination costs. It was now a fact that the use of IT in electronic marketplaces reduced the cost of searching for information about product offerings and prices. Similarly, collaboration through information sharing could lower transaction costs, reduce supply chain uncertainties, and ease the cost of contracting. Kim, Roberts, and Brown (2016) observed that when a supplier was unable to accurately predict the price of his product inputs, he would be reluctant to enter into a contract that locked him into a fixed price for an extended period of time. The manufacturing sector's supply chains had historically experienced uncertainty due to uncertainties in supply, demand, new

product development, and technology. The transaction cost theory clarified our understanding of how firms were linked together through supply chain integration.

Firms, like in our case public universities, chose transactions that economized on supply chain costs. As information and communication technology continued its rapid cost performance improvement, the unit cost of coordinating transactions approached zero, thus enabling the design of innovative coordination transactions to fit new business needs. Whether a university made or bought, that is, produced for its own needs or procured a good or service from an outside supplier (i.e., in the market), depended largely on the transaction costs of managing the transaction in the firm as compared to mediating the transaction through the market. Which transactions went where depended on the attributes of the transaction, on the one hand, and the costs and competence of alternative modes of governance on the other.

2.4.3 Resource Based View Theory

The Resource Based View (RBV) Theory was developed by Wernerfelt in 1984. The Resource Based View Theory of strategy emphasized the people element in strategy development and highlighted the motivation, politics, and cultures of organizations and the desires of individuals (Jackson, 2014). Resource-based business strategy theories provided an inside-out approach to strategy formulation, emerging to help explain many of the firm performance results that could not necessarily be traced to industry-level factors proposed by industry-based theories. Resource-based theories promoted the development of business strategies that could leverage a firm's unique resources. The RBV was an interdisciplinary approach that represented a substantial shift in thinking, and it helped the study achieve a substantial result.

There were primarily two assumptions of the resource-based view that all the resources of the organization should be heterogeneous and immobile. This was the first primary assumption of the resource-based view theory. Heterogeneous referred to the variation in capabilities and skills from one organization to another. This assumption stated that if all the companies had the same amount and the same type of resources, different strategies would not be employed by different companies. The second assumption was on immobility. This assumption stated that the resources could not move from one organization to another for the short term. Because of this, companies were unable to copy similar strategies like their competitors and implement them in the market.

RBV indicated that better performance could be achieved by unique skills based on supply chain sustainability, reflecting a classical vision regarding business performance and power. Supply chain management integrated with the strategic management level, and the RBV perspective demonstrated how this evolution adapted to the general goals for the company's performance. RBV could explain the importance of new resources in technology, knowledge, and relationships, emphasizing the role of SCM to constantly address changes in the business environment to renew its strategic resources and university performances. The integration of supply chain processes was an essential issue so that public universities in the North Rift region participating in the chain could best manage their resources and produce concise information to improve their own efficiency and productivity, thus improving clients' satisfaction and, consequently, the company's performance.

A first critique was that the RBV lacked substantial managerial implications or 'operational validity. It seemed to tell managers to develop and obtain VRIN resources and develop an appropriate organization, but it was silent on how this should be done. Any applied theory, such as the RBV, lacked an unlimited number of levels of analysis,

for each shift in level took the analysis farther from the empirical level and thus from any practical implications. In the example above, introducing a third-order capability would already lead to an artificial theory that did not make much sense. Gibbert (2006a, 2006b) argued that the notion of resource uniqueness – the melding of heterogeneity and immobility – denied the RBV any potential for generalization, ex definition. One could not generalize about uniqueness. As with the 'applied theory' defense above, we thought this was being overly academic. Rather we agreed with Levitas & Ndofor (2006) that it was perfectly possible to generate useful insights about degrees of resource uniqueness.

2.5 Effect of Supply Chain Integration on Performance of Public Universities

Integration could be defined as the creation of a single firm platform by several firms involved in all aspects of the firms' operations. A supply chain comprised of the suppliers, organization, consumers, and other partners that were involved in the operations of the firm (Xie, Wu, Xiao & Hu, 2016). In an integrated supply chain, there existed seamless linkages of the upstream, downstream, and producing firms in their operations. Customer integration, supplier integration, and internal integration were the elements of supply chain integration in order to ensure the quality of the products was maintained, thereby influencing the overall performance of the firm. The current study, however, focused on the supply chain and performance of learning institutions.

Integration of the supply chain resulted in high responsiveness to customers' demands, reduction in cycle time, transaction visibility, reduction in operational costs, and increased customer service levels (Kwon, Kim, & Martin, 2016). All these resulted in high operational and firms' performance of the supply chain partners. Internal integration aimed at unifying the firms' skills, ideas, and culture, thus enhancing decision making and reducing the conflict of interest, risks, and cost implications

imposed on the firm. Customer integration enhanced greater customer value by being responsive to customer needs through systematic and frequent measurement of customer satisfaction and monitoring the levels of commitment to the customers' needs (Dubey & Sangle, 2019).

2.5.1 Effect of Integration Communication on Organizational Performance

Public universities needed to transform themselves in order to meet the challenges posed by the unfavourable perception by realigning their institutions with the environment, redesigning themselves to achieve new goals, redefining roles and responsibilities, and reengineering their marketing processes and strategies (Masete & Mafini, 2018). The negative perception as a result of the university ranking system played a significant role in negatively affecting the performance of several public universities. Adetunji (2015) expressed that there was a decline in quality and performance of higher institutions brought about by a number of factors, which included demography, poor states of the economy, weak internal capacity, poor governance, poor research activities, brain drain, political interference, incessant industrial actions, unruly and destructive conduct of undergraduates, poor preparation of entering students, an unsuitable policy environment, poor funding, shortages in instructional materials, laboratory equipment, and poor library facilities.

The lack of a marketing communication focus tended to be the result of how IHEs had evolved over time, which hindered the optimal performance of several higher institutions (Yilmaz, 2017). As institutions grew their enrollment and program offerings, they also became increasingly fragmented internally. Typically, this resulted in functions becoming compartmentalized and departments operating without any knowledge of the other parts of the institution, thereby resulting in poor institutional performance (Jackson & Deeg, 2018). Individuals within IHEs tended to view

themselves as part of a distinct department competing for limited organizational resources rather than as part of a comprehensive system working toward common objectives, thereby contributing to the sub-optimal level of performance witnessed in some of the institutions (Rosengren and Dahlén, 2015).

According to Haroon and Malik (2018), communication was mandatory to improve the performance of a team. Communication had a similar status in an organization as that of blood flow in the human body. Therefore, an organization that understood the importance of communication used it in its organizational environment. It made sure of the collaboration of material and human factors and helped an organization evolve an efficacious network of transformation and progress. Effective organizational communication worked only when barriers of communication were managed in a dexterous manner. The following were the barriers that obstructed the smooth flow of effective organizational communication: filtration, elective perception, information overload, emotions, language, silence, communication apprehension, gender difference, and politically correct communication (Suen & Suen, 2019).

As indicated by Olaleye, Ukpabi, and Mogaji (2020), communication strategies had a significant impact on enhancing enrollment among public universities. It was believed that print media (newspapers) was the main channel of communication used by the university to disseminate messages. The majority of the students said that radio was their source of information about the university, although they would prefer to be informed through social media, the internet, and radio respectively in the future. The major challenge faced in the implementation of the communication strategies was a lack of enough finance. Public universities should move from focusing so much on advertising in newspapers and embrace technological advances that the university

students identified with, such as social media platforms like Facebook, MySpace, Twitter, and mobile phones, which had become popular among their target audience.

Amollo (2016) indicated that all four supply chain integration practices had been implemented in public universities in Kenya, with lean practices and information technology sharing implemented to a large extent, while outsourcing of non-core services and strategic supplier partnerships to a moderate extent. On individual supply chain integration practices, the involvement of suppliers in planning for the procurement of new items was the least practiced variable. The study, however, focused on general supply chain practices, unlike the current study, which focused on integrated communication and organizational performance.

2.5.2 Effect of Customer Focus Integration on Organizational Performance

According to Akareem and Hossain (2016), in the past, public universities had values and objectives that did not align well with each other. Public universities had their own niche market segments, which were frequently mixed. It was reported that public university schools showed less attention towards market orientation. The difference that existed between public universities and their counterparts was the enrollment growth of students and the retention rate, which affected the organizational performance of public universities. Therefore, the role of market orientation and customer focus integration in the organizational performance of public universities needed to be investigated independently.

In Liao Hu and Ding's study (2017) on customer focus integration and organizational performance of public universities, they looked into supply chain integration in facilities management (FM) both in a generic business context and specifically in public universities. They extensively reviewed critical elements to ensure the success of

supply chain management (SCM) and collaborative innovation in FM as a service delivery system. Facilities were effectively managed by adopting strategic alliances in SCM with FM suppliers through faster service delivery, increased service efficiency, and cost savings. However, the study failed to indicate how customer focus integration influenced the organizational performance of public universities, as is the case in the current study.

Customer satisfaction largely depended on the quality of services provided by any organization, as noted by Al-Azzam (2015). Fundamentally, concerns about service quality had increasingly become common due to the fact that most customers were well-informed about their sovereignty and right to receive better and quality services. This was widely enhanced by the availability of information on product and service quality. Irrespective of the sector in question, globally, consumers expected to be served well and have their concerns and needs satisfied to their expectations. This was seen both in developed and developing countries, in almost all sectors, including the education sector, which was seen as the vehicle behind economic and social development (Pavlínek, 2016).

Public universities were important vehicles in promoting educational goals in many countries all over the world. They supplemented service delivery, especially when public universities could not have managed to cater to the academic needs due to overwhelming numbers of students soughing higher education services (Lynch, 2015). Alternatively, these institutions were seen as forms of investments, in which case the owners of such institutions benefited economically, as well as created more job opportunities, not only for the faculty members but also for many other professions such as accountants, human resource managers, administrators, planners, medical practitioners, and many other people who were employed in the support staff to help

promote service delivery in such institutions. In this regard, the presence of such institutions was not only a positive contribution to a country's education sector but also to the country's economy in terms of improved gross domestic product (GDP), employment opportunities, and even tax revenues to the government (Rachuonyo & Kiriri, 2018).

The university education sector in Kenya had become very attractive due to changes in the environment. Quality had become an essential business strategy for all sectors, and the implementation of quality management practices had become popular (Chege & Bett, 2019). In actual fact, quality management was an integrative management strategy aimed at the continuous improvement of university performance. Employee involvement in university activities, leadership commitment, and continuous improvement, as well as customer focus, had a significant effect on the university supply chain performance. Top management should facilitate employees for any successful implementation of quality management practices. Universities operating in Kenya should embrace a quality management system to improve their performance (Saffar & Obeidat, 2020).

2.5.3 Effect of Stakeholder's Collaboration on Organizational Performance

Globally, university partnerships and collaborations were identified as key pillars of the tripartite roles of universities namely; Academics, Research, and Civic Engagement (Kombo & Mwangi, 2020). In Africa, there was intensified effort to strengthen university partnerships with the governments, industry, and communities for greater impact on socio-economic development. According to Hagen, Zucchella, and Ghauri (2019), the role of university partnerships was considered a vital driver of not only research and innovation but also capacity development as well as internationalization. In this paper, a multiple case analysis approach was used to explore the strategies being

employed by universities in Kenya with a view to teasing out lessons for advancing partnerships and collaborations in universities in Africa.

The demand for higher education in South Africa continued to increase, placing pressure on public higher education institutions to satisfy this demand. Supply chain integration was one of the practices that could be implemented to ensure that public universities improved their operations and could, therefore, meet the increased demand for higher education in the country. Masete and Mafini (2018) indicated that the administration at the institution had invested limited resources, time, and initiatives to ensure the successful implementation of supply chain management. The focus should have been directed to finding lasting solutions to each of the barriers identified in this study. The study nonetheless focused much on challenges in supply chain integration, unlike the current study which focused on stakeholder collaboration and organizational performance of public universities in Kenya.

Partnership in education development was described as "mutually beneficial relationships between two or more institutions, including businesses, industries, universities, non-governmental organizations (NGOs), school systems, and service organizations" (Harangozó & Zilahy, 2015). An effective education partnership was described by Leahy et al. (2016) as a dynamic collaborative process that brought mutual benefit though not necessarily equal to the parties involved in the partnership. The partners shared the ownership of the project, and their relationship was based on respect, transparency, and reciprocity. Effective partnership in HEIs was characterized by improved curricula, increased research publication, and the number of research proposals (British Council, 2015).

The main objective of supply chain collaboration was to focus on improving the efficiency of inter-organizational relationships from source to consumer, with particular importance on the interfaces of the various operations in the supply chain (Tran, Childerhouse & Deakins, 2016). It was widely believed that partners in the supply chain were all focusing on the same goals of relaying goods and services to end-users at the lowest cost possible. This would enable the supply chain partners to streamline their processes by eliminating waste, adjusting their operations, and improving communications to effectively serve the supply chain (Gumboh & Gichira, 2015). Supply chain collaboration was defined in many ways by different scholars. According to Lee and Ha (2018), supply chain collaboration was defined as two or more firms that formed relationships and worked together to plan and execute supply chain operations. It was a process based on mutual respect, information sharing, and trust, mutual ownership of decisions, and shared responsibility for outcomes.

Incorporation of university-industrial relation collaborations and partnerships into the university academic programs was one way through which the universities responded to change to maintain a competitive advantage (Koigi et al., 2018). McConnell and Cross (2019) observed that university collaborations and industrial relations rapidly became a common practice worldwide, making the partnership and collaborations part of universities' agenda. Partnership was an important aspect of benchmarking; through partnership, organizations were able to share experiences, which helped them build synergies and strengthen weak areas.

Practitioners and academics expected collaboration to matter in public management. Practitioners claimed that collaboration was vital for any modern organization to accomplish its performance goals (Dent & Barry, 2017). For example, New York City Police Commissioner William Bratton explicitly expressed the need for collaboration

in the title of his co-authored book, "Collaborate or Perish." The former director of the USAID mission in Iraq, James Stephenson, claimed that the collaborative relationship between the USAID and the U.S. Army helped resolve many of the interagency problems existing between the two agencies during the U.S. war in Iraq from 2003 to 2014 (Thomas, 2018).

2.5.4 Effect of Supply Chain Cooperation on Organizational Performance

In a census survey of the incorporation in Indonesia, Yunus (2013) in his study established a large extent of supply chain integration in the firms in Indonesia, which was characterized with ERP tools and functional coordination that led to an increase in customer satisfaction through demand planning, a reduction in lead-time, timely delivery, and prompt decision-making. The study used an explanatory analysis and the use of questionnaires to carry out the research, which showed a positive relationship between supply chain integration and organizational performance. However, the study focused on firms in Indonesia, whose mode of operation could be different here in Kenya.

A strategy was required for public organizations to be successful. Supply chain integration began as a sourcing strategy but quickly gained prominence in the academic literature and in practice and grew into a business discipline similar to management, marketing, or operations (Mwenda, 2019). In fact, supply chain integration became such a popular discipline that it was difficult to pick up a manufacturing, distribution, marketing, customer management, or transportation periodical without finding an article about supply chain integration or supply chain integration-related topics. Supply chain integration represented a significant shift in the way organizations function, including changes in the integration and coordination of supply, demand, and

relationships in order to satisfy customers in an effective and profitable manner both in public organizations (Vainikainen, 2018).

Public partnerships in education entailed a model of financing and education provision where public sectors shared the costs and risks of education provision in a manner that involved 'a contracting mechanism used to acquire a specified service, of a defined quantity and quality, at an agreed-on price, from a specific provider, for a specific period (Mgaiwa & Poncian, 2016). PPPs had the potential of enhancing service provision to both students and staff in higher learning institutions. Available scanty evidence in Africa showed that public providers of education helped to make education accessible to the poor in Sierra Leone and to the vast majority of children in the Democratic Republic of Congo (Colombo & Pavignani, 2017).

2.5.5 Moderating Effect of Information Technology on the Relationship Between Supply Chain Integration and Organizational Performance

These studies suggest that ICT adoption and organizational integration of the IT function can directly influence organizational performance by making business processes more efficient and fluid. Ghezali and Boudi (2021) investigated the moderating effect of IT capabilities on the relationship between marketing mix and corporate entrepreneurship in Algerian banks. They collected data from managers working in the upper and middle departments and used simple regression and PROCESS macro with moderated multiple regression to test their hypotheses. They found that IT capabilities positively moderate the relationship between marketing mix and corporate entrepreneurship.

Another study by Almaqtari, Farhan, Al-Hattami and Elsheikh (2023) examined the moderating role of information technology governance in the relationship between

board characteristics and continuity management during the Covid-19 pandemic in an emerging economy. They used a quantitative approach and collected data from various respondents. They found that IT governance significantly moderates the effect of board size, board independence, board diligence, audit committee independence, audit committee diligence, and external audit on business continuity management. In a study by Song, Yoon and Kang (2020), the moderating effect of IT spending on the relationship between diversification and firm performance was explored. They used data from the US service sector and found that IT spending positively moderates the relationship between diversification and firm performance.

Joseph (2022) examined the impact of information and communication technology (ICT) adoption on organizational performance during the COVID-19 pandemic. The study found that ICT adoption can directly influence organizational performance by making business processes more efficient and fluid. However, the study also noted that there are still many open questions regarding the hypothetical positive relationship between ICT adoption and organizational performance. Alzoubi and Yanamandra (2020) examined the impact of information technology on organizational communication, with a focus on the mediating role of organizational structure. The study found that adopting more advanced information technologies and organizational structures are critical factors for increasing performance and achieving organizational goals. The study also recommended strengthening information technology and organizational communication through organizational initiatives such as training, developed work plans, and benchmarking practices.

Yunis, El-Kassar and Tarhini (2021) investigated the impact of ICT implementation on organizational performance. The study found that ICT has significant positive effects on the growth of companies. Melville, Kraemer and Gurbaxani (2022) integrative

model of IT business value and examined the relationship between information technology and organizational performance. The review found that IT management influences firm performance by enabling key organizational capabilities through information systems. Liao, Wang, Chuang, Shih and Liu (2021) investigated the impact of the organizational integration of the IT function on firm performance. The study found that the organizational integration between the IT function and the firm's customers positively influences market performance, through the mediating effect of the cooperation of information systems to cooperative capabilities.

2.6 Summary of Literature and Gaps

Research primarily focuses on specific regions, such as Kenya. For instance, Masete and Mafini (2018) highlight supply chain integration within Kenyan public universities. Comparative studies in other regions, like South Africa or Europe, could reveal how geographical context influences these practices.

Yunus (2013) discusses supply chain integration in Indonesia but does not extend findings to other regions like Africa or developed countries. Future studies could explore similar dynamics in underrepresented areas to provide a broader understanding. Akareem and Hossain (2016) note that public universities often have misaligned values and objectives. Research could investigate how different types of institutions (technical colleges vs. research universities) implement supply chain integration differently.

Adetunji (2015) identifies challenges affecting higher education performance but does not explore how external factors like political instability or economic downturns influence supply chain integration effectiveness. Existing studies often rely on established theories without adapting them to the unique context of public universities. For example, Dubey & Sangle (2019) discuss customer integration but do not tailor

their framework specifically for educational institutions. Developing new frameworks that account for the specific challenges faced by public universities could be beneficial. Liao Hu and Ding (2017) review supply chain integration but do not fully integrate dimensions like customer focus within the context of public universities. A comprehensive model that includes all dimensions could enhance understanding.

Many studies, such as those by Haroon and Malik (2018), primarily use quantitative methods. Incorporating qualitative approaches could provide deeper insights into stakeholder experiences and perceptions regarding supply chain practices. Research by Olaleye et al. (2020) often uses limited samples, which may not represent the broader population of public universities. Future studies should aim for larger and more diverse samples to enhance generalizability. Most research is cross-sectional, as seen in Ghezali and Boudi (2021). Longitudinal studies could better capture the long-term effects of supply chain integration on organizational performance over time.

2.7 Conceptual framework.

The conceptual framework was presented in Figure 2.1. The diagram below showed that there were four independent variables of integration communication, customer focus integration, stakeholder collaboration, and supply chain cooperation, and dependent variables of Organizational Performance of Public universities. It showed the rational link among the variables. From the above discussion, the research model was as shown in Figure 2.1.

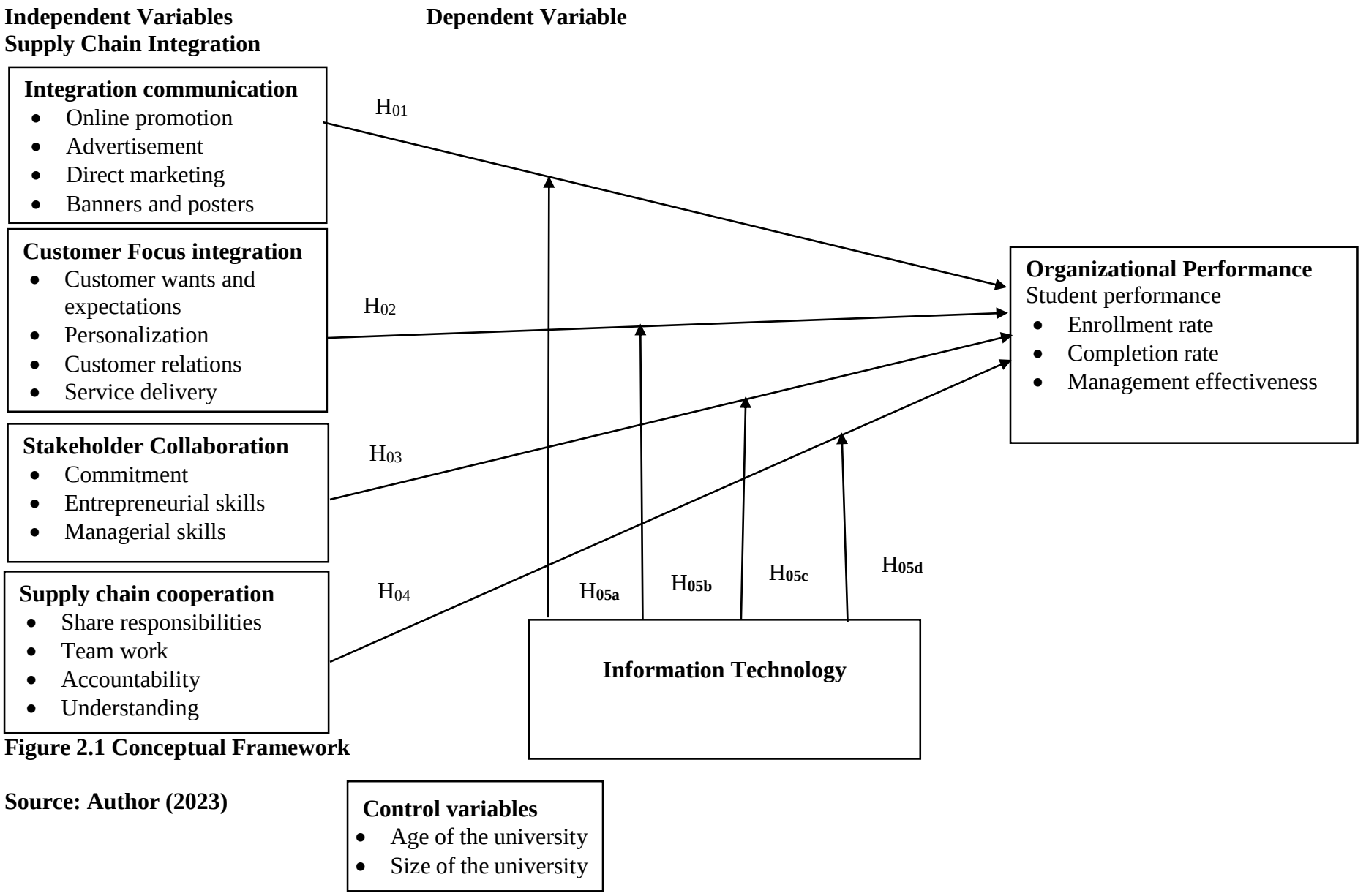

Figure 2.1 Conceptual Framework

Source: Author (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Overview

This chapter covered the research design, study area, target population, sampling design, types of data and collection instruments and procedure, reliability and validity of research instruments, data processing, analysis, presentation, and ethical considerations.

3.1 Research Area

The study was done in three public Universities in the Western Region of Kenya. The Western Region is located on a plateau. The County bordered Trans-Nzoia County to the North, Elgeyo Marakwet and Baringo Counties to the East, Kericho to the South, Nand County to the South, and Kakamega to the West. The universities in the Western Region of Kenya were Maseno University, Kibabii University, and Jaramogi Oginga Odinga University of Science and Technology.

3.2 Research Design

This study adopted an explanatory survey research design. The main goal was to detect cause and effect relationships between the variables (Zikmund, 2000). This design was chosen because it was relatively quick and easy to conduct; data on all variables was only collected once. It was also good for descriptive analysis. The design was applied because it enabled the researcher to collect data that was statistically analyzed to draw meaningful research conclusions concerning the moderating effect of information technology on the relationship between supply chain integration and organizational performance of Public Universities in the Western Region of Kenya.

3.3 Target Population of the Study

The target population for the survey was the entire set of units for which the survey data were to be used to make inferences (Lavrakas, 2008). The target population of this study consisted of 3 public universities in the Western Region of Kenya while the study population were 186 employees. This comprised 36 procurement staff, 72 finance staff, 54 ICT staff, and 24 audit staff. The target population was as presented in Table 3.1.

Table 3.1 Target Population.

Categories	**Target population**
Procurement staff	36
Finance staff	72
ICT staff	54
Audit staff	24
Total	**186**

Source: University Record (2023)

3.4 Census

This study adopted census method where all the respondents was included in the study since the target population was small and manageable while carrying out the study. Census was used because each member of the target population has an opportunity to provide the required information hence giving the study an elevated degree of statistical confidence in the study outcome. This implies all the 186 respondents were used in this study.

3.4.1 Data Types, Sources and Collection Instruments

This study basically used primary sources of data to carry out the analysis. A primary source gave the researcher direct evidence about the moderating effect of information technology on the relationship between supply chain integration and organizational

performance of Public Universities in Western Region Kenya. The data was collected from the selected university departments. The questionnaires were used in data collection.

3.5 Data Collection Procedures

The researcher first sought permission from the University. The researcher sought a permission letter from the National Commission for Science, Technology, and Innovation to carry out research in the identified area of study. Thereafter, the researcher proceeded to respective universities to sought permission to collect data. The researcher then set a specific day to collect data from the selected Universities. The questionnaires were delivered to the respondents and they were given one week to fill them. The structured questionnaire comprised of five Likert scales ranging from Strongly disagreed to strongly agreed. The lowest rating of 1 signified a low opinion by the respondent while a high rating of 5 signified a high rating by the respondents.

3.6 Measurement of Variables

The study used questionnaires to collect primary data. The questionnaires were administered to the target population. The questionnaire was structured as follows: first, it had an introductory request followed by items which were subdivided into four parts. Part 1 captured demographic characteristics of the respondents such as gender, age, education level, and the number of years they had been in the university. Part 2 captured items on specific objectives, including the effect of integration communication, customer focus integration, stakeholder collaboration, and supply chain cooperation on the organizational performance of Public universities in Kenya. Part 3 contained items on the moderator (information technology). Part 4 contained items on the dependent variable (organizational performance) as presented in Table 3.2.

Table 3.2 Measurement of Variables

Type	Variable	Measurement	Measurement scale	Source
Independent variable	Integration communication	• Online promotion • Advertisement • Direct marketing • Banners and posters	5-point linkert scale	Nyangau (2019)
Independent variable	Customer Focus integration	• Customer wants and expectations • Personalization • Customer relations • Service delivery	5-point linkert scale	Muhammedrisaevna et al. (2020)
Independent variable	Stakeholder Collaboration	• Commitment • Entrepreneurial skills • Managerial skills	5-point linkert scale	Ojasalo et al. (2018)
Independent variable	Supply chain cooperation	• Share responsibilities • Team work • Accountability • Understanding	5-point linkert scale	Elia et al. (2020)
Moderator	Information Technology	• Internet applications • Technological devices handling • Data management systems	5-point linkert scale	Lloyd, I. (2020).
Dependent variable	Organizational Performance	• Student performance • Enrollment rate • Completion rate • Management effectiveness	5-point linkert scale	Liao et al. (2017)

Source: Researcher, (2023)

3.7 Pilot Testing

The pilot study was done in universities in Uasin Gishu County by distributing 20 questionnaires to the selected respondents from the universities. The pilot study respondents comprised 10% of the total sample size. Through the pilot study, the researchers were able to determine the consistency of responses made by respondents based on the outcomes of the piloted research instruments.

3.7.1 Validity of the Research Instruments

Validity is the extent to which a test measured what it claimed to measure. There were three types of validity: face validity, content validity, and construct validity. Face validity was how valid results seemed based on what they looked like. Content validity was whether or not the measure used in the research covered all of the content in the underlying construct. Construct validity represented a collection of behaviors that were associated in a meaningful way to create an image or an idea invented for a research purpose. Construct validity was the degree to which the research measured the construct. The content validity of instruments was used to determine the instruments' validity, whether or not an assessment tool was an accurate representation of the subject matter at hand (Shaw & Weir, 2007). By using the expertise of those who were knowledgeable about the subject matter, content validity was most commonly assessed. The researcher gave the research instruments to university supervisors, other lecturers, and experts in this field for content validity testing.

3.7.2 Reliability of the Research Instruments.

Tests that are reliable were those that could consistently produce the same results or conclusions when they were carried out. A test or study that provides different results every time it is carried out, even if all other variables remained the same, could not be considered reliable. The consistency of the test or study was what reliability referred

to, and therefore, no deviations in the observed results or findings were considered reliable (Marques et al., 2016). Creswell (2000) asked researchers if they got the same score the second time, they gave a test to a person as they did the first time. This question could be answered by looking at the test's dependability. The Cronbach's alpha was used to evaluate the data of the pilot study in order to assess how items in the same instrument were related. The acceptable cutoff value for Cronbach's Alpha was taken as being more than 0.7, which improved the identification of the dispensed with and removed variables. However, a Cronbach's coefficient alpha of less than 0.70 indicated that the research instruments were unreliable, and the researcher would correct them before collecting data. The reliability of the research instruments was evaluated through the use of the test-retest approach. For the research proposal, this entailed offering the identical test to the same sample of participants twice.

3.8 Data Analysis and Presentation.

Data analysis is the actions and methods performed on data that helped the researcher to describe facts, detect patterns, develop explanations and test hypotheses (Miles, Huberman & Saldaña, 2018). Data analysis involved cleaning, sorting, and coding relevant data from the respondents. Data analysis was carried out with both descriptive and inferential statistics using Statistical Package for the Social Sciences (SPSS) version 25.

3.8.1 Descriptive Statistics

The inferential statistics used in this study were correlation and regression models. The correlation helped the researcher to describe the linear relationship between independent variables and dependent variables, as well as the moderator. It showed the direction and strength of the relationship between study variables. Regression analysis examined the relationship between the dependent and independent variables, which

best predicted the value of the dependent variable. This analysis estimated the coefficients of the predictive linear equation involving more than one of the dependent variables.

The moderating effect was tested using hierarchical moderating regression analysis. Ordinary least square (OLS) equations and hierarchical moderating regression analysis equations were created involving scores for predictor variable y, scores for the second predictor x, and scores for the third predictor variable z (Aquinas & Gottfredson, 2010).

Equation 1: Regressing the independent variables on dependent variables.

OLS Equation

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$ ……..…Equation 3.1

HMRA Equation

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \varepsilon$……. Equation 3.2

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \beta_6 Z * X_1 + \varepsilon$……..…… Equation 3.3

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \beta_6 Z * X_1 + \beta_7 Z * X_{2+} \varepsilon$…..… Equation 3.4

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \beta_6 Z * X_1 + \beta_7 Z * X_2 + \beta_8 Z * X_3 + \varepsilon$ Equation 3.5

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 Z + \beta_6 Z * X_1 + \beta_7 Z * X_2 + \beta_8 Z * X_3 + \beta_9 Z * X_4 + \varepsilon$…… ……..Equation 3.6

Where:

Y Represents organizational performance

X_1 Represents integration communication

X_2 Represents customer focus integration

X_3 Represents stakeholder's collaboration

X_4 Represents supply chain cooperation

Z Represents information technology (the moderator)

ε represents Error term (disturbance factors) which represents residual

β_0 Represents a constant

From $\beta_{1,}$ to β_9 represents the regression model's coefficients

Analyzed data was presented in form frequency Tables and percentages.

3.9 Assumptions of Regression model

Hierarchical regression model is thus founded on several assumptions namely; linearity, homoscedasticity, normality, multicollinearity and independence of residuals. This study used multiple regressions it the analysis.

The **linearity assumption** implied that there was a linear relationship between the dependent variable and the set of independent variables. The linearity assumption was evaluated with scatter diagrams (Creswell & Clark, 2011). The linearity test was carried out using correlation analysis. The threshold for linearity was that if the p-value of correlation was less than 0.05, it implied there was a linear relationship between study variables. The correlation coefficient needed to be different from zero, implying a linear relationship between the dependent and independent variables.

Homoscedasticity (constant variance) of the errors implied that the variation in the residuals was the same for both large and small values of the predicted value of the dependent variable. Levene's test of homogeneity was used to test this hypothesis. This test, based on the group's mean, was the most robust test and tested the null hypothesis that the population variances were equal (homogeneity of variance or homoscedasticity). The assumption of homogeneity of variance was that the variance within each of the populations was equal. The Levene's statistic values needed to be above the significance level of 0.05.

The **normality** assumption implied that residuals were normally distributed and had a mean of zero. Non-normally distributed variables (highly skewed or variables with

substantial outliers) could distort relationships and significance tests. Skewness and kurtosis were used to determine whether residuals followed a normal probability distribution (Creswell, 2011). The Jarque-Bera (JB) and Kolmogorov-Smirnov test for normality were used to test the normality of error terms. The Kolmogorov-Smirnov test was also used to ascertain if study variables followed a normal distribution. According to Creswell and Clark (2017), a p-value less than 0.05 for the Kolmogorov-Smirnov test indicated non-normality, while a p-value above 0.05 indicated normal distribution.

The assumption of **multicollinearity** implied that there was no correlation between independent variables. This was tested using tolerance and variance inflation factor (VIF). A tolerance below 0.10 or a VIF greater than 10 was regarded as indicative of serious multicollinearity problems. A tolerance below 0.2 indicated a potential problem. When tolerance was close to 1, it implied that there was little multicollinearity. If tolerance was close to 0, it indicated that multicollinearity may be a threat (Field, 2009; Williams, 2015). A VIF greater than 10 was considered unsatisfactory, and in such cases, the independent variable should be removed from the analysis (Creswell & Clark, 2011).

3.10 Ethical Considerations

The researcher sought a letter of approval from Moi University to be used to obtain a permit from the National Commission for Science, Technology and Innovation (NACOSTI) allowing the researcher to carry out the study. The researcher also sought permission from the university authorities to conduct the research. Confidentiality of participants in the study was strictly adhered to at all times throughout the course of and following the study and publication of the results. The researcher used an informed consent sheet which contained phrases indicating that the study participation was voluntary, the objectives of the study, the study procedures, the selection criteria, the

anticipated benefits of their involvement, any risks, assurance of the confidentiality aspect, and privacy during the interview. After the participants had read and comprehended the informed consent, they were requested to indicate their voluntary participation by signing the informed consent sheet.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The analysis of the data collected was presented in this chapter. Descriptive statistics that included means and standard deviations were employed to analyze the data, and the emerging findings were presented using tables and figures and tables.

4.2 Response Rate

Out of 186 samples only 172 samples were returned. Table 4.1 indicates that the response rate was (92.5%). This indicated a high response rate. The 14 of the questionnaires that were not returned by the respondent thus representing 7.5% which had little effect on the results. The failure to respond to questionnaire was due to unwillingness by the respondents to fill the questionnaires, lack of adequate time to respond to the questionnaires and that some of them might not have been present the day the questionnaires were being returned to the researcher.

Table 4.1 Response Rate

Responses	**Frequency**	**Percentages**
Responded	172	92.5
Not responded	14	7.5
Total	186	**100**

Sources: Research Data (2023)

Since this rate was more than 50%, it met Mugenda's criteria for statistical analysis (2010).

4.3 Demographic Information

This study examined the biographic information of the respondents including number of employees and years of service by the operation. The characteristics of the respondents were examined in order to minimize their effects on the outcome of the research objectives and also give a better understanding of the demographic context of the study.

4.3.1 Gender of the Respondents

The study sought to establish the gender of the respondents. Table 4.2 shows the gender of the respondents.

Table 4.2 Gender of the Respondents

Gender	Frequency	Percent
Males	97	56.4
Females	75	43.6
Total	**172**	**100**

Sources: Research Data (2023)

Table 4.2, the findings show that, the majority, 97(56.4%), were male participants, while 75(43.6%) of the respondents were female participants. This reveals that, male and female participants had equal opportunities to be included in the study meaning the gender were equally distributed.

4.3.2 Age Bracket of the Respondents

The researcher also sought to determine the age bracket of the respondents. Table 4.3 presents the study results.

Table 4.3 Age of the Respondents

Age Bracket	Frequency	Percentage
25 – 30 years	69	40.1
31 - 35 years	51	29.7
36 - 40 years	28	16.3
41 – 45 years	16	9.3
45 years and above	8	4.7
Total	**172**	**100**

Sources: Research Data (2023)

The respondent age bracket in years as summarized in Table 4.3, 69(40.1%) of the research participants were between ages of 25 – 30 years, 51(29.7%) were between the age of 31 – 35 years. Moreover, 28(16.3%) of the respondents were aged between age 36 - 40 years while 16(9.3%) of research participants were aged 41 – 45 years and 8(4.7%) were over 45 years of age. From Table 4.4, there is a clear indication that majority of the respondent were between age 25-30 years as shown.

4.3.3 Respondent's Years of Operations.

The outcome of the research on experience of research participants was summarized in Table 4.4

Table 4.4 Work Experience of Respondents

Years of operations	Frequency	Percentage
Below 5 years	92	53.5
5 to 10 years	64	37.2
11 to 15 years	16	9.3
Total	**172**	**100**

Sources: Research Data (2023)

From the findings in Table 4.4, 92 research participants had involvement of below 5 years, 64 had worked for 5 to 10 years and 16 had worked for between 11 to 15 years

4.3.4 Highest Level of Education of the Respondents

Summary of results on level of education are presented in Table 4.5.

Table 4.5 Education Level of the Respondents

Education Level	Frequency	Percentage
Degree	96	55.8
Diploma	64	37.2
Masters	12	7.0
Total	**172**	**100**

Sources: Research Data (2023)

From the results in Table 4.5, 96(55.8%) had degree, 64(37.2%) had diploma and 12(9.0) had masters. This implies that most of the respondents a bachelor's degree

4.4 Supply Chain Integration Communication on Organizational Performance

The study sought to evaluate the effect supply chain integration on organizational performance of public universities in Western Region Kenya. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 given moderately agree; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree.

Table 4.6 Supply Chain Integration and Organizational Performance

Statements		SA	A	N	D	SD	Mean	Sd
1. The successful integration of supplier's businesses to the university's transactions are integrations utilized in supply chain integration	F	56	73	7	22	14	3.78	1.25
	%	32.6	42.4	4.1	12.8	8.1		
2. Integration of information among suppliers, manufacturers, distributors, and customers has improved organizational performance of public universities	F	45	68	10	26	23	3.50	1.37
	%	26.2	39.5	5.8	15.1	13.4		
3. University has the ability to integrate its processes internally and externally with its supply chain partners aids its ability to respond to the changing demands of the customer.	F	43	60	10	37	22	3.38	1.39
	%	25	34.9	5.8	21.5	12.8		
4. Systematic integration among internal functions has improved organizational performance of public universities	F	54	63	10	29	16	3.64	1.33
	%	31.4	36.6	5.8	16.9	9.3		

Sources: Research Data (2023)

According to the information on Table 4.6, the descriptive statistics findings on supply chain integration showed that 129(75%) of the respondents strongly agreed that the successful integration of supplier's businesses to the university's transactions are integrations utilized in supply chain integration while 36(20.9%) of the respondents disagreed that the successful integration of supplier's businesses to the university's transactions are integrations utilized in supply chain integration. The study findings father revealed the respondents strongly agreed with the statement that the successful

integration of supplier’s businesses to the university’s transactions are integrations utilized in supply chain integration mean rating of 3.78 and standard deviation of 1.25. These findings agree with Alshurideh, Kurdi, Alzoubi, Obeidat, Hamadneh & Ahmad, (2022) who examines the influence of supply chain partners' integration on organizational performance, with a specific focus on the moderating role of trust. The authors investigate how the level of integration among supply chain partners affects the performance of organizations, and how trust moderates this relationship.

Furthermore, 113(57%) of the respondents agreed and 49(28.5%) of the respondents disagreed that integration of information among suppliers, manufacturers, distributors, and customers has improved organizational performance of public universities. However, respondents agreed that Integration of information among suppliers, manufacturers, distributors, and customers has improved organizational performance of public universities with mean rating of 3.50 and Standard deviation of 1.37. This suggest that they strongly agree on the statement that Integration of information among suppliers, manufacturers, distributors, and customers has improved organizational performance of public universities. However, according to Sundram, Bahrin, Abdul Munir & Zolait, (2018) suggest effective management of supply chain information and the infrastructure of information systems influence manufacturing performance. They may explore how these factors affect the integration of the supply chain, and subsequently, how supply chain integration impacts the overall manufacturing performance of organizations in Malaysia.

Further, 103(59.9%) of the respondents agreed that University has the ability to integrate its processes internally and externally with its supply chain partners aids its ability to respond to the changing demands of the customer and those who disagreed are 59(34.3%). The study findings revealed that participants agreed with the statement

that University has the ability to integrate its processes internally and externally with its supply chain partners aids its ability to respond to the changing demands of the customer with mean rating of 3.38 and the Standard deviation of 1.39. This finding agrees with Alzoubi, Elrehail, Hanaysha, Al-Gasaymeh and Al-Adaileh, (2022) who suggested that both SCI and agile practices have a positive impact on lead time reduction. SCI was found to have a stronger impact on lead time reduction than agile practices. The study also found that the combination of SCI and agile practices had a synergistic effect on lead time reduction, meaning that the impact of the two factors was greater than the sum of their individual effects.

Finally, 117(68%) of the participants agreed that Systematic integration among internal functions has improved organizational performance of public universities. However, 45(26.2%) of the respondents disagreed that Systematic integration among internal functions has improved organizational performance of public universities Further, the study findings revealed that participants strongly agreed towards the statement that Systematic integration among internal functions has improved organizational performance of public universities with mean rating of 3.64 and the standard deviation of 1.33. Furthermore, these findings agree with Zhou, Zhou, Feng & Jiang (2019) who examines the relationship between dynamic capabilities, innovation, and organizational performance. Dynamic capabilities refer to an organization's ability to integrate, build, and reconfigure internal and external resources to address rapidly changing environments. They also propose that dynamic capabilities positively impact organizational performance and that this relationship is mediated by innovation.

4.5 Customer Focus Integration on Organizational Performance

The study sought to assess the effect of customer focus integration on organizational performance of public universities in Western Region Kenya. Responses were elicited

on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 given moderately agree; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree.

Table 4.7 Customer Focus Integration on Organizational Performance

Statements		**SA**	**A**	**N**	**D**	**SD**	**Mean**	**Sd**
1. Customer wants and expectation guides the performance of public universities	F	51	60	13	20	28	3.50	1.44
	%	29.7	34.9	7.6	11.6	16.3		
2. Employee's personalization has helped in improving performance of universities	F	33	76	13	39	11	3.47	1.22
	%	19.2	44.2	7.6	22.7	6.4		
3. Good customer relations between employees, employer and students have improved school performance	F	48	57	10	39	18	3.45	1.38
	%	27.9	33.1	5.8	22.7	10.5		
4. Client and customers appreciate services offered by university staff	F	48	53	20	36	15	3.48	1.33
	%	27.9	30.8	11.6	20.9	8.7		

Sources: Research Data (2023)

From Table 4.7, 111(64.6%) of the respondents agreed Customer wants and expectation guides the performance of public universities and on the other hand 48(27.9%) of the respondents disagreed that Customer wants and expectation guides the performance of public universities. Additionally, the study results father revealed that the respondents strongly agreed that Customer wants and expectation guides the performance of public universities with mean rating of 3.50 and a standard deviation of 1.43. However, this finding agree with Saad & Abbas, (2018) that organizational culture has a positive impact on job performance. Organizational culture is an important factor in determining

job performance in the Saudi Arabian public sector. The study also recommends that organizations in the public sector should focus on developing a strong and positive organizational culture in order to improve job performance.

Also, 109(63.4%) of the respondents agreed that Employee's personalization has helped in improving performance of universities. However, 50(33.6%) of the respondents disagreed that Employee's personalization has helped in improving performance of universities. Analysis on mean rating and standard deviation of 3.47 and 1.21 respectively revealed the respondents agreed and with the statement that Employee's personalization has helped in improving performance of universities. This finding agree with Foroudi, Yu, Gupta & Foroudi, (2019) study likely explores the relationship between customer value co-creation behavior and the enhancement of brand image and reputation in the context of universities.

However, 105(61%) of the participants agreed that good customer relations between employees, employer and students have improved school performance. On contrary, 57(33.2%) of the participants disagreed that good customer relations between employees, employer and students have improved school performance. Further, the study results also showed that the respondents agreed that Good customer relations between employees, employer and students have improved school performance with mean rating of 3.45 and the standard deviation of 1.38. However, the findings agree with Verčič & Ćorić, (2018) who investigated how reputation and employer branding are related to corporate social responsibility. They examine the impact of a positive reputation and strong employer branding on an organization's CSR efforts.

Finally, 101(58.7%) of the participants agreed that Client and customers appreciate services offered by university staff. Conversely to that, it was noted that 51(29.6%) of

the respondents disagreed that Client and customers appreciate services offered by university staff, the study results father revealed that the respondents agree with the statement that Client and customers appreciate services offered by university staff with mean rating of 3.48 and a standard deviation of 1.33. According to Serhan and Serhan, (2019) noted that all of the food service attributes had a significant and positive impact on customer satisfaction.

4.6 Stakeholder's Collaboration on Organizational Performance

The study sought to evaluate the effect of stakeholder's collaboration on organizational performance of public universities in Western Region Kenya. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 given moderately agree; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree.

Table 4.8 Stakeholder's Collaboration On Organizational Performance

Statements		SA	A	N	D	SD	Mean	Sd
1. Stakeholders' commitments are to deliver their service effectively while adhering to costs management efficiently	F	51	83	7	13	18	3.79	1.24
	%	29.7	48.3	4.1	7.6	10.5		
2. Effective management of relationships with stakeholders is crucial to resolving issues facing organizations while improving performance	F	79	44	7	28	14	3.85	1.37
	%	45.9	25.9	4.1	16.3	8.1		
3. Accountability by the employer has improved the productivity of employees hence improved performance	F	47	83	13	14	15	3.77	1.19
	%	27.3	48.3	7.6	8.1	8.7		
4. Stakeholders hold the key to the business and social environment to which the universities operate in.	F	44	80	17	22	9	3.74	1.13
	%	25.6	46.5	9.9	12.8	5.2		

Sources: Research Data (2023)

According to Table 4.8, 134(78%) of the respondents strongly agreed that Stakeholders' commitments are to deliver their service effectively while adhering to costs management efficiently while 31(18.1%) of the respondents disagreed that Stakeholders' commitments are to deliver their service effectively while adhering to costs management efficiently. The respondents agreed that Stakeholders' commitments are to deliver their service effectively while adhering to costs management efficiently with mean rating of 3.79 and a standard deviation of 1.24. However, this finding agrees with Jones, Harrison & Felps, (2018) who emphasize on Instrumental stakeholder theory considers the performance consequences for firms of highly ethical relationships

with stakeholders, characterized by high levels of trust, cooperation, and information sharing.

Furthermore, 123(71.8%) of the respondents agreed and 42(24.4%) of the respondents disagreed that the effective management of relationships with stakeholders is crucial to resolving issues facing organizations while improving performance. However, the respondents agree with the statement that Effective management of relationships with stakeholders is crucial to resolving issues facing organizations while improving performance with mean rating of 3.85 and standard deviation of 1.37. However, these findings are consistent with the findings by Ali & Haseeb, (2019) a strategic tool towards higher performance of supply chain operations in textile and apparel industry of Malaysia.

Further, 130(75.6%) of the respondents agreed and 29(16.8%) of the respondents disagreed that accountability by the employer has improved the productivity of employees hence improved performance. Furthermore, the study's findings revealed that the respondents agree with the statement that Accountability by the employer has improved the productivity of employees hence improved performance with mean rating of 3.77 and a standard deviation of 1.19.

Finally, 120(72.1%) of the participants agreed that Stakeholders hold the key to the business and social environment to which the universities operate in. However, 31(18%) of the respondents disagreed that Stakeholders hold the key to the business and social environment to which the universities operate in. Further, the study findings also indicated the respondents agreed that Stakeholders hold the key to the business and social environment to which the universities operate in with mean rating of 3.74 and a standard deviation of 1.13. However, these findings agree with the findings by

Chyhryn, Bilan, Bilan Yurii Valentynovych & Kwilinski, (2020) that stakeholders are individuals, groups, or organizations that have an interest in or are affected by the actions and outcomes of an organization or a particular issue. In the context of green competitiveness, stakeholders can include various entities such as customers, employees, suppliers, local communities, government agencies, NGOs, and other organizations that have a stake in environmental sustainability and the organization's performance.

4.7 Supply Chain Cooperation On Organizational Performance

The study sought to establish the effect of supply chain cooperation on organizational performance of public universities in Western Region Kenya. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 given moderately agree; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree.

Table 4.9 Supply Chain Cooperation on Organizational Performance

Statements		SA	A	N	D	SD	Mean	Sd
1. The university is involved in enhancing responsiveness to changes in customer demand through communications.	F	56	61	11	18	26	3.60	1.42
	%	32.6	35.5	6.4	10.5	15.1		
2. Employee's cooperation has let to full utilization of their entrepreneurial skills.	F	56	60	9	20	27	3.57	1.44
	%	32.6	34.9	5.2	11.6	15.7		
3. There is accountability of all transactions between internal supply chain team and university supply partners.	F	51	60	16	24	21	3.56	1.36
	%	29.7	34.9	9.3	14	12.2		
4. The university supply chain integration is dependent on internal synergy for an effective solution delivery challenges and performance.	F	59	48	17	26	22	3.56	1.42
	%	34.3	27.9	9.9	15.1	12.8		

Sources: Research Data (2023)

The Table 4.9 indicates that 117(68.1%) of the respondents agreed that the university is involved in enhancing responsiveness to changes in customer demand through communications. However, 44(25.6%) of the respondents disagreed that the university is involved in enhancing responsiveness to changes in customer demand through communications. Additionally, the study results on mean and standard deviation revealed that the respondents agreed with the statement that the university is involved in enhancing responsiveness to changes in customer demand through communications with mean rating of 3.60 and a standard deviation of 1.42. The study done by Dirani, Abadi, Alizadeh, Barhate, Garza, Gunasekara and Majzun, (2020) that leadership competencies required in the time of crises, followed by exploring cases of best practices of leadership in different contexts, followed by reflections on new roles for HRD researchers and practitioners post a global crisis.

Also, 116(67.9%) of the respondents agreed that employee's cooperation has let to full utilization of their entrepreneurial skills. However, 47(27.3%) of the respondents disagreed that employee's cooperation has let to full utilization of their entrepreneurial skills. Analysis on mean and standard deviation of 3.57 and 1.44 respectively revealed that the respondents agreed with the statement that employee's cooperation has let to full utilization of their entrepreneurial skills. These findings agreed with Abbott and Snidal, (2021) this decentralized process may or may not serve the public interest.

Further, 111(64.6%) of the respondents agreed that there is accountability of all transactions between internal supply chain team and university supply partners. While 45(26.2%) of the respondents disagreed that There is accountability of all transactions between internal supply chain team and university supply partners. Further, the study findings showed in terms of means and standard deviation of 3.56 and 1.36 respectively, shows that the respondents agreed that there is accountability of all transactions between internal supply chain team and university supply partners. According to the study done by Kumar, Liu and Shan, (2020) used SCM mainly for storing important data related to interorganizational transactions among partners where trust is lacking and provenance and visibility are critical.

Finally, it was noted that 107(62.2%) of the participants agreed that the university supply chain integration is dependent on internal synergy for an effective solution delivery challenges and performance. Conversely to that, it was noted that 48(27.9%) of the respondents disagreed that the university supply chain integration is dependent on internal synergy for an effective solution delivery challenges and performance. Further, the mean rating of 3.56 and a standard deviation of 1.42 revealed that the respondents agreed that the university supply chain integration is dependent on internal synergy for an effective solution delivery challenges and performance. These findings

agreed with the study done by Yuen and Thai, (2016) indicates that firm performances can be maximized from establishing closer relationships with supply chain partners. Additional performances can also be realized from synergies that are generated from performing similar internal and external SCI activities.

4.8 Information Technology On Organizational Performance

The study sought to establish the effect of information technology on organizational performance of public universities in Western Region Kenya. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 given moderately agree; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree.

Table 4.10 Information Technology on Organizational Performance

Statements		SA	A	N	D	SD	Mean	Sd
1. Use of IT tools and services has significantly improved the data collection process by field officers.	F	53	74	6	29	10	3.76	1.22
	%	30.8	43	3.5	16.9	5.8		
2. Use IT tools in data collection is easier as compared to previous paper based process.	F	65	58	9	24	16	3.77	1.33
	%	37.8	33.7	5.2	14	9.3		
3. Use of IT has facilitated better management of departmental data needs.	F	58	60	9	28	17	3.66	1.35
	%	33.7	34.9	5.2	16.3	9.9		
4. Use of IT data management systems has made the decision making process faster.	F	39	77	21	28	7	3.66	1.12
	%	22.7	44.8	12.2	16.3	4.1		

Sources: Research Data (2023)

Table 4.10 showed that of the respondents 127(73.8%) agreed that the use of IT tools and services has significantly improved the data collection process by field officers. However, 39(22.7%) of the respondents disagreed that the use of IT tools and services has significantly improved the data collection process by field officers. Further, the study results revealed that the respondents agree with the statement that the use of IT tools and services has significantly improved the data collection process by field officers with mean rating of 3.76 and standard deviation of 1.22. This study concurs with the study done by Deichmann, Goyal and Mishra, (2016) reveals that digital technologies overcome information problems that hinder market access for many small-scale farmers, increase knowledge through new ways of providing extension services, and they provide novel ways for improving agricultural supply chain management.

However, 123(71.5%) of the respondents agreed and 40(23.3%) disagreed with the statement that Use IT tools in data collection is easier as compared to previous paper

based process. Further, the study results reveals that the mean of 3.77 and a standard deviation of 1.33 indicate that the respondents agree with the statement that Use IT tools in data collection is easier as compared to previous paper based process. The study done by Guest, Namey and Chen, (2020) indicate the method we propose to assess and report on saturation is feasible and congruent with findings from earlier studies.

Furthermore, 118(68.6%) of the respondents agreed that Use of IT has facilitated better management of departmental data needs. On contrary 45(26.2%) of the respondents disagreed that use of IT has facilitated better management of departmental data needs. The study results indicate that the respondents agree with the statement that use of IT has facilitated better management of departmental data needs with mean rating of 3.66 and standard deviation of 1.35. According to the study done by Atkins, Francis, Islam, O'Connor, Patey, Ivers and Michie, (2017) reveals the advantages of utilizing the TDF encompass offering a theoretical foundation for implementation research, comprehensive exploration of possible factors contributing to the sluggish integration of evidence into practical use, and a systematic approach to transitioning from theory-driven inquiry to actual interventions.

Finally, 116(67.5%) of the participants agreed that Use of IT data management systems has made the decision making process faster. On contrary to the statement 35(20.4%) of the respondents disagree that Use of IT data management systems has made the decision making process faster. However, the study results indicate that the respondent agree with the statement that Use of IT data management systems has made the decision making process faster with mean rating of 3.66 and standard deviation of 1.12. Janssen, Van Der Voort and Wahyudi, (2017) reveals that that taking advantage of big data is an evolutionary process in which the gradually understanding of the potential of big data and the reutilization of processes plays a crucial role.

4.9 Organizational Performance of Public Universities

The study sought to establish organizational performance of public universities in Western Region Kenya. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 given moderately agree; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree.

Table 4.11 Organizational Performance of Public Universities

Statements		SA	A	N	D	SD	Mean	Sd
1. There has been growth of the university through integration of supply chain	F	58	51	16	21	26	3.55	1.44
	%	33.7	29.7	9.3	12.2	15.1		
2. The university is able to compete both locally and international through supply chain integration	F	54	66	10	15	27	3.61	1.41
	%	31.4	38.4	5.8	8.7	15.7		
3. All our customers are satisfied with our services	F	69	39	15	18	31	3.56	1.53
	%	40.1	22.7	8.2	10.5	18		
4. The university is able to develop new programs which are in accordance with the changing world	F	39	77	21	28	7	3.66	1.33
	%	22.7	44.8	12.2	16.3	4.1		

Sources: Research Data (2023)

The study results in Table 4.12 showed that 109(63.4%) of the respondents agreed that There has been growth of the university through integration of supply chain. On contrary, 47(27.3%) of the respondents disagreed that there has been growth of the university through integration of supply chain. Further, the study results indicate that the mean and the standard deviation of 3.55 and 1.44 respectively clearly shows that the respondents agreed with the statement that There has been growth of the university through integration of supply chain. The study done by Mangla, Luthra, Mishra, Singh,

Rana, Dora and Dwivedi, (2018) play a role in reshaping supply chains, leading to economic growth, tackling global warming, and creating chances for employment.

Further findings revealed that majority, 120(69.8 %) of the respondents agreed that sometimes The university is able to compete both locally and international through supply chain integration. However, 42(24.4%) of the respondents disagreed that the university is able to compete both locally and international through supply chain integration. Further, the study results also show that the respondents strongly agreed with the statement that the university is able to compete both locally and international through supply chain integration having a mean rating of 3.61 and standard deviation of 1.41. These findings agreed with the study done by Haddud, DeSouza, Khare and Lee, (2017) benefits were discovered to play a role in various vital factors that ensure the successful implementation of Supply Chain Management (SCM). The study also verified that while specific potential challenges remained significant obstacles to IoT adoption, other examined challenges did not pose hindrances to the adoption of IoT.

Moreover, 108(62.8%) of the respondents agreed and 49(28.5%) disagreed that all our customers their satisfied with their services. Similarly, the study results revealed that the respondents agree with the statement that all their customers are satisfied with their services with mean rating of 3.56 and a standard deviation of 1.53. According to Ngo and Nguyen, (2016) suggest that there are non-linear relationships between three constructs and emphasize the need to treat customer loyalty management as a process which includes plenty of factors interacting with each other.

Finally, majority 116(67.5%) of the respondents agreed that the university is able to develop new programs which are in accordance with the changing world. On contrary to that, 35(20.4%) of the respondents disagreed that the university is able to develop

new programs which are in accordance with the changing world. Further, the study results reveal that mean and standard deviation of 3.66 and 1.33 respectively indicates that the respondents agreed with the statement that the university is able to develop new programs which are in accordance with the changing world. These findings agreed with Leithwood, Jantzi and Steinbach, (2021) indicated that a limited differentiation in the data regarding district conditions that impacted individual learning as opposed to collective learning. Teacher interviews regarding community factors supporting Organizational Learning (OL) indicated that parental alignment with the school's vision and methods, an environment that encouraged parental involvement, and the active engagement of parents within the school held significance. The interviews yielded relatively minor support for the notion that principals across the six schools collectively held high performance expectations for their staff members, at least in a way that was perceptible to their staff.

4.10 Correlation Analysis

The degree and direction of the relationship between the dependent and independent variables was analyzed using Pearson's correlation. The outcomes are shown in Table 4.12.

Table 4.12 Multiple Correlation Analysis Results

		Organizational performance	**Integration communication**	**Customer focus integration**	**Stakeholder's collaboration**	**Supply chain cooperation**
Organizational performance	Pearson Correlation	1				
Integration communication	Pearson Correlation	.658**	1			
	Sig. (2-tailed)	.000				
Customer focus integration	Pearson Correlation	.677**	.605**	1		
	Sig. (2-tailed)	.000	.000			
Stakeholder's collaboration	Pearson Correlation	.673**	.628**	.585**	1	
	Sig. (2-tailed)	.000	.000	.000		
Supply chain cooperation	Pearson Correlation	.667**	.556**	.540**	.645**	1
	Sig. (2-tailed)	.000	.000	.000	.000	

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

Sources: Research Data (2023)

According to Table 4.12, the research found that integration communication was positively associated with organizational performance (r=.658; p<0.01). The results show a favorable, statistically significant association between customer focus integration and organizational performance (r= 0.677; p<0.01). Stakeholder's collaboration was found to have a statistically significant (r=0.673; p<0.01) favorable relationship with organizational performance. Supply chain cooperation were positively related to organizational performance (r=0.667; p<0.01).

According to Orodho (2003), the presence of two or more variables with a high correlation indicates that these variables are connected to one another in a significant manner, whereas the presence of two or more variables with a low correlation indicates that these variables are not connected at all. When interpreting the results of an experiment, a value of 0.00 indicates that there is no association between the variables.

4.11 Multiple Regression Assumptions Test

Model assumptions were tested before running a regression model. the regression, linearity, homoscedasticity, normality, multicollinearity, and residual independence assumptions. This is typically done to prevent the acquisition of erroneous regression results.

4.11.1 Test of Linearity

The linearity of the data was examined by means of a correlation analysis. A linear relationship between the variables is inferred if there is a significant correlation between the independent variables and the dependent variable. There is no linear relationship between the independent variables and the dependent variable if the correlation coefficient is not significantly different from zero. Table 4.13 displays the results of the linearity analysis.

Table 4.13 Test of Linearity

Variables	Pearson Correlation	Sig.
Integration communication	0.658**	.000
Customer focus integration	0.677**	.000
Stakeholders collaboration	0.673**	.000
Supply chain cooperation	0.667**	.000

Correlation significant at the 0.01 level (2-tailed).
Sources: Research Data (2023)

Results presented in Table 4.13 revealed integration communication had a correlation coefficient of 0.658. Customer focus integration had a correlation coefficient of 0.677. Stakeholders' collaboration had a correlation coefficient of 0.673. In terms of managing supply chain cooperation, the correlation coefficient was 0.667. These indicated that the linearity assumption was made due to the non-zero values of the correlation coefficients for the four research variables. Inferring linearity in the data used.

4.11.2 Homoscedasticity Assumption

The homoscedasticity assumption was tested using the Levenes test of equality of error variances. Table 4.14 displays the results of the assumed-true-positive tests.

Table 4.14 Homoscedasticity Assumption

Variable	Levene Statistic	df1	df2	Sig.
Integration communication	1.662	15	156	.064
Customer focus integration	5.220	15	156	.129
Stakeholder's collaboration	5.205	13	158	.198
Supply chain cooperation	5.034	14	157	.117

Sources: Research Data (2023)

The study results in Table 4.14 indicated that the p-value in Levenes test for integration communication was .064. P-value in Levenes test for customer focus integration was.129. P-value in Levenes test for stakeholders' collaboration was .198. P-value in Levenes test for Supply chain cooperation was .117. All the P-values were above 0.05. Thus, the homoscedasticity assumption was made showing that data used had no heteroscedasticity.

4.11.3 Normality Assumption Test

The study employed the Shapiro-Wilk test to determine whether or not the data significantly deviated from the assumed normal distribution. If the significance value

was less than 0.05, the data were considered to be normally distributed (Ghasemi & Zahediasl, 2012).

Table 4.15 Normality Assumption Test

Variables	Statistic	df	Sig.
Integration communication	.909	6	.433
Customer focus integration	.881	16	.140
Stakeholder's collaboration	.801	17	.211
Supply chain cooperation	.922	25	.056

Sources: Research Data (2023)

Research results showed that all Shapiro-Wilk values in Table 4.15 were statistically significant at the 0.05 level or lower. Since the significance values were greater than 0.05, the data were assumed to have come from a normal distribution. The assumption of normality in linear regression (Knezevic, Savic, Kutlesic & Opacic, 2017). If the Shapiro-Wilk value is greater than 0.05, then the data is normally distributed, while if it is less than 0.05, then the data considerably deviates from a normal distribution, as stated by Ahad, Yin, Othman and Yaacob, (2011).

4.11.4 Multicollinearity Assumption Test

Using VIFs (variance inflation factors) and tolerance, the research examined the multicollinearity assumption. Table 4.16 details the study's findings.

Table 4.16 Multicollinearity Assumption Test

Variables	Tolerance	VIF
Integration communication	.504	1.983
Customer focus integration	.545	1.835
Stakeholder's collaboration	.455	2.198
Supply chain cooperation	.528	1.895

Sources: Research Data (2023)

To test for multicollinearity, tolerance and Variance Inflation Factor (VIF) was used. Multicollinearity is present if the VIF value is greater than 10, as stated by Field (2009).

Table 4.16 displays that the variation inflation factors for Integration communication were 1.983, Customer focus integration were 1.835, stakeholders collaborations were 2.198, and supply chain cooperation were 1.895. The data showed that the multicollinearity assumption was correct due to the high tolerance values for all variables (above 0.10).

4.12 Results for Multiple Regression Analysis

The power of a link between the dependent variable and several predictor variables was evaluated with multiple regression analysis, and the relative relevance of each predictor was determined, typically with the effect of other predictors eliminated statistically.

4.12.1 Model Summary

The coefficient of determination (R^2) and correlation coefficient (R) showed the degree of association between dependent and independent variables. The results are presented in Table 4.17.

Table 4.17 Interpretation of Multiple Regression Models

R	R Square	Adjusted R Square	Std. Error of the Estimate
.804[a]	.646	.637	.47622

Sources: Research Data (2023)

Table 4.17 displays the regression findings, which showed an R^2 of 0.646 and an R-value of 0.804. The high linear correlation between the dependent and independent variables was indicated by the R-value of 0.637. According to the coefficient of determination (R^2), the independent variables provided 0.637 of the total explanation. The regression model accounted for roughly 63.7% of the observed variation in the independent variable.

4.12.2 Regression Model Fitness Test

The model's fitness was checked to see if it provided the best possible fit for the data. Table 4.18 shows the outcomes of the investigation.

Table 4.18 The Fitness of Regression Model

	Sum of Squares	df	Mean Square	F	Sig.
Regression	69.051	4	17.263	76.120	.000[b]
Residual	37.873	167	.227		
Total	106.924	171			

Sources: Research Data (2023)

Table 4.18 displayed an F-statistic of (F =76.120), which was statistically significant at the p=0.000 level, demonstrating that the model was accurate. This means that the data were well-fit by the multiple regression model. That is why it was important considering the independent variables while designing the system.

4.12.3 Regression Model Coefficients

Running a regression model yielded coefficients for use in the regression equation. Table 4.19 details the study's findings.

Table 4.19 Regression Model Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.022	.207		.108	.914
Integration communication	.222	.069	.209	3.225	.002
Customer focus integration	.303	.065	.289	4.638	.000
Stakeholder's collaboration	.226	.076	.203	2.968	.003
Supply chain cooperation	.284	.068	.264	4.160	.000

Sources: Research Data (2023)

Table 4.19 shows that the integration communication had a positive linear effect on organizational performance (β_1=0.222, p=0.002). This shows that a 0.222-unit improvement in organizational performance can be attained by instituting a more stringent collection approach. Organizational performance was also found to be positively correlated with customer focus integration (β_2=0.303, p=0.001) Therefore, a rise in customer focus integration results in a 0.303-unit rise in organizational performance. There is a positive and statistically significant relationship stakeholder's collaboration and organizational performance (β_3=0.226, p=0.003). The impact of supply chain cooperation on organizational performance is favorable and statistically significant (β_4=0.284, p=0.000). This suggested that a change in supply chain cooperation would improve organizational performance by 0.284 percentage points. The resulting regression equation is as follows:

$Y = 0.022 + 0.222X_1 + 0.303X_2 + 0.226X_3 + 0.284X_4$……. Equation 4.1

Y represent organizational performance

X_1 integration communication

X_2 customer focus integration

X_3 Stakeholder's collaboration

X_4 supply chain cooperation

4.13 Hierarchical Moderated Regression Analysis

In order to establish the interaction effect between independent variables and dependent variable, information technology was used as a moderating variable. The hierarchical linear regression analysis was used to test moderating influence (Baron & Kenny, 1986). The regression analysis was done for each independent variable and dependent variable to determine the individual moderating effect of each element on organizational performance of Public Universities.

4.13.1 Model Summary

Model summary shows the variations in R^2 from model 1 to model 6 as presented in Table 4.20.

Table 4.20 Hierarchical Moderated 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	.804[a]	.646	.637	.47622	.646	76.120	4	167	.000
2	.831[b]	.691	.682	.44591	.046	24.470	1	166	.000
3	.837[c]	.701	.690	.44018	.010	5.354	1	165	.022
4	.850[d]	.722	.710	.42564	.021	12.463	1	164	.001
5	.858[e]	.736	.723	.41651	.013	8.272	1	163	.005
6	.871[f]	.759	.745	.39916	.023	15.475	1	162	.000

Sources: Research Data (2023)

From Table 4.20 shows coefficient of determination $R^2 = 0.646$. The R^2 value was statistically significant at $p<0.05$ and indicating that the explanatory power of the independent variables was 0.646. This means that 64.6% of the variation in organizational performance of Public Universities was explained by the four independent variables (integration communication, customer focus integration, stakeholder's collaboration and supply chain cooperation).

Further Table 4.20 provided the results of the R^2 change. The R^2 change from model 1 to model 2 was 0.046 which changed from 0.646 to 0.691 and statistically significant ($p<0.05$). This shows that adding information technology in the model increases the model predictive capacity of supply chain integration in predicting organizational performance of Public Universities by increasing presentable variable counted for by 4.6%. The R^2 change from model 2 to model 3 was 0.010 which changed from 0. 691 to 0. 701 and statistically significant ($p<0.05$). This indicated that information technology moderates the effect of integration communication on organizational performance of Public Universities by increasing presentable variable counted for by

1%. The R^2 change from model 3 to model 4 was 0. 021 which changed from 0.701 to 0.722 and statistically significant ($p<0.05$). This indicated that information technology moderates the effect of integration communication and customer focus integration on organizational performance of Public Universities by increasing presentable variable counted for by 2.1%.

There was no R^2 change from model 4 to model 5. The absence of an R^2 change from model 4 to model 5 suggests that information technology does not significantly moderate the impact of integration communication, customer focus integration, and stakeholder collaboration practices on the organizational performance of Public Universities. This indicates that these variables alone account for the observed variation in organizational performance, without any additional contribution from information technology. The R^2 change from model 5 to model 6 was 0.007 which changed from 0.736 to 0. 756 and statistically significant ($p<0.05$). This revealed that information technology moderates the effect of integration communication, customer focus integration and stakeholder's collaboration practices and supply chain cooperation practices on organizational performance of Public Universities by increasing presentable variable counted for by 2.3%.

4.13.2 Multiple Regression Model Fitness

The regression model's ability to predict the independent variable was tested using an ANOVA for statistical significance as shown in Table 4.21.

Table 4.21 Hierarchical Moderated Model Fitness Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.051	4	17.263	76.120	.000[b]
	Residual	37.873	167	.227		
	Total	106.924	171			
2	Regression	73.916	5	14.783	74.348	.000[c]
	Residual	33.007	166	.199		
	Total	106.924	171			
3	Regression	74.954	6	12.492	64.474	.000[d]
	Residual	31.970	165	.194		
	Total	106.924	171			
4	Regression	77.212	7	11.030	60.884	.000[e]
	Residual	29.712	164	.181		
	Total	106.924	171			
5	Regression	78.647	8	9.831	56.669	.000[f]
	Residual	28.277	163	.173		
	Total	106.924	171			
6	Regression	81.112	9	9.012	56.565	.000[g]
	Residual	25.811	162	.159		
	Total	106.924	171			

Sources: Research Data (2023)

Table 4.21 provided the F test revealing the significance of the fitted regression model. An F statistic in model 1 produced the value of 76.120 indicated that the independent variables were predicators of dependent variable ($F=76.120$; $p<0.05$). This implies a good fit and therefore considering the regression fitted, supply chain integration (integration communication, customer focus integration, stakeholder's collaboration and supply chain cooperation) had an effect on organizational performance of Public Universities.

F-value of model 2 was 74.348. This implied that after moderation of integration communication there was still good fit of the model ($F=74.348$; $p< 0.05$).

F-test for model 3 had a F-value of 64.474 which is associated with an R^2 of .646 and R^2 change of 0.013. This implied that after moderation of customer focus integration

by information technology shows a good predictor of organizational performance of Public Universities and that the overall model was significant as it was less than p-value 0.05 (P< 0.05).

F-test for model 4 had a F-value of 60.884 which is associated with an R^2 of .662 and R^2 change of 0.015. This implied that after moderation of integration communication and customer focus integration practices separately by information technology shows a good predictor of organizational performance of Public Universities and that the overall model was significant as it was less than p- value 0.05 (P< 0.05).

F-test for model 5 had a F-value of 56.669 which is associated with an R^2 of .671 and R^2 change of 0. 009. This implied that after moderation of integration communication, customer focus integration and stakeholder's collaboration practices separately by information technology shows a good predictor of organizational performance of Public Universities and that the overall model was significant as it was less than p- value 0.05 (P< 0.05).

F-test for model 6 had a F-value of 56.565 which is associated with a R^2 of 0. 686 and R^2 change of 0.015. This implied that after moderation of integration communication, customer focus integration, stakeholder's collaboration and supply chain cooperation practices separately by information technology shows a good predictor of organizational performance of Public Universities and that the overall model was significant as it was less than p- value 0.05(P< 0.05).

4.13.3 Multiple Regression Coefficients

The regression of coefficients results is presented in Table 4.22.

Table 4.22 Hierarchical Moderated Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
1	**(Constant)**	.022	.207		.108	.914
	Integration communication	.222	.069	.209	3.225	.002
	Customer focus integration	.303	.065	.289	4.638	.000
	Stakeholders collaboration	.226	.076	.203	2.968	.003
	Supply chain cooperation	.284	.068	.264	4.160	.000
2	**(Constant)**	-.259	.202		-1.281	.202
	Integration communication	.205	.064	.194	3.185	.002
	Customer focus integration	.211	.064	.201	3.290	.001
	Stakeholders collaboration	.155	.073	.139	2.127	.035
	Supply chain cooperation	.271	.064	.252	4.248	.000
	Information technology	.262	.053	.264	4.947	.000
3	**(Constant)**	-.594	.247		-2.408	.017
	Integration communication	.330	.083	.311	3.958	.000
	Customer focus integration	.201	.063	.192	3.176	.002
	Stakeholders collaboration	.158	.072	.141	2.191	.030
	Supply chain cooperation	.278	.063	.258	4.403	.000
	Information technology	.377	.072	.378	5.233	.000

	M* Supply chain integration	-.041	.018	-.219	-2.314	.022
4	**(Constant)**	-.329	.250		-1.317	.190
	Integration communication	.399	.083	.377	4.817	.000
	Customer focus integration	.019	.080	.018	.234	.815
	Stakeholders collaboration	.188	.070	.168	2.679	.008
	Supply chain cooperation	.259	.061	.241	4.236	.000
	Information technology	.263	.077	.264	3.435	.001
	M* Integration communication	-.075	.020	-.404	-3.829	.000
	M*Customer focus integration	.073	.021	.386	3.530	.001
5	**(Constant)**	-.220	.247		-.891	.374
	Integration communication	.418	.081	.394	5.133	.000
	Customer focus integration	.107	.084	.102	1.274	.205
	Stakeholders collaboration	.045	.085	.040	.525	.600
	Supply chain cooperation	.273	.060	.254	4.542	.000
	Information technology	.228	.076	.229	2.999	.003
	M* Integration communication	-.084	.019	-.455	-4.342	.000
	M*Customer focus integration	.042	.023	.222	1.834	.069
	M*Stakeholders collaboration	.049	.017	.278	2.876	.005
6	**(Constant)**	-.321	.239		-1.346	.180
	Integration communication	.312	.082	.295	3.789	.000

Customer focus integration	.122	.081	.117	1.514	.132
Stakeholders collaboration	-.072	.087	-.065	-.838	.403
Supply chain cooperation	.510	.083	.474	6.119	.000
Information technology	.236	.073	.237	3.240	.001
M* Integration communication	-.051	.021	-.273	-2.469	.015
M*Customer focus integration	.048	.022	.256	2.196	.029
M*Stakeholders collaboration	.092	.020	.524	4.690	.000
M*Supply chain cooperation	-.086	.022	-.487	-3.934	.000

Sources: Research Data (2023)

Regression coefficients results of model 1 in Table 4.22 showed that integration communication had a positive and significant effect on organizational performance of Public Universities (β_1=0.222, p=.002). Customer focus integration practice had a positive and significant effect on organizational performance of Public Universities (β_2=0.303, p=.000). Stakeholder's collaboration practice had a positive and significant effect on organizational performance of Public Universities (β_3=0.286, p=.003). Supply chain cooperation had a positive and significant effect on organizational performance of Public Universities (β_4=0.224, p=.000).

In model two a regression analysis was done to determine the moderation effect of information technology on the relationship between integration communication practice, stakeholders collaboration practice, preventive practice, supply chain cooperation practice and organizational performance of Public Universities. The equation shows that the coefficient of information technology interaction was significant since it had a p-value of 0.032 which was less than 0.05 as shown in Table

4.22 since the coefficient was significant. It implied that information technology had a moderating effect on the relationship between integration communication practice, customer focus integration, stakeholder's collaboration practice, supply chain cooperation practice and organizational performance of Public Universities.

In model three a regression analysis revealed that information technology has a moderating effect on the relationship between integration communication practice and organizational performance of Public Universities (p=.004). In model four a regression analysis revealed that information technology had a significant effect on the relationship between integration communication practice and organizational performance of Public Universities (p=.000) and on the relationship between customer focus integration practice and organizational performance of Public Universities (p=.001).

In model five a regression analysis revealed that information technology had a positive and significant effect on the relationship between integration communication practice and organizational performance of Public Universities (p=.000) and on the relationship between customer focus integration practice and organizational performance of Public Universities (p=.015). Information technology had a significant effect on the relationship between stakeholder's collaboration practice and organizational performance of Public Universities (p=.011).

In model six a regression analysis revealed that information technology had a negative moderating effect on the relationship between integration communication practice and organizational performance of Public Universities (β=-0.051, p=.015). The information technology had a moderating effect on the relationship between customer focus integration practice and organizational performance of Public Universities (β=0.048,

p=.029). Information technology had a moderating effect on the relationship between stakeholder's collaboration practice and organizational performance of Public Universities (β=0.092, p=.000). Information technology had a positive moderating effect on the relationship between supply chain cooperation and organizational performance of Public Universities (β=-0.086, p=.000).

$$\mathbf{Y= 0.022} + 0.222\mathbf{X_1+ 0}.303\mathbf{X_2+} 0.226\mathbf{X_3}+ 0.284\mathbf{X_4+ 0}.377\mathbf{Z} - 0.051\mathbf{Z*X_1}+ 0.048\mathbf{Z*X_2} \mathbf{+ 0.} 092\mathbf{Z*X_3 - 0.086Z*X_4}$$

4.14 Hypotheses Test Results

The research hypotheses were assessed using the significance level of the coefficients from the regression model derived in Table 4.23. The goal of the study was to see if the hypothesis could be tested without rejecting or rejecting the relationship between the independent and dependent variables. The following were included in the study's research hypothesis:

4.14.1 Hypothesis Testing of the Effect of Integration Communication on the Organizational Performance

Hypothesis H_{01} stated that supply chain integration has no significant effect on organizational performance of Public Universities in Western Region Kenya. Results revealed that supply chain integration has a positive and significant effect on the organizational performance of public universities in western region Kenya (β_1=0.222, $p<0.05$) hence rejecting the null hypothesis H_{01}.

4.14.2 Hypothesis Testing of the Effect of Customer Focus Integration on the Organizational Performance

Hypothesis H_{02} stated that customer focus integration has no significant effect on organizational performance of Public University in Western Region Kenya. Findings

revealed that customer focus integration has a positive and significant effect on the organizational performance of Public University in Western Region Kenya (β_2=.303, $p<0.05$). The null hypothesis H_{02} was rejected, indicating that customer focus integration had a significant effect on organizational performance.

4.14.3 Hypothesis Testing of the Effect of Stakeholder's Collaboration on the Organizational Performance

Hypothesis H_{03} stated that stakeholder's collaboration has no significant effect on organizational performance of Public University in Western Region Kenya. The findings revealed that stakeholder's collaboration has a positive and significant effect on the organizational performance of Public University in Western Region Kenya (β_3=.226, $p<0.05$). The results showed that stakeholder's collaboration had a significant effect on organizational performance, rejecting the null hypothesis H_{03}.

4.14.4 Hypothesis Testing of the Effect of Supply Chain Cooperation on the Organizational Performance

Hypothesis H_{04} stated that supply chain cooperation has no significant effect on organizational performance of Public University in Western Region Kenya. Supply chain cooperation has a positive and significant effect on organizational performance of Public University in Western Region Kenya (β_4=.284, $p<0.05$). The results showed that supply chain cooperation had a significant effect on organizational performance of Public University in Western Region Kenya, rejecting the null hypothesis H_{04}.

4.14.5 Hypothesis Testing of Information Technology on the Relationship Between Integration Communication and Organizational Performance

Hypothesis H_{05a} stated that information technology has no significant moderating effect on the relationship between supply chain integration and organizational performance of

Public University in Western Kenya. Results revealed that information technology has a positive and significant moderating effect on the relationship between supply chain integration and organizational performance of Public University in Western Kenya. (β_{5a}=.051; p<0.05). The null hypothesis H_{05a} was rejected based on the findings, implying that information technology moderates the relationship between supply chain integration and organizational performance of Public University in Western Kenya.

4.14.6 Hypothesis Testing of Information Technology on the Relationship Between Customer Focus Integration and Organizational Performance

Hypothesis H_{05b} Information technology has no significant moderating effect on the relationship between customer focus integration and organizational performance of Public University in Western Kenya. Results revealed that information technology has a positive significant moderating effect on the relationship between customer focus integration and organizational performance of Public University in Western Kenya. (β_{5b}=.048; p<0.05). The null hypothesis H_{05b} was rejected based on the findings, implying that information technology moderates the relationship between customer focus integration and organizational performance of Public University in Western Kenya.

4.14.7 Hypothesis Testing of Information Technology on the Relationship Between Stakeholder's Collaboration and Organizational Performance

Hypothesis H_{05c} stated that information technology has no significant moderating effect on the relationship between stakeholder's collaboration and organizational performance of Public University in Western Kenya. Results showed that information technology has a positive and significant moderating effect on the relationship between stakeholder's collaboration and organizational performance of Public University in Western Kenya (β_{05c} =.092; p<0.05). The results showed that information technology

had a moderating influence on the relationship between stakeholder's collaboration and organizational performance of Public University in Western Kenya, hence rejecting the null hypothesis H_{05c}.

4.14.8 Hypothesis Testing of Information Technology on the Relationship Between Supply Chain Cooperation and Organizational Performance

Hypothesis H_{05d} stated that information technology has no significant moderating effect on the relationship between supply chain cooperation and organizational performance of Public University in Western Kenya. The findings revealed that information technology has a positive significant moderating effect on the relationship between supply chain cooperation and organizational performance of Public University in Western Kenya (β_{05d}=-086; $p<0.05$). The results showed that information technology had a moderating influence on the relationship between supply chain cooperation and organizational performance of Public University in Western Kenya, hence rejecting the null hypothesis H_{05d}.

Table 4.23 Summary of Hypotheses Test Results

Hypothesis	β-value	p-value	Decision rule
H_{01}. Supply chain integration has no significant effect on organizational performance of Public Universities in Western Region Kenya	β_1=.222	p=0.002<0.05	Rejected the null hypothesis
H_{02}. Customer focus integration has no significant effect on organizational performance of Public University in Western Region Kenya.	β_2=.303	p=0.000<0.05	Rejected the null hypothesis
H_{03}. Stakeholder's collaboration has no significant effect on organizational performance of Public University in Western Region Kenya	β_3=.226	p=0.003<0.05	Rejected the null hypothesis
H_{04}. Supply chain cooperation has no significant effect on organizational performance of Public University in Western Region Kenya.	β_4=.284	p=0.000<0.05	Rejected the null hypothesis
H_{05a}. Information technology has no significant moderating effect on the relationship between supply chain integration and organizational performance of Public University in Western Kenya.	B_{5a}=-.051	p=0.015<0.05	Rejected the null hypothesis
H_{05b}. Information technology has no significant moderating effect on the relationship between customer focus integration and organizational performance of Public University in Western Kenya.	B_{5b}=.048	p=0.029<0.05	Rejected the null hypothesis
H_{05c}. Information technology has no significant moderating effect on the relationship between Stakeholder's collaboration and organizational performance of Public University in Western Kenya.	B_{5c}=.092	p=0.000<0.05	Rejected the null hypothesis
H_{05d}. Information technology has no significant moderating effect on the relationship between supply chain cooperation and organizational performance of Public University in Western Kenya.	B_{5d}=-.086	p=0.000<0.05	Rejected the null hypothesis

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This section summarized study findings, conclude and make recommendations. It further suggested areas for further research in the following sub sections.

5.2 Summary of the Study Findings.

This section presents the summary of the study findings based on the research objectives.

5.2.1 Integration Communication.

The respondents were asked about the supply chain integration such as successful integration of supplier's businesses to the university's transactions are integrations utilized in supply chain integration, integration of information among suppliers, manufacturers, distributors, and customers has improved organizational performance of public universities and the outcome response is that the respondents agreed. The respondents agreed that University has the ability to integrate its processes internally and externally with its supply chain partners aids its ability to respond to the changing demands of the customer and the that they also agreed that Systematic integration among internal functions has improved organizational performance of public universities.

However, the majority of the respondents in a survey agreed that the successful integration of supplier businesses into the university's transactions is considered a form of supply chain integration. This suggests that these respondents believe that incorporating suppliers into the university's operations is an important aspect of managing the supply chain effectively. Additionally, a smaller portion of the

respondents agreed that the university's ability to integrate its processes internally and externally with its supply chain partners contributes to its capability to respond to changing customer demands. This implies that these respondents acknowledge the significance of collaboration and coordination with supply chain partners to enhance the university's responsiveness to customer needs.

The provided statement highlights significant findings from a survey conducted to gauge the perspectives of respondents on the concept of Supply Chain Integration and its impact on the operational performance of public universities. The statement delves into various dimensions of supply chain integration, including its diverse components and its influence on organizational effectiveness.

The survey asked participants about their viewpoints on specific aspects of supply chain integration, such as the successful integration of supplier businesses into the university's transactions, as well as the integration of information among various stakeholders in the supply chain. The outcome revealed agreement among the respondents regarding the positive effects of these integration practices on the performance of public universities.

The findings indicated consensus among respondents that integrating supplier businesses effectively into university transactions constitutes a form of supply chain integration. This observation underscores the belief among these participants that aligning suppliers' operations with the university's transactions holds significance in optimizing supply chain management. Additionally, the study revealed a shared perspective among respondents that the university's capacity to internally and externally integrate its processes with supply chain partners contributes to its ability to respond

adeptly to evolving customer demands. This recognition emphasizes the importance of collaborative efforts with partners in meeting customer needs efficiently.

However, a noteworthy insight from the survey was the substantial agreement among the majority of respondents regarding the significance of supplier business integration in the context of supply chain integration. This demonstrates a widely held belief among these respondents that a symbiotic relationship with suppliers is a key element in effective supply chain management. Conversely, a smaller group of respondents acknowledged the university's ability to integrate its processes with supply chain partners to enhance responsiveness to customer demands. This recognition suggests an awareness among these participants of the value of seamless coordination with partners to adapt to changing customer preferences.

Finally, the survey findings underscore the importance of various dimensions of supply chain integration in enhancing the operational performance of public universities. The agreement among respondents on the role of supplier integration and process alignment with supply chain partners highlights the consensus on these critical aspects. This suggests a shared belief in the value of collaboration, coordination, and integration within the supply chain to improve the universities' ability to meet customer needs effectively and efficiently.

5.2.2 Customer Focus Integration.

The findings indicate that the respondents agreed with all the statement that Customer wants and expectation guides the performance of public universities, Employee’s personalization has helped in improving performance of universities. However, participants also agreed that good customer relations between employees, employer and

students have improved school performance and finally Client and customers appreciate services offered by university staff.

Similarly, the majority of respondents strongly agreed that the wants and expectations of customers guide the performance of public universities. This indicates that these respondents believe that understanding and meeting customer needs is essential for the effective functioning of public universities.

On the other hand, a smaller portion of the respondents agreed that clients and customers appreciate the services offered by university staff. This suggests that these respondents recognize the value that university staff provide in terms of services, and that customers show appreciation for these services.

The provided statement underscores significant findings derived from a study regarding the role of customer-related factors in the performance of public universities. The findings shed light on various dimensions of the respondents' perspectives on how customer expectations, employee engagement, customer relations, and service appreciation contribute to the overall functioning and effectiveness of these institutions.

The results revealed that respondents displayed agreement with a series of statements pertaining to the influence of customer wants and expectations on the performance of public universities. This reflects the acknowledgment among participants that the needs and desires of customers play a pivotal role in shaping how these universities operate. Moreover, the respondents recognized the positive impact of employee personalization in enhancing the universities' performance, indicating an appreciation for the role of individual staff members in contributing to the institutions' success.

Furthermore, the findings highlighted the respondents' agreement that strong customer relations among employees, employers, and students have a positive effect on school

performance. This suggests an understanding of the interconnectedness of these relationships and how they collectively contribute to the universities' effectiveness. Likewise, the participants expressed agreement that the services offered by university staff are appreciated by clients and customers. This recognition underscores the value attributed to the services provided by university staff members, indicating a positive perception of their contributions.

A notable observation from the study was the prevailing strong agreement among the majority of respondents regarding the significant role of customer wants and expectations in guiding the performance of public universities. This robust agreement underscores the belief among these respondents that a customer-centric approach is fundamental to the successful operation of these institutions, emphasizing the importance of aligning with customer needs. However, a smaller subset of respondents agreed that clients and customers appreciate the services provided by university staff. This recognition suggests that, while there is acknowledgment of the value of these services, there might be room for enhancing the visibility and recognition of such appreciation among a portion of respondents.

Finally, the study's findings emphasize the interplay between customer expectations, employee engagement, customer relations, and service appreciation in shaping the performance of public universities. The majority of respondents recognize the pivotal role of customer needs, while a smaller proportion acknowledges the appreciation for services rendered by university staff. These insights collectively underscore the significance of customer-focused approaches in enhancing the effectiveness and perception of these institutions.

5.2.3 Stakeholder's Collaboration.

The study findings indicate that the respondents strongly agreed with the statement that Stakeholders' commitments are to deliver their service effectively while adhering to costs management efficiently. Similarly, the staff respondents agree that effective management of relationships with stakeholders is crucial to resolving issues facing organizations while improving performance. Also, the respondent agreed that accountability by the employer has improved the productivity of employees hence improved performance. Furthermore, the study's findings revealed that the respondents agreed that Stakeholders hold the key to the business and social environment to which the universities operate in.

However, it appears that in the survey, the vast majority of respondents strongly agreed that stakeholders' commitments are focused on delivering their service effectively while also managing costs efficiently. This suggests that these respondents believe stakeholders play a crucial role in ensuring the effective delivery of services while maintaining cost control.

On the other hand, a smaller portion of the respondents agreed that stakeholders hold the key to the business and social environment in which universities operate in. This implies that these respondents perceive stakeholders as having significant influence over the overall business and social context within which universities function.

Based on these responses, it can be inferred that the majority of participants recognize the importance of stakeholders in terms of service delivery and cost management. They understand that stakeholders play a critical role in achieving these objectives. However, a smaller group of respondents emphasized the broader impact of stakeholders on the business and social environment in which universities operates in.

5.2.4 Supply chain cooperation

The findings revealed that the respondents agreed with the statement that the university is involved in enhancing responsiveness to changes in customer demand through communications. However, they also agreed that that employee's cooperation has let to full utilization of their entrepreneurial skills. Moreover, the respondents agreed that there is accountability of all transactions between internal supply chain team and university supply partners and finally they agreed that the university supply chain integration is dependent on internal synergy for an effective solution delivery challenges and performance.

According to the survey results, the majority of respondents strongly agreed that the university is actively involved in enhancing its responsiveness to changes in customer demand through communications. This indicates that these respondents believe that effective communication plays a crucial role in enabling the university to adapt and meet the evolving needs of its customers.

On the other hand, a smaller portion of the respondents agreed that the university's supply chain integration is dependent on internal synergy for effective solution delivery and performance. This suggests that these respondents recognize the importance of internal collaboration and coordination within the university's operations to ensure successful supply chain integration and overcome delivery challenges. Finally, based on the survey responses, it can be concluded that the majority of participants acknowledge the significance of communication in enhancing the university's responsiveness to changes in customer demand. They understand that effective communication is essential for meeting customer needs. Additionally, a smaller group of respondents emphasize the importance of internal synergy in achieving effective supply chain integration and addressing delivery challenges.

5.2.5 Information Technology

Based on the findings, the respondents strongly agreed with the statements that the use of IT tools and services has significantly improved the data collection process by field officers. However, respondents agreed that using IT tools in data collection is easier as compared to previous paper based process. Furthermore, the respondents agreed that use of IT has facilitated better management of departmental data needs and IT data management systems has made the decision making process faster.

According to the survey results, the vast majority of respondents strongly agreed that the use of IT tools and services has significantly improved the data collection process by field officers. This indicates that these respondents recognize the positive impact of IT tools and services on enhancing the efficiency and effectiveness of data collection activities carried out by field officers.

On the other hand, a small portion of the respondents agreed that the use of IT data management systems has made the decision-making process faster, while some respondents disagreed with this statement. This suggests that there may be varying opinions among the participants regarding the speed of decision-making processes facilitated by IT data management systems. It is worth noting that while some respondents acknowledge the acceleration of decision-making, others may have a different perspective or may not have experienced significant speed improvements.

Also, the survey findings indicate that the majority of participants perceive the use of IT tools and services as beneficial for improving the data collection process conducted by field officers. However, opinions vary regarding the speed of decision-making processes facilitated by IT data management systems. Some respondents agree that

decision-making has become faster, while others either disagree or have a neutral stance on this matter.

5.2.6 Organizational Performance

According to the survey results the respondent agreed with the statements that there has been growth of the university through integration of supply chain. Further findings revealed that the respondents agreed that sometimes the university is able to compete both locally and international through supply chain integration. Moreover, the respondents agreed that all our customers are satisfied with our services. Similarly, the respondents agreed that the university is able to develop new programs which are in accordance with the changing world. However, the vast majority of the respondents strongly agreed that sometimes the university is able to compete both locally and international through supply chain integration while on the other hand, a small portion of the respondents agreed that all our customers are satisfied with our services.

According to the survey results, respondents expressed agreement with several crucial aspects related to the university's supply chain integration and its overall effectiveness. Firstly, the survey revealed that respondents acknowledged the growth of the university attributed to the integration of supply chain practices. This suggests that the integration has had a positive impact on the university's expansion and development. Furthermore, the findings indicated that respondents perceived the university's ability to compete both locally and internationally through supply chain integration. This implies that supply chain practices have contributed to enhancing the university's competitive position on both domestic and global levels.

In addition, the respondents indicated agreement with the assertion that the university's services were satisfying all customers. This suggests a positive perception of the quality

of services provided by the university, as perceived by its customers. Likewise, the survey results highlighted the consensus among respondents that the university was capable of designing new programs that align with the evolving demands of the changing world. This indicates that the university's supply chain integration might be aiding its adaptability to the dynamic educational landscape.

However, a noteworthy observation from the survey was the strong agreement among the majority of respondents regarding the university's occasional ability to compete both locally and internationally through supply chain integration. This suggests that while there is overall agreement, there might still be room for improvement in consistently maintaining such competitiveness. On the contrary, a smaller group of respondents agreed that all customers were satisfied with the university's services, implying that there might be some skepticism or room for improvement in this aspect as well.

5.3 Conclusion of the Study

The study concluded that supply chain integration plays a role in the growth and competitiveness of the university. They acknowledged the successful integration of supplier businesses into the university's transactions as a form of supply chain integration. Additionally, they recognized the importance of integrating information among suppliers, manufacturers, distributors and customers in improving organizational performance.

The study concluded that customer wants and expectations guide the performance of public universities and acknowledged the importance of good customer relations and the appreciation of services offered by university staff.

Stakeholders' are committed to delivering services effectively and managing costs efficiently. The university's involvement in enhancing responsiveness to customer demands through communications and recognized the importance of internal synergy for effective solution delivery and performance.

IT tools and services have significantly improved the data collection process and facilitated better management of departmental data needs. However, there were varying opinions regarding the speed of decision-making processes facilitated by IT data management systems.

5.4 Recommendations of the Study.

The recommendation of the study is that;

Public universities in the Western Region of Kenya should recognize the critical role of information technology in supply chain integration and organizational performance. They should prioritize investments in IT infrastructure, tools, and systems to enhance data collection, communication, and decision-making processes.

To fully leverage the potential of information technology, universities should provide regular training and development programs for staff members involved in supply chain management. This will ensure they have the necessary skills and knowledge to effectively utilize IT tools and systems.

Universities should promote collaboration and knowledge sharing among various stakeholders, including suppliers, manufacturers, distributors, and customers. Information technology can facilitate seamless communication and sharing of information, leading to improved supply chain integration and organizational performance. Public universities should consider implementing integrated information systems that connect different functions within the organization and facilitate smooth

information flow across the supply chain. This will enable real-time data sharing, enhance visibility, and support faster decision-making processes.

5.5 Recommendation for Further Studies

The main aim of this study was employee perception of the moderating effect of information technology on supply chain integration and performance of public universities in Western Region, Kenya. The study recommends that:

Conduct benchmarking studies to compare the IT-enabled supply chain integration practices and performance of public universities in the Western Region with leading universities or organizations in the field. This can help identify best practices and provide insights for continuous improvement.

Investigate the specific impact of different IT solutions, such as enterprise resource planning (ERP) systems, cloud computing, data analytics, or e-procurement, on supply chain integration and organizational performance. This will help identify the most effective IT tools for enhancing performance in the specific context of public universities.

Explore the influence of external factors, such as government policies, regulatory frameworks, and industry dynamics, on the moderating effect of information technology on supply chain integration and organizational performance. This will provide a holistic understanding of the broader environment in which universities operate.

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APPENDICES

APPENDIX I LETTER OF INTRODUCTION

Job Kibiwott Baskwony,

Moi University

To: Whom it may concern

Dear Sir/Madam,

RE: ASSISTANCE TO FILL ACADEMIC SURVEY QUESTIONNAIRE

I am a master's student at the Moi University, conducting academic research titled "**moderating effect of information technology on the relationship between supply chain integration and organizational performance of Public Universities in Western Region Kenya**". I humbly request your assistance in filling in the attached questionnaire.

Your participation in this research survey is greatly appreciated and your confidentiality and anonymity are guaranteed. Information gathered from this survey will only be used for data collection and during the analysis of the results; you will not be individually identified with your questionnaire or response. All collected data will be aggregated and grouped.

Regards,

Job Kibiwott Baskwony

APPENDIX II QUESTIONNAIRE

(Please fill in the questionnaire as diligently as you can. Tick in the appropriate box where the question requires you to do so, where the space is provided. Please fill in your answer)

SECTION A: GENERAL INFORMATION

1. Name of the institution……...
2. Department…….

3. What is your gender
   - Male ☐
   - Female ☐
4. Age Group
   - 25-30 ☐
   - 31-35 ☐
   - 36-40 ☐
   - 41-45 ☐
   - Above 50 ☐

5. Years of operation.
   - Less than 5years ☐
   - 5-10years ☐
   - 11-20years ☐

6. Total number of employees

7. Highest level of education
   - College Diploma ☐
   - Bachelor's Degree ☐
   - Master's Degree ☐

SECTION B: SUPPLY CHAIN INTEGRATION

Integration communication on organizational performance of Public Universities. To what extent do you agree with the following statements in regard to the effect of Integration communication?

SA – Strongly Agree A – Agree N – Neutral D – Disagree SD – Strongly Disagree

Supply Chain Integration	**SA**	**A**	**N**	**D**	**SD**
1. The successful integration of supplier's businesses to the university's transactions are integrations utilized in supply chain integration					
2. Integration of information among suppliers, manufacturers, distributors, and customers has improved organizational performance of public universities					
3. University has the ability to integrate its processes internally and externally with its supply chain partners aids its ability to respond to the changing demands of the customer					
4. Systematic integration among internal functions has improved organizational performance of public universities					

SECTION C: CUSTOMER FOCUS INTEGRATION

Please indicate your level of agreement with the following statements relating to Customer Focus Integration.

SA – Strongly Agree A – Agree N – Neutral D – Disagree SD – Strongly Disagree

Customer Focus Integration	**SA**	**A**	**N**	**D**	**SD**
1. Customer wants and expectation guides the performance of public universities					
2. Employee's personalization has helped in improving performance of universities					
3. Good customer relations between employees, employer and students have improved school performance					
4. Client and customers appreciate services offered by university staff					

SECTION D: STAKEHOLDER'S COLLABORATION

Please indicate your level of agreement with the following statements relating to Stakeholder's collaboration.

SA – Strongly Agree A – Agree N – Neutral D – Disagree SD – Strongly Disagree

Stakeholder's collaboration	**SA**	**A**	**N**	**D**	**SD**
1. Stakeholders' commitments are to deliver their service effectively while adhering to costs management efficiently					
2. Effective management of relationships with stakeholders is crucial to resolving issues facing organizations while improving performance					
3. Accountability by the employer has improved the productivity of employees hence improved performance					
4. Stakeholders hold the key to the business and social environment to which the universities operate in.					

SECTION E: SUPPLY CHAIN COOPERATION

Please indicate your level of agreement with the following statements relating to Supply chain cooperation.

SA – Strongly Agree A – Agree N – Neutral D – Disagree SD – Strongly Disagree

Supply Chain Cooperation	**SA**	**A**	**N**	**D**	**SD**
1. The university is involved in enhancing responsiveness to changes in customer demand through communications					
2. Employee's cooperation has let to full utilization of their entrepreneurial skills					
3. There is accountability of all transactions between internal supply chain team and university supply partners					
4. The university supply chain integration is dependent on internal synergy for an effective solution delivery challenges and performance					

SECTION F: INFORMATION TECHNOLOGY

Please indicate your level of agreement with the following statements relating to information technology.

SA – Strongly Agree A – Agree N – Neutral D – Disagree SD – Strongly Disagree

Information Technology	**SA**	**A**	**N**	**D**	**SD**
1. Use of IT tools and services has significantly improved the data collection process by field officers.					
2. Use IT tools in data collection is easier as compared to previous paper based process.					
3. Use of IT has facilitated better management of departmental data needs.					
4. Use of IT data management systems has made the decision making process faster.					

SECTION G: ORGANIZATIONAL PERFORMANCE OF PUBLIC UNIVERSITIES IN KENYA.

Please indicate your level of agreement with the following statements relating to Organizational Performance of Public universities in Kenya.

SA – Strongly Agree A – Agree N – Neutral D – Disagree SD – Strongly Disagree

Organizational Performance of Public universities	**SA**	**A**	**N**	**D**	**SD**
1. There has been growth of the university through integration of supply chain					
2. The university is able to compete both locally and international through supply chain integration					
3. All our customers are satisfied with our services					
4. The university is able to develop new programs which are in accordance with the changing world					

APPENDIX III UNIVERSITY LETTER

MOI UNIVERSITY
POSTGRADUATE OFFICE
SCHOOL OF BUSINESS AND ECONOMICS

Tel: 0722271134
0722685969
0715245347
Fax No: (053) 43047
Telex No. MOIVARSITY 35047

P.O. Box 3900
Eldoret.
Kenya

RE: MU/SBE/PGR/ACD/21B **DATE:** 20th May, 2023

TO WHOM IT MAY CONCERN:

RE: JOB KIBIWOT BASKWONY-SBE/MLS/002/18

The above named is a bonafide student of Moi University School of Business and Economics, undertaking **Master of Science in logistics and supplies Management.**

He has successfully completed the coursework, defended his proposal, and is proceeding to the field to collect data for his research titled: ***"Moderating Effect of Information Technology on Supply Chain Integration and Organizational Performance of Public Universities in Western Region, Kenya"***

Any assistance accorded to him will be highly appreciated.

Yours faithfully,

SCHOOL OF BUSINESS & ECONOMICS
MOI UNIVERSITY
P. O. Box 3900 ELDORET 30100

DR. RONALD BONUKE
POSTGRADUATE CHAIR, SB&E

/vc

APPENDIX IV NACOSTI APPROVAL LETTER

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **455838**

Date of Issue: **17/July/2023**

RESEARCH LICENSE

This is to Certify that Mr.. JOB KIBIWOTT BASKWONY of Moi University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Bungoma, Busia, Kakamega on the topic: MODERATING EFFECT OF INFORMATION TECHNOLOGY ON SUPPLY CHAIN INTEGRATION AND ORGANIZATIONAL PERFORMANCE OF PUBLIC UNIVERSITIES IN WESTERN REGION, KENYA for the period ending : 17/July/2024.

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