KNOWLEDGE MANAGEMENT CAPABILITY AND COMPETITIVENESS OF CHARTERED PUBLIC UNIVERSITIES IN KENYA

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Knowledge Management Capability and Competitiveness of Chartered Public Universities in Kenya

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DECLARATION

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

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DEDICATION

I dedicate this Thesis to my family for their love, patience and invaluable support throughout my undertaking and accomplishment of the doctorate degree. Special appreciation to Serina, Lynn, Collins and Joy who endured long and lonely moments as I worked on various stages of the PhD programme.

To my parents Lydiah and Dominic, who gave me foresight, determination to excel and a foundation for education that has allowed me to advance to doctoral level. To my siblings for their encouragement, moral support and their understanding when I missed family functions. It is never too late to achieve your dream and be what you ever wanted to be.

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ACRONYMS AND ABBREVIATIONS

CKO	Chief Knowledge Officer
ICT	Information Technology
KM	Knowledge Management
KMC	Knowledge Management Capability
KMS	Knowledge Management System
RBV	Resource Based View
R&D	Research and Development
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences
VRIO	Valuable, Rare, costly to Imitate and Organized to capture value

DEFINITION OF OPERATIONAL TERMS

Competitiveness Competitiveness can be defined as the ability of a firm to design, produce and or market products superior to those offered by competitors, considering the price and non-price qualities (Shvindina, 2022).

Information Technology Information technology refers to the intrinsic capabilities availed to firms by deployment of computers and software to convey relevant data and knowledge to individual employees, groups and business process in order to improve its internal collaboration (Taherdoost, 2023).

Knowledge Knowledge refers to the concepts, skills, experiences and vision that provide a basis for creation, evaluation and utilization of information in a firm (Antunes et al., 2020).

Knowledge Creation Knowledge creation is defined as the capability of a firm as a whole to generate knowledge, store and share it, thereby embodying it in its services, products, and operating systems (Moyo & Phiri, 2024).

Knowledge Management The term Knowledge management refers to the strategy and process of identification, capture, and leveraging of knowledge that help an organization to compete (Trivedi & Srivastava, 2022).

Knowledge Management Capability This capability refers to mechanisms geared towards continual and intentional creation and utilization of organizational knowledge (Duchek, 2020).

Knowledge Organization Knowledge organization refers to articulation of critical knowledge created by an organization, learned, or acquired so that it can be absorbed by other individuals or groups in the organization that may need to apply it (Yeboah, 2023).

Knowledge Sharing Knowledge sharing is the distribution of knowledge within the organization to enable employees and other stakeholders create desired organizational advantage (Yeboah, 2023).

Knowledge Storage Knowledge storage refers to the deliberate process of recording knowledge and other tangible assets of a firm and its storage in a knowledge repository such as database or filing system (Kimote, Z., & Kitui, 2024).

ABSTRACT

This study examined the relationship between knowledge management capability (KMC) and the competitiveness of chartered public universities in Kenya. Despite their role as knowledge-intensive institutions, many public universities face challenges in leveraging knowledge assets strategically. Prior research has largely focused on commercial organizations, leaving a gap in understanding how KMC influences performance in higher education, particularly in Sub-Saharan Africa. The study was guided by five specific objectives: to assess the effect of knowledge creation, knowledge organization, knowledge sharing and knowledge storage capabilities on competitiveness, and to evaluate the moderating role of information technology in this relationship. A descriptive survey design was adopted, targeting all 31 chartered public universities in Kenya. Purposive sampling was used to select 155 middle-level managers across institutions, including registrars, deans, ICT officers, librarians, and finance officers. Primary data was collected using structured questionnaires, while secondary data on competitiveness indicators (citations, patents, enrollment) was extracted from institutional records and official databases. Out of 155 questionnaires distributed, 123 were returned, representing a 79% response rate. Data were analyzed using descriptive and inferential statistics, including multivariate regression analysis. The findings revealed that all four KMC dimensions namely, knowledge creation, organization, sharing, and storage had a positive and significant influence on university competitiveness. Among them, knowledge sharing emerged as the strongest predictor, followed by organization, creation, and storage. Additionally, the study confirmed that information technology significantly moderates the relationship between KMC and competitiveness. The study concludes that universities must adopt structured frameworks that enhance knowledge creation, organization, sharing and storage supported by robust IT systems. Doing so will improve academic performance, innovation, and institutional responsiveness. The study recommends further research to explore similar dynamics in private universities and technical institutions to broaden the understanding of KMC in higher education.

CHAPTER ONE

INTRODUCTION

1.1 Background of Study

In the knowledge-driven global economy, the ability to generate, manage, and apply knowledge strategically has become a vital capability for organizations, especially higher education institutions (HEIs). Universities are increasingly expected to extend beyond their traditional functions of teaching and research to encompass innovation, community engagement, and responsiveness to sociolect-economic challenges (Odularu & Bokwe, 2025). In this context, knowledge is not just an asset but a dynamic resource that enables institutions to adapt, compete, and contribute meaningfully to development. Therefore, robust knowledge management (KM) systems are essential for universities to organize, store, and apply knowledge effectively (Abdullah et al., 2022).

Knowledge management capability (KMC) refers to the institutional capacity to create, acquire, store, share, and apply knowledge and has gained recognition as drivers of organizational performance, especially in knowledge-intensive environments like universities (Mugimu, 2021). Institutions with well-developed KM capabilities are better equipped to enhance research, support policy reforms, and meet growing stakeholder expectations. While KM practices are common in the private sector, their integration into higher education particularly within African public universities remains under-explored and uneven (Etomaru, 2022; Odularu & Bokwe, 2025).

Existing literature tends to focus on KM in corporate contexts, overlooking its distinct application in university settings. However, universities function as knowledge-centric organizations with unique needs: preserving institutional memory, fostering collaboration, ensuring continuity in research and teaching, and responding to regulatory demands. In Africa, barriers such as limited ICT infrastructure, staff capacity, and a lack of institutional KM frameworks hinder effective knowledge use (Kwao et al., 2022). This underscores a conceptual and contextual gap while global

KM research is abundant, there is limited empirical work on how KMC influences competitiveness in African higher education institutions.

In Kenya, 35 chartered public universities serve as national knowledge hubs advancing research, innovation, and skilled human capital. These institutions operate in increasingly complex environments shaped by changing funding models, performance-based accountability, and quality assurance frameworks (CUE, 2024). Recent policy shifts, such as the Bottom-Up Economic Transformation Agenda (BETA) and the new performance-based funding framework, have heightened the need for strategic knowledge deployment. Public universities must, therefore, strengthen their KM capabilities to remain competitive and aligned with national development goals.

1.1.1 Knowledge Management Capability

Knowledge Management Capability (KMC) is defined as an institution's ability to systematically create, store, organize, share, and apply knowledge to support strategic goals (Abdullah et al., 2022). In the university context, KMC supports critical functions such as research continuity, teaching innovation, curriculum relevance, and evidence-based governance (Mugimu, 2021). Efficient KM systems also enhance operational effectiveness, collaboration across faculties, and stakeholder trust.

Unlike commercial enterprises, universities deal with diverse knowledge types, tacit and explicit, across disciplines and organizational levels. As such, KM practices in universities must go beyond data collection to include codification, knowledge reuse, digital integration, and capacity building. Institutions with robust KM capabilities can adapt faster to policy reforms, manage interdisciplinary collaboration, and maintain academic relevance (Hock-Doepgen et al., 2021; Alo et al., 2025).

Scholars such as Imran et al. (2022) and Lapsomboonkamol et al. (2022) have linked KMC with improved institutional outcomes, including research productivity, student satisfaction, and innovation. However, most of these studies are based in developed contexts, with limited attention to African or Kenyan public universities. This gap calls for context-specific research on how KMC can be leveraged to address performance

challenges and support sustainable competitiveness in public universities.

1.1.2 Competitiveness of Chartered Public Universities

In higher education, competitiveness refers to an institution's ability to offer high-quality academic, research, and community services that meet stakeholder expectations and ensure sustainability. For Kenyan public universities, competitiveness involves attracting quality faculty, producing relevant research, forming industry linkages, and adapting to policy and technological changes (Liao & Suprapto, 2024). The Commission for University Education (CUE) plays a regulatory role, ensuring institutions uphold standards under the Universities Act (2012).

Recent policy changes, such as performance-based financing and curriculum realignment, have increased pressure on universities to demonstrate efficiency, innovation, and impact. However, competitiveness is not a standalone goal it is an outcome of internal capabilities such as governance, digital systems, and notably, knowledge management. Institutions that can strategically mobilize and apply knowledge resources are more likely to improve their performance and responsiveness to national priorities (Edu, 2025).

1.1.3 Global Perspective of Competitiveness of Chartered Public Universities

Globally, universities operate in a highly competitive environment shaped by international ranking systems such as the QS World University Rankings, Times Higher Education (THE), and the Academic Ranking of World Universities (ARWU/Shanghai Ranking**)**. These rankings influence institutional decisions around funding, research, and internationalization by measuring performance using indicators such as research output, citation impact, global partnerships, and faculty-student ratios (Liao & Suprapto, 2024).

In a comparative analysis by Hazelkorn and Mihut (2021), it was noted that top-performing institutions in THE and QS rankings have strategically invested in research-intensive programs, partnerships, and academic reputation management. For instance, National University of Singapore (NUS) ranked 8th in the 2024 QS rankings

after prioritizing global faculty recruitment and research funding. Similarly, Tsinghua University climbed into the top 20 globally in ARWU by aligning its research agenda with national innovation policies and increasing R&D output (Biasi et al., 2021).

Such examples show how universities pursue strategic differentiation to improve competitiveness. Governments in Asia and the Middle East have adopted funding models that reward institutions based on global ranking performance, research productivity, and international engagement. This has created pressure for universities to adopt entrepreneurial models and dynamic knowledge management systems (Sukoco et al., 2022).

The adoption of entrepreneurial leadership characterized by proactiveness, innovation, and calculated risk-taking has enabled universities to enhance competitiveness while meeting global benchmarks (Johnson & Schaltegger, 2020). In this context, Knowledge Management Capabilities (KMC) support the ability to leverage research, collaborations, and institutional memory to improve rankings and societal impact. Thus, global competitiveness in higher education is strongly shaped by how institutions respond to the demands of ranking systems, and how well they manage knowledge for innovation, reputation, and resilience.

1.1.4 Regional Perspective of Competitiveness of Chartered Public Universities

Across Africa, Knowledge Management (KM) is increasingly recognized as a strategic tool for enhancing competitiveness in higher education. Many African universities operate in resource-constrained environments, facing challenges such as under-funding, faculty shortages, weak research output, and governance limitations. These issues hinder their ability to build and leverage institutional knowledge effectively (Mugimu, 2021). Despite these constraints, KM is emerging as a critical enabler for performance improvement, innovation, and global relevance (Etomaru, 2022).

The competitiveness of African universities is often measured through international rankings such as Times Higher Education (THE), QS World University Rankings, and Webometrics. However, representation remains limited. For instance, in the 2024 THE rankings, only one African university, the University of Cape Town ranked in the

global top 200. A 2023 study by Elsevier revealed that African research output accounted for less than 1% of global publications, highlighting the region's under-representation in global knowledge systems (TARA, 2023).

In East Africa, universities are beginning to adopt KM practices to enhance research quality, teaching, and institutional visibility. Efforts are underway to strengthen knowledge creation, sharing, and retention through improved digital infrastructure and collaborative platforms. These practices are vital for addressing regional development needs while positioning universities for international competitiveness (Maende, 2021).

Nevertheless, implementation challenges persist, including limited technological capacity, low awareness of KM tools, and institutional resistance to change. Addressing these gaps requires deliberate investment in KM systems, policy support, and capacity building. For Kenyan public universities, developing KM capabilities offers a pathway to improving research productivity, academic reputation, and alignment with global standards ultimately contributing to sustainable competitiveness in the region.

1.1.5 Local Perspective of Competitiveness of Chartered Public Universities

In Kenya, the competitiveness of public universities has become a critical policy concern amid rising enrolment, constrained funding, and increased demand for globally relevant academic programs. As of 2024, Kenya has 35 chartered public universities that serve as the backbone of the country's higher education sector. These institutions are central to the country's innovation, research, and socioeconomic development goals (CUE, 2024).

While advancements in technology and digital infrastructure have enhanced learning and research, public universities still face challenges in managing institutional knowledge. This includes underutilized research outputs, fragmented information systems, and limited integration of knowledge management strategies in decision-making (Maende, 2021). As Kenya embraces reforms in funding models including performance-based financing universities must prioritize strategic knowledge use to remain competitive and responsive to national needs.

Policy changes under the BETA (Bottom-up Economic Transformation Agenda) have heightened the urgency for universities to realign their academic programs with market demands and research with national priorities. Universities are now expected to demonstrate stronger outputs in innovation, employability, and knowledge transfer. Efficient implementation of Knowledge Management frameworks can improve institutional learning, enhance academic quality, and enable sustainable competitiveness (Etomaru, 2022).

Moreover, universities must build internal systems that facilitate the creation, storage, sharing, and application of knowledge to enhance teaching, research, and governance. Developing robust KM capabilities is no longer optional but essential for thriving in Kenya's evolving higher education environment. As Kenya positions itself as a regional education hub, the strategic deployment of KM in public universities will be key in fostering innovation, improving global visibility, and contributing meaningfully to national development.

1.2 Statement of the Problem

Chartered public universities in Kenya are central to national goals for innovation, research, and human capital development. However, their overall competitiveness remains low, as reflected by under-performance in global rankings, weak graduate employability, and declining research impact. Despite hosting over 469,688 students in 2024 making up 74.7% of total university enrolment (KIPPRA, 2024) these institutions face serious performance gaps that hinder their ability to compete regionally and globally.

A growing body of research identifies Knowledge Management Capabilities (KMC**)** specifically knowledge sharing and technological enablement as key drivers of institutional performance (Gakuru, 2025; Wendo et al., 2025). However, most Kenyan universities have yet to fully develop or implement robust systems that allow knowledge to be effectively captured, distributed, and applied. This deficiency limits collaboration, decision-making, and the ability to respond to rapidly evolving academic and industry needs. Technological tools such as digital repositories, e-learning platforms, and centralized databases remain underutilized, undermining

institutional memory and innovation capacity (Gachanja et al., 2024).

This challenge is compounded by external pressures. Government spending on higher education has declined by 20% even as enrolments continue to rise (KIPPRA, 2024). Meanwhile, 70% of employers express dissatisfaction with graduates' job preparedness (KNBS, 2024), exposing a disconnect between knowledge creation and real-world application. Furthermore, in the 2024 Webometrics ranking, only five Kenyan universities appeared among Africa's top 100, with none featuring within the top global tiers. This highlights a persistent competitiveness gap in the international visibility and academic performance of Kenyan universities.

Although recent studies have examined aspects of knowledge management in Kenyan universities, important gaps remain. Rotich and Mose (2025) explored the role of ICT infrastructure in enhancing knowledge management system performance, emphasizing technological enablement. Wambui (2025) examined determinants of knowledge sharing through institutional repositories, highlighting structured dissemination mechanisms. Ogechi (2025) analyzed efficiency and productivity growth in public chartered universities, providing insight into institutional performance and competitiveness indicators. While these studies offer valuable contributions, they focus on isolated dimensions of knowledge management or institutional efficiency rather than examining knowledge management capability as an integrated construct. Moreover, none explicitly assesses how knowledge creation, organization, sharing, and storage collectively influence competitiveness or evaluates the moderating role of information technology in this relationship. This leaves limited empirical evidence on the comprehensive impact of knowledge management capability on the competitiveness of chartered public universities in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the study was to examine the effect of knowledge management capability on competitiveness of chartered public universities in Kenya.

1.3.2 Specific Objectives

The specific objectives of the study were:

i) To determine the effect of knowledge creation capability on competitiveness of chartered public universities in Kenya.
ii) To examine how knowledge organization capability influences the competitiveness of chartered public universities in Kenya.
iii) To assess how knowledge sharing capability enhances competitiveness in chartered public universities.
iv) To evaluate the contribution of knowledge storage capability to competitiveness of chartered public universities in Kenya.
v) To assess the moderating effect of information technology on the relationship between knowledge management capability and competitiveness of chartered public universities in Kenya

1.4 Study Hypotheses

This study aimed at testing the following hypotheses:

H_{01}: Knowledge creation capability has no effect on competitiveness of chartered public universities in Kenya.

H_{02}: Knowledge organization capability has no effect on competitiveness of chartered public universities in Kenya.

H_{03}: Knowledge sharing capability has no effect on competitiveness of chartered public universities in Kenya

H_{04}: Knowledge storage capability has no effect on competitiveness of chartered public universities in Kenya

H_{05}: Information technology has no moderating effect on the relationship between knowledge management capability and competitiveness of chartered public universities in Kenya.

1.5 Significance of the Study

This study is significant to various stakeholders, starting from national-level actors to institutional and individual beneficiaries. The findings will support national policymakers and government agencies such as the Ministry of Education and the Commission for University Education (CUE) in formulating evidence-based strategies to improve the performance of public universities. By highlighting key knowledge management capabilities (KMCs) that influence competitiveness, the study contributes to the realization of Kenya's development goals under Vision 2030 and the Bottom-Up Economic Transformation Agenda (BETA) (Republic of Kenya, 2023). KM practices are central to innovation, research, and human capital development priorities outlined in Kenya's education sector plan (Ministry of Education, 2024).

Public universities will benefit from a clearer understanding of how specific KM capabilities such as knowledge creation, sharing, storage, and organization can be aligned with institutional goals. The study offers practical insights for improving competitiveness through enhanced student services, research outputs, and operational efficiency, especially under constrained funding conditions (KIPPRA, 2024; Mauki et al., 2020).

The research provides university leaders and administrators with strategies for embedding effective KM systems and tools in their institutional planning. This will support evidence-based decision-making, performance monitoring, and internal innovation, which are critical in navigating the increasingly competitive and dynamic higher education landscape (Bala, 2025).

This study contributes to the academic literature by addressing an under-researched area in the context of Sub-Saharan Africa. It provides a context-specific model for enhancing competitiveness through KMC, and establishes a basis for further research on KM practices in developing country universities (Pazhouhan & Mohammadi, 2025).

1.6 Scope of the Study

This research study sought to determine the relationship between knowledge management capability and competitiveness of chartered public universities in Kenya. The constructs of knowledge management capability included knowledge creation, storage, organization and sharing based on (Migdadi, 2022) who referred to knowledge management capability as the direct determinant of organizational effectiveness and ingredients for sustained competitiveness.

Further, competitiveness was operationalized based on (Ali & Anwar, 2021) perspective as an organization's ability to successfully compete for business opportunities and perform better than its benchmark competitors in regard to sales, market share and overall profitability, hereby analysed in terms of new student enrollment, patents, and number of citations by top ten most cited researchers. The study was moderated by the role of information communication technology. The study focused on 31 public universities accredited by the Commission for University Education in Kenya by December 2020. The universities are spread across twenty five (25) counties in Kenya. The study was carried out within Kenya in the year 2023.

1.7 Limitations of the Study

The study was conducted on knowledge management capability and competitiveness of chartered public universities in Kenya and therefore did not include other players such as university colleges and private universities. In addition, the target population for this study was confined to middle level management staff within public universities since they are directly involved in the knowledge management processes. This population is a small proportion of the entire university sector. With such a confined target population, challenges abound in terms of applicability and generalizability of the study. To manage the deficiency, future studies may encompass more representative institutions and cadres of staff for imperative generalization and application of the findings across the university sector.

In addition, the study focused on selected dimensions of knowledge management capability, namely knowledge creation, organization, sharing, and storage. Other

important dimensions such as knowledge protection were not examined. This content limitation may restrict the comprehensiveness of the findings regarding the broader knowledge management capability framework.

Finally, there was resistance by respondents in providing specific information because of the tenet of confidentiality; however, this was mitigated by encouraging anonymity of respondents and by providing assurance through the research permit that the study was conducted strictly for academic purposes.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews data by other scholars who have undertaken similar studies on knowledge management capability and firm competitiveness. The chapter covers the theoretical perspectives, conceptual framework, an empirical review and research gaps.

2.2 Theoretical Review

A theoretical framework forms the foundation upon which scholarly research is built. It guides the identification of variables, establishes relationships among them, and offers explanatory insights into the phenomenon under study (Varpio et al., 2020). This study on knowledge management capability and competitiveness of chartered public Universities in Kenya is anchored on the Resource-Based Theory (RBT) and further supported by the Knowledge Economics Theory, Dynamic Capabilities Theory, Organizational Learning Theory, Technology Acceptance Model (TAM) and Porter's Competitive Advantage Theory. These theories were selected because they align closely with the study's core variables, namely, knowledge management capabilities (independent), competitiveness (dependent), and information technology (moderating).

2.2.1 Resource-Based Theory (RBT)

The Resource-Based Theory (RBT), initially proposed by Penrose (1959) and later expanded by Barney (1991), posits that an organization's internal resources are its primary drivers of sustained competitive advantage. The theory has gained relevance in higher education, particularly in understanding how universities can leverage unique resources to enhance competitiveness in increasingly dynamic environments.

According to Barney (1991), organizational resources are either tangible such as buildings, equipment, or infrastructure or intangible, including knowledge, reputation,

intellectual property, and organizational culture. While tangible assets are easily replicable and offer limited competitive edge, intangible resources are difficult to imitate and therefore more strategically significant. In the context of chartered public universities, intangible assets such as academic expertise, research output, institutional memory, and collaborative networks form the foundation of long-term competitiveness.

Recent studies such as Rutaba (2025) have reaffirmed that resource-based advantages stem from the effective bundling, leveraging, and reconfiguring of strategic assets. These capabilities enable organizations to respond to shifting demands while sustaining performance. For public universities, this entails aligning academic programs, knowledge systems, and research strategies to attract students, funding, and recognition. Rutaba (2025) emphasized that knowledge-based assets particularly those related to research, teaching, and innovation are now central to competitive advantage in knowledge-intensive sectors like higher education. Public universities must therefore cultivate core competencies such as curriculum design, digital teaching capabilities, and research translation, which are rooted in knowledge management.

Furthermore, Truong et al. (2024) argue that capabilities such as organizational memory, staff expertise, and collaborative culture are forms of knowledge capital that significantly influence organizational performance and sustainability. In this regard, organizational knowledge, if rare, valuable, and non-substitutable, qualifies as a strategic asset that drives university competitiveness. Knowledge differs from other resources in that it expands with use. It can be simultaneously applied across departments without diminishing in value (Grant, 2021). The ability to convert tacit and explicit knowledge into institutional processes, curricula, and innovations enhances competitiveness by improving quality, visibility, and relevance. Moreover, in a resource-constrained public sector, knowledge becomes a cost-effective tool for building innovation and adaptability (Raziq et al., 2024).

The RBT supports this study by offering a conceptual basis for examining how knowledge management capabilities such as creation, storage, organization, and sharing contribute to the competitiveness of public universities. These capabilities

enable universities to effectively utilize internal resources to improve rankings, student outcomes, and research visibility. Universities with strong knowledge strategies are better positioned to achieve higher enrolment, research innovation, global reputation, and institutional resilience. Figure 2.1 shows the Resource Based View Model.

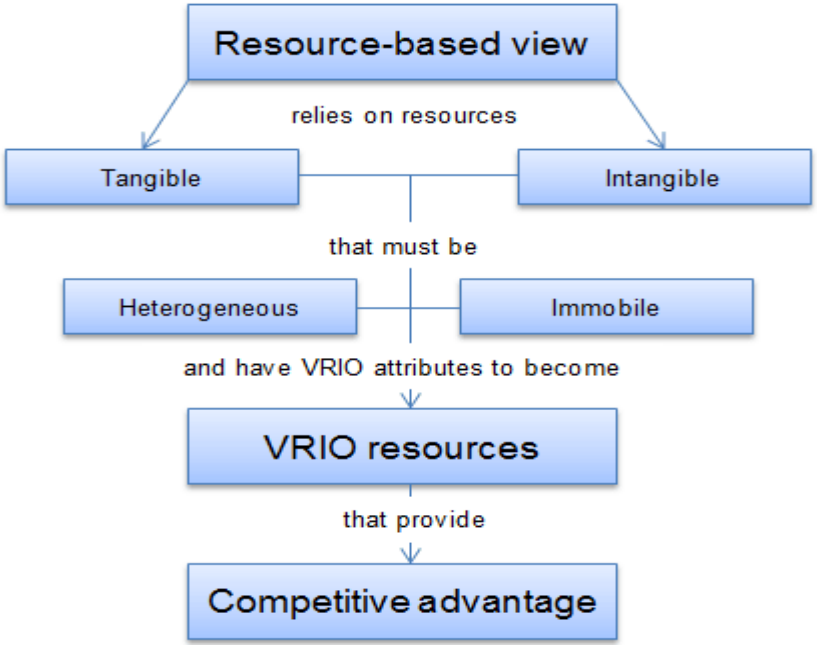

Figure 2.1: Resource Based View Model

2.2.2 The Knowledge Economics Theory

The Knowledge Economics Theory was popularized by Drucker (1969) through his analogy of manual workers who used their hands to produce goods and knowledge workers who use their heads to produce ideas, information, and knowledge. The theory emphasizes the growing significance of a skilled workforce in the knowledge-driven service economy, where knowledge and intellectual capital have become central to economic performance. It is closely related to the information economy, which highlights the role of intangible assets such as digital tools, data, and information systems. In this context, intellectual property including patents, trade secrets, and copyrighted materials has emerged as a core competitive asset in knowledge-based enterprises (Cepeda-Carrion et al., 2023).

Rooted in knowledge management and information economics, the theory views knowledge as both an internal resource and a marketable product. Effective knowledge management, especially knowledge creation, is essential in such economies since firm-specific knowledge is unique, rare, and difficult to imitate (Mostafiz et al., 2023). Under this theoretical lens, managerial decisions revolve around when and how to generate knowledge internally, when to engage external experts, and how to combine internal knowledge with external contributions for organizational advantage.

Additionally, the theory advocates for developing systems that enable internal knowledge to be repackaged and shared externally e.g., through consultancy or publication thus transforming knowledge into a valuable commodity. This aligns directly with the concept of knowledge creation capability, whereby organizations generate new knowledge through collaboration, learning, and innovation (Konno & Schillaci, 2021). Consultants and professionals thrive in such ecosystems because knowledge is both the product and the driver of value creation.

According to Demarest (1997), the theory emphasizes professional support systems, which include enhancing communication, reducing complexity, and optimizing performance. Professionals apply scientific reasoning, hands-on expertise, and routine skills to complex and unique challenges, ultimately generating high-value, transferable knowledge (Tordoir, 1995). Demarest's model outlines four iterative knowledge management processes: (1) constructing knowledge through methods; (2) embodying it in vessels such as documents or systems; (3) distributing it via human or technological channels; and (4) developing knowledge into products with market value.

In this study, the Knowledge Economics Theory anchors the independent variable of knowledge creation capability, emphasizing that the ability of universities to continuously generate, internalize, and utilize knowledge is a strategic imperative for enhancing their competitiveness in a knowledge-driven economy.

2.2.3 Theory of Dynamic Capabilities

The Theory of Dynamic Capabilities was introduced by Teece et al., (1997) as an advancement of the Resource-Based View (RBV), aiming to address its limitations in dynamic, fast-changing environments. The theory proposes that for firms to remain competitive, they must be able to build, integrate, and reconfigure internal and external resources quickly in response to environmental changes. Teece (2007) further refined the theory, identifying three core dimensions of dynamic capabilities: sensing (identifying and assessing new opportunities), seizing (mobilizing resources to capture value), and transforming (continuous renewal and reconfiguration of organizational assets).

This theory is particularly relevant to the domain of knowledge organization capability, as it underscores the ability of institutions to systematize, realign, and integrate their knowledge assets efficiently in response to evolving academic and operational demands (Cordeiro et al., 2023). Public universities, operating in increasingly volatile environments characterized by funding shifts, technological change, and global academic competition, must develop internal routines that allow them to organize knowledge resources strategically to remain competitive.

Moreover, dynamic capabilities encompass several functional areas such as research and development (R&D), innovation, human capital, and intellectual property, all of which rely heavily on the effective structuring and integration of knowledge systems (Brinch et al., 2021). According to Avila (2022), while dynamic capabilities are necessary, they are not in themselves sufficient for competitiveness; complementary capabilities such as absorptive capacity which enables effective knowledge integration and application are also essential.

Firms with strong dynamic capabilities can develop knowledge-based assets and translate them into operational routines that generate value. As Teece (2009) explains, universities must institutionalize the ability to adapt their structures and systems to align with their evolving knowledge base. The organization and reuse of knowledge across departments and faculties is crucial to achieving strategic alignment and innovation. This internal structuring directly supports knowledge organization

capability, ensuring that resources are not only accessible but effectively utilized across the institution.

The theory thus supports the independent variable of knowledge organization capability, emphasizing that sustainable competitiveness arises when organizations can internally reconfigure knowledge structures to align with strategic goals and dynamic external demands.

2.2.4 Organizational Learning Theory

Organizational Learning Theory, as developed by Argyris and Schön (1997), emphasizes that organizations learn through a process of inquiry triggered by mismatches between expected and actual outcomes. When discrepancies arise, individuals and groups engage in investigation to resolve these gaps, and in the process, knowledge is created and shared. Learning becomes an organizational output derived from ongoing interactions among individuals, systems, and structures within the firm.

Levitt and March (1988) proposed that organizational learning involves acquiring, disseminating, and interpreting information to effect behavioral change and improve performance. This view is supported by Castaneda et al., (2018), who recognized that the foundation of organizational learning lies in the ability to absorb and distribute information efficiently. More recently, Ahmad & Museera (2024) emphasized that sustained learning is not only about knowledge acquisition but also about the capacity to embed, preserve, and access knowledge over time. Such retention is fundamental to institutional memory and decision-making.

Organizational learning is essentially the cycle of knowledge creation, retention, and transfer, all of which depend on both individual experiences and institutional systems (Nauman et al., 2025). These systems include databases, repositories, standardized procedures, and communication tools that allow organizations to capture and store tacit and explicit knowledge. In this way, past experiences and newly generated insights remain accessible for future reference and can support consistency in operations, innovation, and adaptability.

This theory directly supports the knowledge storage capability construct in this study. It explains how universities, as knowledge-intensive institutions, must not only encourage knowledge creation but must also develop robust mechanisms to capture and preserve that knowledge for reuse. As asserted by Patel (2025), knowledge retention mechanisms enhance organizational resilience, especially in knowledge-dependent environments such as higher education. Thus, storage capability forms a vital link between learning and long-term competitiveness.

2.2.5 Technology Acceptance Theory

The Technology Acceptance Theory (TAM), developed by Davis (1989), explains how individuals come to accept and use new technologies within organizational settings. TAM emphasizes two key beliefs that influence user adoption: *perceived usefulness* the degree to which a person believes that using a system would enhance their job performance and *perceived ease of use*, which reflects the effort expected in using the system. These beliefs form users' attitudes toward technology and ultimately shape their behavioral intention and actual usage (Davis, 1989).

Over time, TAM has evolved through empirical validations and extensions. Venkatesh and Davis (2000) expanded the model to include external variables such as social influence and cognitive instrumental processes. Recent studies have shown that perceived ease of use continues to significantly influence perceived usefulness, thus shaping user attitude and acceptance (Chao, 2019). In addition, contemporary models like the Unified Theory of Acceptance and Use of Technology (UTAUT) have integrated TAM principles to predict technology acceptance more accurately in dynamic environments (Dwivedi et al., 2019).

In the context of this study, the Technology Acceptance Theory is directly aligned with the moderating variable, information technology (IT). IT plays a critical enabling role in knowledge management capability. Technologies that are perceived to be easy to use and useful increase the likelihood that employees will utilize knowledge management systems effectively (Hamamurad et al., 2022). This, in turn, enhances knowledge creation, organization sharing and storage within universities.

Therefore, TAM supports the idea that the adoption of IT moderates the relationship between knowledge management capability and university competitiveness, by facilitating user engagement with knowledge platforms, digital repositories, and communication tools.

2.2.6: Porter's Competitive Advantage Theory

The Competitive Advantage Theory, advanced by Michael Porter (1985), offers a strategic framework for understanding how organizations achieve and sustain superior performance relative to competitors. Porter identified three generic strategies cost leadership, differentiation, and focus through which organizations can secure a competitive edge. The theory posits that an organization's competitiveness stems from its ability to implement unique value-creating strategies that are not simultaneously being pursued by competitors. Porter's model emphasizes that long-term success depends on aligning internal resources and capabilities with external opportunities to create sustainable value (Porter, 1985). Recent studies, such as Aithal and Aithal (2020), have reinforced this position, arguing that competitiveness emerges from strategic distinctiveness supported by innovation, quality, and knowledge utilization.

In the higher education context, Porter's framework has been widely applied to explain institutional performance and differentiation. Universities operate in increasingly competitive environments where they must attract students, generate impactful research, and foster innovation to sustain relevance. According to Chen et al. (2021), universities that pursue differentiation through unique programs, specialized research centers, and high-quality teaching achieve stronger competitive positions. Similarly, Djakona et al., (2021) highlight that institutions leveraging intellectual resources and technology-based capabilities demonstrate superior academic performance and innovation outcomes. These findings suggest that competitive advantage in higher education is largely derived from the ability to integrate and utilize knowledge strategically to enhance value for stakeholders.

Competitiveness in public universities is manifested through key indicators such as student enrollment, patents, and citations, which reflect an institution's market attractiveness, innovation output, and research impact. According to Javed et al.

(2025), knowledge-driven differentiation enhances institutional reputation, which directly influences enrollment and research productivity. Likewise, Russo et al., (2025) argue that universities leveraging their intellectual capital through collaborative research, technology transfer, and publication strategies achieve stronger visibility and global competitiveness. This aligns with Porter's assertion that institutions can sustain competitiveness by developing distinctive competencies that are difficult to imitate, thereby fostering long-term academic and operational excellence.

This study adopts Porter's Competitive Advantage Theory to anchor the dependent variable competitiveness as it provides a conceptual basis for linking knowledge management capabilities to measurable institutional performance. The theory underscores that competitiveness in chartered public universities can be achieved through strategic differentiation, innovation, and operational efficiency. By effectively managing knowledge creation, sharing, and application, universities can enhance their ability to attract students, generate patents, and increase research citations. Porter's framework therefore reinforces the idea that competitiveness is not incidental but the product of deliberate strategic choices and the optimal use of knowledge-based assets to sustain institutional success.

2.3 Conceptual Framework

According to Varpio et al., (2020), a conceptual framework is a structured set of interrelated concepts and variables that guide a research study by identifying relationships among the variables under investigation. It provides a logical structure of meaning that supports the development of the study's objectives and research questions. A well-constructed framework enables the researcher to interpret findings in a coherent manner. Similarly, Takona (2024) emphasize that a conceptual framework serves as a blueprint for data collection, analysis, and interpretation. It illustrates how the independent, dependent, and intervening variables are theoretically connected and supports the formulation of hypotheses and assumptions relevant to the study. The variables of this study are shown in Figure 2.2.

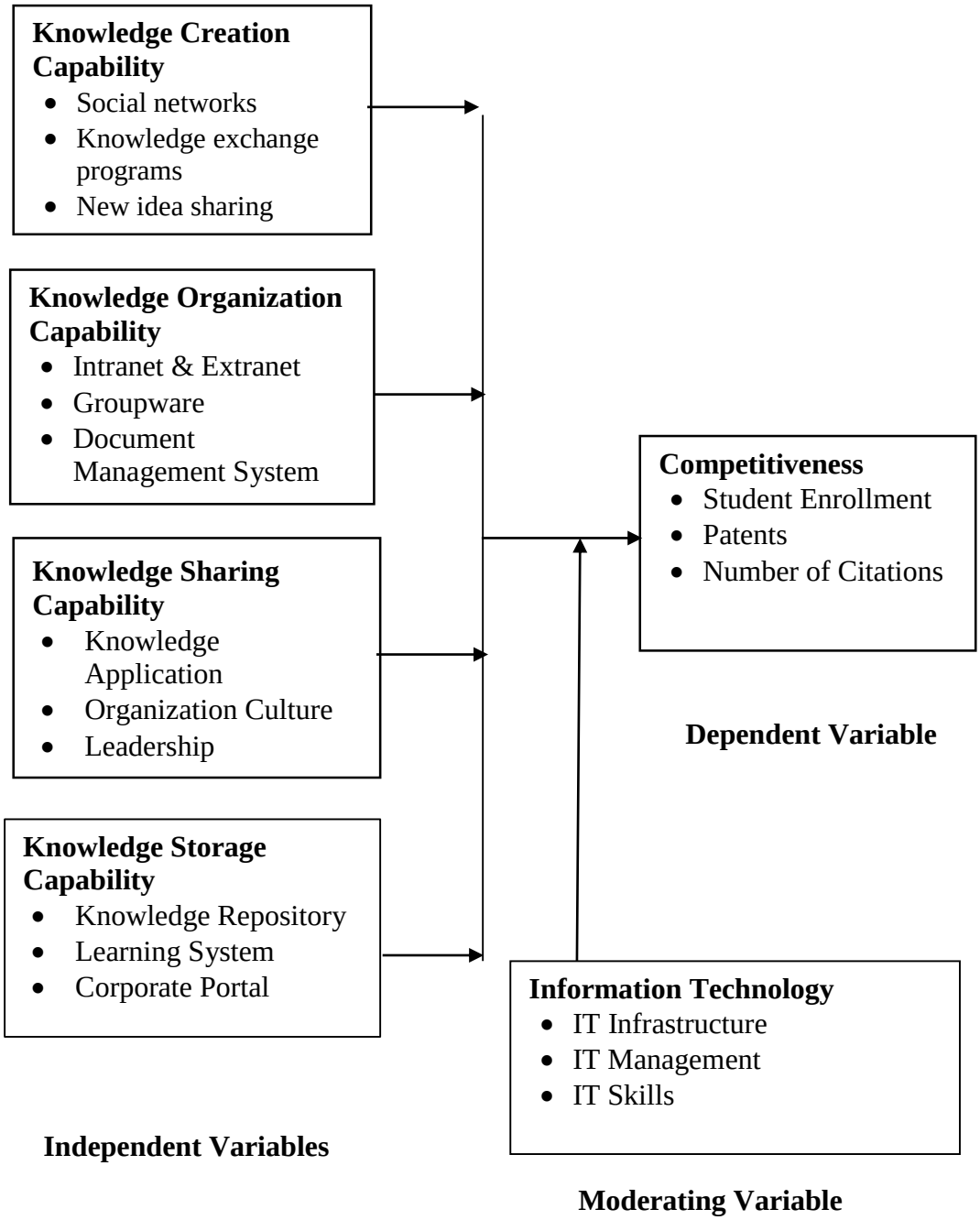

Figure 2.2: Conceptual Framework

2.3.1 Knowledge Creation Capability

Knowledge creation is the deliberate act of making knowledge available in an organization, distributing it in social settings, and merging it with the existing internal knowledge system (Migdadi, 2022). Kolluri (2022) asserted that a firm can generate knowledge within it by undertaking research and development of new processes. Also,

according to Migdadi (2022) organizations acquire knowledge externally by hiring new workers and consultants who bring advanced knowledge and new insights of competing firms. In other words, knowledge creation focuses on the substance of the existing knowledge that is being re-created. It is concerned with how different kinds of knowledge can be created independently and jointly through diverse social and cognitive processes of interaction amongst employees (Sa et al.,2020; Migdadi, 2022; Sahibzada et al.,2023). In resource-based theory, the knowledge creation capability of multinational organizations is situated in the category of intangible resources, and it is understood that organizations are responsible for managing knowledge creation and development. Knowledge creation processes could even be used to improve an organization's capacity for mature innovation (Liu et al.,2020) as knowledge transference between companies provides opportunities for both mutual learning and inter-organizational cooperation. As a result, this may stimulate the creation of new knowledge while simultaneously contributing to the organizational ability to innovate (Lam et al., 2021).

Knowledge creation capability represents the process that enables organizations to create extra or different views on the existing knowledge. The process can be carried out by the employees deliberately by following existing creative methodologies, through a goal free/driven process (Al-Omoush et al., 2020). Also, knowledge creation may occur less consciously, by employees utilizing new prospects to appear or depending on chance (Songkajorn et al., 2022). Once employees become conscious of new knowledge, they often start codifying it so that it becomes more certain and structured for use (Zieba, 2021). The process allows the knowledge to be captured, stored in the organization’s repositories, and shared in a process referred to as organizational learning (Antunes et al., 2020).

In the creation and acquisition phase of the knowledge management life cycle, information is created or acquired internally by knowledge workers. Externally information is acquired through outsourcing, or purchased from an outside source, and the mechanisms for this phase include self-reporting, documentation, programming, instrumentation, and knowledge engineering (Oniare, 2021). To this end therefore,

knowledge creation and acquisition affect organizational performance through self-reporting.

According to (Chen et al., 2020), high-performing knowledge workers get most of the valuable information from other people in their social networks. Feng et al., (2021) observed the positive effect of social networks in knowledge sharing behaviors, while Appel et al., (2020) opined that information hungry individuals develop social networks. Gondal (2023) acknowledged that social networks can considerably modify the innovation diffusion and a person's adoption decisions. For purposes of this study, the measures for knowledge creation will be the availability of formal and informal networks between organization's employees and external experts, policies and manuals, constant experimentation with new ideas, and employee knowledge exchange programmes.

2.3.2 Knowledge Organization Capability

According to Ogutu et al., (2023) organizations should categorize knowledge assets in order to establish the resources that they have at their disposal and to identify their strengths and weaknesses. Thus, once created, knowledge needs to be organized into something manageable through activities that index, classify, map, and categorize it for easier storage, navigation, and retrieval (Gnoli, 2020). Zighan et al., (2024) assigned the role of knowledge preparation and organizing to a knowledge manager or the actual producer of the knowledge so that it can be easily shared for reuse. Gnoli (2020) referred to knowledge organization as knowledge enabling processes that are put in place to make resources findable, whether one is looking for a single item or browsing through vast resources of knowledge to get something useful.

Knowledge management involves people, processes and technology in order to be complete and for its potential to be realized (Ostrovska et al., 2020). Building on the technology perspective, IT-based systems have been generally adopted as a means of organizing and retrieving knowledge and information (Adamides & Karacapilidis, 2020). These systems are designed solely for the intense analytical processing of information with the aim of generating key knowledge reports from available organizational data (Osman, 2019).

2.3.3 Knowledge Sharing Capability

Knowledge sharing comprises of exchange of knowledge and information from a single source such as an individual, team or firm to another firm (Muhammed & Zaim, 2020; Sonmez et al., 2020). Knowledge sharing denotes the transfer and exchange of existing know-how and ideas amongst workers in order to generate additional knowledge to assist firms to achieve their overall objectives. Through sharing of knowledge, firms achieve continuous growth, maintain profitability and competitiveness. In addition, knowledge sharing promotes individual workers' learning and innovation, enhances their skills, competencies and overall performance.

2.3.4 Knowledge Storage Capability

Knowledge storage refers to the practice of recording knowledge and other tangible assets of a firm and packing it in a knowledge repository such as database, archives, and filing system. The knowledge is thereafter transferred to the individual, departments or units for application in their processes (Deliwe & Khumalo, 2023). Once the desired knowledge has been obtained, it should be coded and documented to ease accessibility (Mahdi & Nassar, 2021). Linzalone et al., (2020) identified three knowledge storage tools, namely knowledge repository, learning system and a corporate portal. A repository aids in management of documents such as editions, version control, document sharing, support for various types of content (audio, text, video, graphs and web), and in search and advanced retrieval mechanism. A robust university repository holds vital information such as research interest within or at affiliate institutions, outcome of research and organizations that offer funding and commercialization of research.

A learning system aids in student evaluation, progress tracking, examinations, collaborations, library resources, cohorts and publications. According to Khatun et al., (2021) a model university portal contains a link for research management guidelines and best practices relating to opportunities for funding, call for proposals, protocols and budgets. Other functionalities include proposal-routing guidelines, notification of award, account procedure, grant administration guidelines, reporting templates and research support staff.

The above capabilities enable the institution to attain increased competitiveness and responsiveness to the dynamic customer needs. The measurement of performance in institutions of higher learning ought to focus on achievement by students, which necessitates a robust and integrated knowledge management system. Such a system serves as a platform to allow academics communicate their research outcome (Paudel et al., 2023), and add value to knowledge environment (Adhikari & Shrestha, 2023). The common function of knowledge management is that of organizational knowledge repository (Levallet & Chan, 2019).) and best practice for all in-house knowledge resources to allow utilization within the firm. Further, Osman et al., (2022) posit that a knowledge repository serves as an analytical tool to enable mapping of existing experiences and skills with present needs to mitigate deficiencies in the organizational knowledge base

2.3.5 Information Technology

An organization's distinct capabilities are entrenched in its business processes that make it more effective than its competitors in identifying and exploiting its resources (Abrokwah-Larbi, 2024; Amini et al., 2023). According to Božič and Dimovski (2019) IT is a firm's ability to accumulate, integrate, and exploit valuable IT assets alongside other capabilities and resources. Paramesha et al., (2024) referred to IT as the ability of a firm to discover systems that meet the needs of the business, to exploit the systems in a cost-effective manner, and to provide long term support and maintenance for those systems. IT refers to the manner in which an organization controls its investment in assets and leverages them to create business systems that impact on the organization's overall efficiency (Obitade, 2019; Agarwal & Sambamurthy, 2020). Jia et al., 2019 expounded that IT is composed of four main resources namely IT resources, human IT infrastructure (knowledge resource), shared IT services and shared standard applications.

2.3.6 Competitiveness of Public Universities

Competitiveness refers to a firm's ability to outperform the competitors in terms of profits, sales volume and market share (Farida & Setiawan, 2022). Additionally, competitiveness is defined as a firm's market position in relation to its competitors and

also as the ability to meet the needs of the consumers in a manner that is superior than the competitors. The measure of the level of competitiveness of a firm aims at outlining its competitive position in relation to the other players in the market in which it is trading.

Competitiveness is a multi-dimensional concept that can be evaluated through various performance indicators reflecting an institution's ability to achieve superior outcomes (He, 2024). In the higher education context, competitiveness extends beyond financial measures to include indicators that capture academic productivity and institutional effectiveness. Hence, a university's competitiveness is best understood as a reflection of its overall efficiency, innovation, and capacity to generate impactful knowledge (Osazefua, 2019). Several researchers (Droj et al., 2021; Godínez-Reyes et al., 2022) have argued that institutional efficiency in higher education is better reflected through research output and academic recognition rather than traditional financial metrics. Similarly, Multan et al. (2023) emphasized that efficiency in universities is determined by their ability to create and apply valuable academic knowledge that contributes to societal and economic advancement.

Although public universities in Kenya do not exist for profit making, they are expected to generate resources and manage them efficiently. In line with Article 68 (1) (b) of the Public Finance Management ACT (2012), it is recommended that a public institution manages its assets guided by the principle of efficiency of their use. Pursuant to this guidance, the management of a public university should pay attention to its finances and make an effort to efficiently manage the assets owned. Therefore, it seems justified to measure their success in terms of a clear/hard/measurable criterion such as profit/surplus and efficiency. Enrollment refers to the number of students enrolling in a particular university and serves as a vital metric for higher education institutions to gauge their effectiveness in attracting and converting prospective students. A high enrollment yield typically suggests that an institution has successfully enticed and convinced students to choose them over other options, while a low yield may signal missed opportunities or room for improvement. Beyond the obvious financial implications, a strong yield directly impacts an institution's reputation, ranking, and overall desirability (Hasan et al., 2025).

Public universities conduct a lot of activity in the education market and knowledge management happens to be one of the key assets capable of improving their attractiveness and competitiveness. Competitiveness can be attained by offering a high-quality product/service that satisfies both the consumer (student) and the consumer of the finished product (the labour market) where the students realize their potential (Calma & Dickson-Deane, 2020). Each university strives to manage the services to students, so that it is preferred over its competitors, by providing the following marketing mix to its customer: value, quality, price, image, reputation, value addition and location. Presently, there is a high competition caused by the increased number of local universities, international competition, new forms of qualification and re-qualification and introduction of new learning methods such as distance learning. In order to adapt, public universities should respond by developing new marketing strategies to build competitive advantages that enhance their competitiveness. Such strategies would be based on factors of production such as highly qualified teaching staff, modern facilities and infrastructure, and deployment of complementary services such as scientific research, consultancy and marketing management (Rosmayati, 2022).

The concept of competitiveness of a university is closely linked to the ratings associated with webometric ranking, highly cited researchers, number of papers published, employer reputation, faculty/student ratio, citations, international outlook, innovation, entrepreneurship and university brand assessment (Rosmayati, 2022). These ratings serve as reference points for prospective students and their parents when choosing one institution over another, and dictate the number and quality of students that chose respective programme offerings in the universities.

This study used framework to measure competitiveness of chartered public universities by considering three key variables namely, new student enrollment, patents and number of citations by top ten researchers. Student enrollment is a significant indicator of a university's market demand and perceived value by students and stakeholders such as parents and industry (Yamin, 2024). Technological innovation on the other hand is one of the key drivers of socio-economic development. Technological innovation and patenting are represented by the conversion of

knowledge into new products and processes which, when commercialized, generate wealth. It occurs mainly when firms create, through research and development (R&D), new products or processes (Medda, 2020).

Kenya has recognized the role of R&D in spurring economic development and has put in place systems to enhance it. These include the creation of a National Council for Science and Technology (NCST) as the main governance body to oversee science, research and technology issues; and Science, Technology and Innovation (STI) policy to promote efficiency, productivity and competitiveness and an innovation fund to spur up innovativeness for development. Universities and R&D organizations are an important part of any country's national innovation system, because they are considered as the main potential generators and users of intellectual property.

The mandate of these institutions includes capacity building and creation of new knowledge through research and knowledge transfer. In Kenya, public research institutions and universities provide the primary source of knowledge by conducting basic and applied research. Universities have recognized the contribution to knowledge by individual researchers through protected knowledge in the form of patents or in the form of start-ups. For economic development in the country, measures of the quality of universities in terms of the number of patents and the number of start-ups is equally as relevant as the traditional measures of competitiveness (Fiorentino et al., 2021).

Scholarly publications are one of the most common research outputs. These include books, conference proceedings, journal articles and their underlying data. The significance of publication-based indicators derived at the university level can hardly be disputed. The distribution and discussion of new knowledge are mainly undertaken by means of written papers, with great significance attached to publication in scientific journals (Liu et al., 2020). The use of citation metrics as an indicator of research performance is based on the assumption that the frequency of citations demonstrates that the progress in knowledge contributed by a paper is imparted to other scholars by their study of that paper. On the other hand, un-cited papers mean that they do not provide a major contribution for other scholars (Yan et al., 2020) and the literature

cited therein. Aksnes et al., (2019) drew attention to the fact that citations represent an impact indicator which is valid, relatively objective, and, with existing databases and search tools, straightforward to compute.

Accordingly, the utilization of citations, especially as part of a comprehensive set of indicators, generates in principle a more complete, more characteristic picture of the research profile of a university or faculty (Aksnes et al., 2019; Glänzel et al., 2019). Citation counts provide researchers and administrators with a reliable and efficient indicator for assessing the research performance of authors, projects, programs, institutions, and countries and the relative impact and quality of their work (Aguinis et al., 2021).

2.4 Empirical Literature Review

This segment reviews the literature from previous studies regarding the relationship of knowledge creation capability, knowledge storage capability, knowledge organization capability, knowledge sharing capability and Information Technology on competitiveness of public universities.

2.4.1 Knowledge Creation and Competitiveness

The creation of knowledge within organizations plays a critical role in enhancing performance and sustaining competitiveness. Doval (2020) posits that the deliberate process of generating new knowledge fosters innovation, strategic flexibility, and adaptability elements necessary for firms to thrive in rapidly changing environments. His findings show that firms which actively embed knowledge creation into their processes are more capable of responding to external pressures and ensuring continuous performance improvement.

Panjaitan et al. (2021) reinforce this view by demonstrating that institutions that prioritize knowledge creation such as through internal research, academic collaborations, and employee-driven innovation achieve better business outcomes. Their study emphasizes that competitive advantage stems not only from possessing knowledge, but from the continuous effort to generate, refine, and apply it within the

organization. This ensures that firms remain proactive in responding to evolving market demands and stakeholder expectations.

Similarly, Mwangi & Mwanzu (2025) found that organizations that support an environment of continuous learning and employee knowledge sharing experience enhanced strategic positioning and operational efficiency. Their study revealed that initiatives such as idea incubation platforms, mentorship programs, and interdepartmental collaboration significantly contribute to the development of innovative solutions, which in turn boost competitiveness. Overall, these findings underscore the importance of institutionalizing knowledge creation as a strategic asset for organizations seeking long-term growth and differentiation.

2.4.2 Knowledge Organization and Competitiveness

Mahdi et a., (2019) examined the role of knowledge management processes including knowledge organization on sustainable competitive advantage in private universities. Their study demonstrated that when universities systematically organize and manage knowledge assets, they improve decision-making, enhance academic services, and gain a more sustainable competitive position. Specifically, organizing knowledge through classification systems and internal documentation was found to reduce duplication of effort and improve responsiveness to stakeholder needs.

Similarly, Olan et al. (2022) explored the influence of artificial intelligence (AI) on knowledge sharing and overall organizational performance. While their primary focus was on knowledge sharing, the study emphasized the significance of structured knowledge systems enhanced by AI. Organized digital platforms allowed better access and retrieval of relevant knowledge, directly supporting productivity and strategic agility both of which are core to competitiveness.

Azeem et al. (2021) investigated the influence of organizational culture and knowledge sharing on innovation and competitive advantage. The findings revealed that organized knowledge systems, supported by cultural values and technological infrastructure, foster innovation. These systems made it easier for teams to access critical insights, which not only supported internal collaboration but also contributed to long-term

competitiveness by encouraging faster development cycles and responsiveness to market needs.

Rehman et al. (2022) analyzed the interrelationship between intellectual capital, knowledge management, and competitive advantage. They identified knowledge organization as a key component that links intellectual capital with strategic outcomes. The study emphasized that effective categorization, storage, and retrieval of knowledge allow firms to utilize their intangible assets more fully, enabling faster innovation, improved service delivery, and stronger market positioning.

2.4.3 Knowledge Sharing and Competitiveness

Knowledge sharing is a core component of knowledge management and is essential for achieving sustainable competitiveness in institutions of higher learning. Gebreyohans et al., (2022), through a systematic literature review, found that digital knowledge sharing significantly enhances innovation, collaboration, and academic performance in higher education institutions. The study highlighted that when universities adopt digital platforms, they foster continuous knowledge flows among staff and students, thus strengthening institutional competitiveness. Similarly, Purba et al. (2021) conducted a systematic review of knowledge-sharing practices in academic institutions and concluded that a supportive culture, ICT infrastructure, and leadership commitment are critical enablers for knowledge sharing, all of which contribute to the strategic advantage of universities.

Expanding on this, Ravikumar et al. (2022) investigated how knowledge sharing affects knowledge acquisition among employees in higher education institutions. Their results showed that active knowledge-sharing practices not only promote knowledge internalization but also enhance the employees' innovation and responsiveness to institutional goals. The study emphasized that when employees consistently share knowledge, they improve decision-making, reduce redundancy, and promote efficiency all key indicators of organizational competitiveness.

Focusing on the local context, Omanyo & Ndiege (2025) provided a systematic review of knowledge management considerations in learning management systems in Kenyan

universities. Their study found that knowledge-sharing functionalities embedded in LMS platforms such as discussion forums, collaborative assignments, and content repositories enhanced institutional responsiveness and academic collaboration. Additionally, Mwambasa (2021), in a doctoral study, evaluated knowledge-sharing practices in public universities in Kenya and confirmed that structured sharing mechanisms such as departmental meetings, mentorship programs, and digital tools contributed to improved innovation and institutional performance. Together, these local findings support the global evidence that effective knowledge sharing directly strengthens university competitiveness.

2.4.4 Knowledge Storage and Competitiveness

Knowledge storage is a foundational capability in knowledge management that significantly influences organizational performance and competitiveness. It involves the systematic collection, coding, and preservation of valuable knowledge both explicit and tacit within repositories such as databases, filing systems, and institutional memory platforms. According to Trivedi and Srivastava (2022), effective knowledge storage ensures that organizations retain institutional memory, which contributes to continuous learning and improvement of business processes. When knowledge is stored correctly and made accessible, it enables employees to replicate successful strategies, avoid previous failures, and enhance productivity thus improving overall competitiveness.

Ngah and Wong (2020) also emphasized that well-structured knowledge repositories are especially critical in knowledge-intensive firms, where competitive advantage depends on how well organizations leverage internal knowledge to respond to market demands. Moreover, Mahdi and Nassar (2021) observed that firms with strong leadership in knowledge storage demonstrated greater resilience and agility during periods of environmental uncertainty, such as the COVID-19 pandemic, due to their ability to retrieve, adapt, and reapply stored knowledge quickly.

In addition, recent research by Thumbi et al., (2025) revealed that knowledge storage significantly supports human resource planning in public institutions. Their study at the Public Service Commission of Kenya found that access to well-documented

institutional knowledge improves forecasting, succession planning, and training, all of which are essential to organizational competitiveness. The findings reinforce the idea that knowledge storage is not merely a technical function, but a strategic one that facilitates operational continuity, staff efficiency, and better decision-making. Therefore, as organizations including public universities strive to remain competitive in increasingly dynamic environments, investing in robust knowledge storage systems and practices becomes not only necessary but instrumental to their long-term success.

2.4.5 Information Technology and Competitiveness of Universities

Recent global studies affirm the significant influence of information technology on the competitiveness of higher education institutions. Maulani and Hamdani (2019) examined the role of IT alongside organizational climate in Indonesian private universities and found that IT adoption significantly enhanced competitiveness by streamlining operations and improving academic service delivery. Similarly, Galynska et al. (2021) highlighted how innovative teaching technologies including virtual labs and online collaborative tools enhanced students' academic preparedness and employability, thereby raising institutional competitiveness. These findings reinforce that institutions leveraging modern IT tools for instruction and management create more dynamic learning environments, increasing their appeal to prospective students and faculty.

Supporting this, Vasiliev (2021) proposed methods for assessing academic excellence through the integration of emerging technologies. His study emphasized that technologies like AI-driven analytics, digital assessment tools, and adaptive learning systems can serve as competitive differentiators when integrated effectively within institutional quality frameworks. Lin (2020) also developed an educational competitiveness evaluation model based on technology integration, organizational adaptability, and student satisfaction, revealing that institutions embracing IT holistically were better positioned in competitive academic landscapes. Furthermore, Kholiavko et al. (2021) emphasized that ICTs play a critical strategic role in adapting universities to the digital economy. Their research illustrated how e-governance,

digital platforms, and ICT-enabled curriculum design are now central to institutional sustainability and global relevance.

In the Kenyan context, Keitany et al., (2019) analyzed the impact of technological innovation on the competitiveness of universities in Nakuru Town and concluded that universities investing in ICT infrastructure, digital libraries, and online systems recorded improved operational efficiency and student satisfaction. Additionally, Chege et al., (2020) explored IT innovation across various sectors in Kenya, including education, and found that IT's influence on institutional performance is amplified when paired with strong leadership and strategic alignment. Collectively, these local findings mirror global trends and affirm that the purposeful deployment of IT capabilities enables universities to enhance service delivery, increase innovation capacity, and compete effectively in an increasingly digital higher education environment.

2.5 Critique of Existing Literature

The reviewed literature consistently affirms that knowledge management capabilities specifically knowledge creation, storage, organization, and sharing play a vital role in enhancing competitiveness within institutions of higher learning. Several studies (Doval, 2020; Mwangi & Mwanzu, 2025; Mahdi et al., 2019) emphasize that institutions that institutionalize knowledge processes are better equipped to innovate, respond to external pressures, and sustain superior performance. Similarly, research confirms that structured knowledge systems supported by technology infrastructure (Azeem et al., 2021; Olan et al., 2022; Rehman et al., 2022) facilitate collaboration, faster decision-making, and improved service delivery attributes directly linked to competitiveness.

While the literature provides broad consensus on the positive outcomes of effective knowledge management, several gaps remain. Most global studies have concentrated on private universities or commercial organizations in developed contexts, with less emphasis on public universities, particularly in Sub-Saharan Africa. Additionally, earlier works heavily influenced foundational thinking but lacked consideration of recent digital trends, institutional complexities, and contextual differences in

developing countries. Though more recent studies such as Thumbi et al. (2025) and Omanyo & Ndiege (2025) have begun to fill this void, empirical data from public universities in Kenya remains limited. Moreover, while the moderating role of information technology is acknowledged, studies often fail to assess its strategic alignment with institutional objectives, thereby offering limited insights into how IT integration affects competitiveness beyond operational improvements.

In light of these gaps, the present study is both timely and necessary. It focuses specifically on chartered public universities in Kenya and investigates how their knowledge management capabilities, when supported by strategic use of information technology, influence their competitiveness. By aligning with recent empirical findings while addressing underexplored contexts and relationships, this study contributes meaningful insights to both academic literature and policy-making in higher education management.

2.6 Chapter Summary

This section explored the existing literature on knowledge management capability and competitiveness of public universities. The literature has revealed presence of relationship between knowledge management capability and competitiveness of public universities. Knowledge management capability is considered a key source of competitive advantage for most organizations. Effective management of an organization's knowledge assets is a key determinant for efficiency in business operations, and results in superior performance. Public universities are institutions where knowledge ought to be created and shared amongst the stakeholders in order to create unique core competencies for survival and competitiveness in a dynamic environment.

2.7 Research Gaps

The reviewed literature reaffirms the growing importance of knowledge management (KM) capabilities such as knowledge creation, storage, organization, and sharing as critical drivers of institutional competitiveness. Scholars like Doval (2020), Mahdi et al. (2019), and Rehman et al. (2022) have underscored how structured KM processes

enhance innovation, responsiveness, and strategic agility. However, much of this literature is rooted in developed economies or the private sector, and focuses largely on theoretical constructs or generalized models without sufficient empirical backing, especially in the context of public universities in developing countries.

While some recent studies such as Thumbi et al. (2025) and Omanyo & Ndiege (2025) have made strides in contextualizing KM practices within Kenya's public sector, there remains a significant contextual gap. Few studies have holistically examined how multiple KM capabilities collectively influence competitiveness in the public university setting. Moreover, the moderating role of information technology, though widely acknowledged as an enabler of knowledge processes, has not been adequately explored in relation to its alignment with institutional competitiveness in the Kenyan higher education landscape.

In terms of methodology, many existing studies remain descriptive or qualitative, lacking robust empirical models that test the strength of relationships between KM capabilities and competitiveness outcomes. Additionally, gaps exist in theory application: while studies have used frameworks like the Resource-Based View and Organizational Learning Theory independently, there is limited research that integrates multiple theoretical lenses including the Technology Acceptance Model and Knowledge Economics Theory to fully explain how public universities can leverage KM for strategic advantage.

This study seeks to fill these gaps by empirically investigating the relationship between knowledge management capabilities and competitiveness in chartered public universities in Kenya, while assessing the moderating role of information technology. It contributes to both theoretical development and practical understanding by applying a multi-theory framework and using a quantitative approach to test relationships across variables, thereby advancing the literature on knowledge management in higher education.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the techniques used in the study. The methodology comprised of assumptions that are related, and reflects the researcher's view of reality, how it is articulated through research, and is reflective of what the study wanted to uncover. The chapter covers philosophy, design, sampling method, sample size, data collection instruments, pilot test and data analysis.

3.2 Research Philosophy

Research philosophy refers to the set of beliefs and assumptions about how knowledge is developed, interpreted, and analyzed in a study (Bell et al., 2022). It defines the worldview underpinning the research process and influences methodological choices, including data collection, analysis, and interpretation.

This study adopted a positivist philosophy, which is appropriate for studies that aim to test hypotheses based on objective and measurable data (Hair et al., 2019). Positivism is grounded in the belief that reality is external and can be objectively measured using empirical methods, particularly quantitative techniques. Under this paradigm, knowledge is derived from observable phenomena and statistical analysis, and the researcher remains independent from the study to minimize bias (Emon, 2024).

The selection of positivism aligns with the study's goal of establishing the relationship between knowledge management capabilities and competitiveness of public universities in Kenya. Hypotheses were developed from existing theories and tested through structured data collection and statistical methods. This philosophy enables the study to explain causal relationships and to generalize findings across the university context, thereby ensuring the validity and reliability of the conclusions drawn.

3.3 Research Design

A research design is the framework that outlines how data will be collected, measured, and analyzed to answer specific research questions. It provides a structured approach that ensures the research is logically and coherently executed. As defined by Hair et al., (2019), research design is the general plan that guides the researcher in addressing the research problem by identifying data sources, methods of data collection, and analysis strategies.

This study adopted a descriptive survey design, which is suitable for systematically collecting data to describe the characteristics of a population or phenomenon. According to Bell et al., (2022), descriptive survey designs are appropriate when the goal is to collect quantifiable data from a large sample, especially when testing hypotheses and relationships between variables. Given that this study aimed to examine the relationship between knowledge management capabilities and competitiveness in public universities, the descriptive approach enabled the researcher to collect detailed information from key institutional actors on multiple dimensions such as knowledge creation, storage, sharing, organization, and the moderating role of IT.

The design was also appropriate because it allows for the use of both primary and secondary data to explore variables at a specific point in time without manipulation. It supports correlation analysis and hypothesis testing, which align with the study's objectives. This approach has been successfully employed in recent empirical studies investigating strategic and organizational capabilities in higher education and public institutions (Chondo, 2021; Maende, 2021). Therefore, adopting a descriptive survey design provided a valid methodological foundation to understand and explain the interaction between knowledge management capabilities and institutional competitiveness within the Kenyan public university context.

3.4 Target Population

The target population refers to the entire group of entities to which a researcher intends to generalize the results of the study. According to Carraquico and Matos (2019), it

represents the complete set of cases that possess the characteristics of interest to the researcher. In this study, the target population comprised 31 chartered public universities in Kenya, which served as the units of analysis, given that the research aimed to examine institutional-level capabilities and competitiveness outcomes.

Within these universities, the study focused on middle-level managers as the units of observation. These included registrars, deans, and heads of departments, who are directly involved in the implementation of knowledge-related processes across various academic and administrative functions. Positioned between senior leadership and frontline staff, these managers play a critical role in translating strategic objectives into operational action, thereby making them ideal informants for assessing institutional knowledge management practices. As highlighted by Iqbal et al. (2019), middle-level managers in universities significantly contribute to organizational performance through their facilitation of knowledge flows, support for innovation, and stewardship of intellectual capital factors that are central to enhancing institutional competitiveness.

Although data in this study was collected at the individual level, the analysis and interpretation were conducted at the organizational level. This approach aligns with a multilevel research design, in which data is obtained from individuals to make inferences about higher-level units such as organizations. Yin (2018) and Creswell and Clark (2017) emphasize that multilevel research is particularly suitable when institutional phenomena are best examined through the perspectives and experiences of actors embedded within those institutions. Thus, using responses from individual managers to assess organizational knowledge capabilities remains methodologically sound within the context of a descriptive survey design.

The collection of demographic data at the individual staff level, including age, gender, education, and experience, was essential for understanding the characteristics of the respondents who provided institutional data. It also allowed the researcher to explore potential patterns in knowledge management behaviors across demographic groups and to support more nuanced interpretations of how individual-level attributes may influence perceptions of institutional practices. While demographic features of the

universities themselves, such as institutional age, size, or geographic location, could offer additional context, this study deliberately prioritized internal operational dynamics as perceived by knowledge actors within the organization.

3.5 Sampling Frame

A sampling frame refers to the precise list or database from which study participants or units are selected. It defines the operational boundary of the target population and serves as a foundational reference for ensuring representativeness and minimizing sampling bias (Kanaki & Kalogiannakis, 2023). A well-constructed sampling frame provides a structured platform for identifying all relevant units eligible for inclusion in a study and enhances both the validity and reproducibility of research outcomes (Taherdoost, 2019).

In this study, the sampling frame consisted of chartered public universities in Kenya, as recognized and published by the Commission for University Education (CUE) as of December 2020. These universities were selected based on their formal accreditation status, institutional autonomy, and comprehensive academic and administrative structures. Leveraging an official and up-to-date list enhanced the transparency, accuracy, and credibility of the sampling process.

3.6 Sample Size and Sampling Technique

This study employed a two-tiered sampling strategy, combining census and purposive sampling techniques to strategically capture relevant and reliable data across Kenya's chartered public universities. At the institutional level, the study adopted a census approach targeting all 31 chartered public universities in Kenya, which served as the units of analysis. A census was considered appropriate due to the relatively small and manageable number of institutions, ensuring inclusivity and representativeness of the population. As emphasized by Loice (2023), a census is most suitable when each unit holds critical value in understanding the research phenomenon and allows generalization within the target context.

At the respondent level, the study applied purposive sampling to select five middle-level managers from each university. These included the Registrar, Finance Officer, ICT Officer, Librarian, and Dean of Faculty. These roles were selected due to their strategic involvement in knowledge-related activities, decision-making, and operational execution. According to Migdadi (2022) and Iqbal et al. (2019), purposive sampling is ideal in knowledge management research where specific expertise is required to obtain valid insights. Their proximity to organizational data and processes makes these officers suitable informants.

While purposive sampling may introduce selection bias, this risk was mitigated through consistent selection criteria applied across all institutions. Additionally, the diversity in managerial roles helped balance perspectives and improved the credibility and depth of data. The final sample size comprised 155 respondents (5 officers × 31 universities), which was considered adequate for statistical analyses and generalizability within the study's scope. These are presented in Table 3.1

Table 3.1: Sample Size

S/No.	Respondent	Number
1.	Registrar	31
2.	Finance Officer	31
3.	ICT Officer	31
4	Librarian	31
5	Dean of faculty	31
	Total	**155**

In terms of adequacy, the sample size meets current recommendations for quantitative studies involving regression analysis. For example, Tumiran (2024) affirm that a sample size of over 150 is sufficient for populations below 500 when four or more predictors are involved. Similarly, Torwane et al. (2021) support that a sample size exceeding 100 is adequate to detect significant relationships among variables with acceptable confidence intervals. This sampling approach ensured that the study was methodologically rigorous, contextually relevant, and statistically robust.

3.7 Data Collection Instruments

This study employed both primary and secondary data sources to comprehensively examine the relationship between knowledge management capability and competitiveness among Kenya's public universities. Combining the two enhanced the validity and depth of the findings.

3.7.1 Questionnaire

Primary data was collected using a structured questionnaire distributed to five middle-level managers in each institution. The instrument included closed-ended items rated on a five-point Likert scale, designed to measure knowledge creation, sharing, storage, and organization, as well as perceived competitiveness. This approach enabled the collection of standardized and quantifiable data. The questionnaire was physically administered using a drop-and-pick-later method to maximize response rates, with follow-ups conducted via email, telephone and personal visits. This method has been shown to improve participation and reduce non-response bias (Perera et al., 2022).

3.7.2 Secondary Data Collection Tool

Secondary data focused on competitiveness indicators such as student enrollment trends, number of research citations, and patent registrations. These data were extracted from official university reports, Commission for University Education publications, and databases such as university repositories and NACOSTI. When discrepancies arose, verification was sought from institutional offices, such as research and planning departments. Triangulation was applied by cross-checking figures from multiple sources to ensure consistency and improve credibility of the findings (Iqbal et al., 2019). This combination of subjective and objective measures enhanced the reliability and robustness of the study outcomes.

3.8 Pilot Test

A pilot test was conducted before the main study to evaluate the validity and reliability of the questionnaire. This process ensured that the research design and instruments were appropriate, accurate, and capable of generating meaningful data. It also helped

identify and correct weaknesses in question wording and structure. In line with best practices, 10 percent of the main sample, 15 respondents from three non-chartered public universities participated in the pilot test. The feedback from this exercise informed adjustments that improved the questionnaire and data-coding scheme before the main study (Gani et al., 2020).

3.8.1 Validity of Research Instruments

Validity refers to the extent to which a research instrument accurately measures what it is intended to measure. To ensure content validity, the questionnaire was reviewed by subject experts during its development. Construct validity was then assessed using the Average Variance Extracted (AVE) method, with results above the threshold of 0.5 indicating acceptable convergent validity. This confirmed that the instrument adequately captured the intended constructs (Haji-Othman & Yusuff, 2022).

3.8.2 Reliability of Research Instruments

Reliability measures the consistency of results when an instrument is applied repeatedly under similar conditions. Cronbach's alpha was used to assess internal consistency, where values of 0.7 or higher were deemed acceptable. Items that did not contribute to the reliability coefficient were revised or removed to enhance the overall reliability of the instrument (Sekaran & Bougie, 2020).

3.9 Data Analysis and Presentation

Babin et al. (2020) described data analysis as the application of reasoning to comprehend research data in order to determine consistent trends and summarize the outcome of the investigation. According to Strydom and van der Merwe (2025) data analysis refers to the process in which raw research data is pre-arranged so as to extract valuable information. The following data analysis procedure was used for this study.

First, the data was organized and coded for processing with the Statistical Package for Social Sciences (SPSS) to generate tables and graphs, as well as inferential and descriptive statistics. Secondly, descriptive statistics of key variables was evaluated to gain insight of major characteristicsand patterns of the main variables. The mean,

standard deviation and frequency distribution was used for descriptive analysis and findings presented in tables, charts and graphs.

Thirdly, to address the objectives of the study, two multiple regression models equation (3.1) and (3.2) in section 3.10, were estimated and results presented. The following series of diagnostic tests were conducted to ascertain the suitability of the models: Breusch-Pagan test and Variance-inflation factor (VIF) test was conducted to test for heteroskedasticity in the stochastic term and multicollinearity of independent variables respectively; Ordinary Least Squares were used to estimate models in absence of heteroskedasticity and multicollinearity. Where presence of heteroskedasticity and/or multicollinearity was detected, General Least Squares or other suitable methods were used to correct the problem. Adjusted R square and F statistics were used to evaluate the strength and reliability of each regression (Chicco et al., 2021).

To address hypothesis H_1 through H_5, a t test was conducted to test the significance of the independent variables and hypothesis. The p-values for the t-tests were used to make conclusions on whether to fail to reject or fail to accept the null hypotheses. A level of significance of 5 percent formed the benchmark for failure to reject or accept the null hypothesis. Table 3.2 shows the Hypotheses test.

Table 3.2: Hypotheses Tests

Objective(s)	Hypotheses	Hypothesis Test	Regression Model
Research objective 1: To determine the effect of knowledge creation capability on competitiveness of chartered public universities in Kenya	Hypothesis 1:	H0≠0 Ha=0	(Equation 1) where: Y=Competitiveness β0= intercept
	H01: Knowledge creation capability has no effect on competitiveness of chartered public universities in Kenya	Accept Ha if p<0.05, Otherwise fail to accept the Ha	β1 = Coefficient for X1 X1= knowledge creation. e = Error term
Research Objective 2: To examine how knowledge organization capability influences the competitiveness of chartered public universities in Kenya	Hypothesis 2:	H0≠0 Ha=0	(Equation 1) where:
	H02: Knowledge organization capability has no effect on competitiveness of chartered public universities in Kenya	Accept Ha if p<0.05, Otherwise fail to accept the Ha	Y= Competitiveness β0= intercept β3 = Coefficient for X3 X3=knowledge organization e = Error term
Research Objective 3: To assess how knowledge sharing capability enhances competitiveness in chartered public universities.	Hypothesis 3:	H0≠0 Ha=0	(Equation 1) where: Y=Competitiveness β0= intercept

Objective(s)	Hypotheses	Hypothesis Test	Regression Model
	H03: Knowledge sharing capability has no effect on competitiveness of chartered public universities in Kenya.	Accept Ha if p<0.05, Otherwise fail to accept the Ha	β4= Coefficient for X4 X4= knowledge sharing e = Error term
Research objective 4: To evaluate the contribution of knowledge storage capability to competitiveness of chartered public universities in Kenya	Hypothesis 4:	H0≠0 Ha=0	(Equation 1) where: Y=Competitiveness β0= intercept
	H04: Knowledge storage capability has no effect on competitiveness of chartered public universities in Kenya	Accept Ha if p<0.05, Otherwise fail to accept the Ha	β2 = Coefficient for X2 X2= knowledge storage e = Error term
Research Objective 5: To assess the moderating effect of Information Technology on the relationship between knowledge management capability and competitiveness of chartered public universities in Kenya	Hypothesis 5:	H0≠ 0 Ha=0	(Equation 2) where
	H05: Information Technology has no moderating effect on the relationship between knowledge management capability and competitiveness of chartered public universities in Kenya	Accept Ha if p<0.05, Otherwise fail to accept the Ha	Y= Competitiveness α0= intercept αi= Coefficients for XiX5 for i= (1,2,3,4) e = Error term

3.10 Model Specification

Equation (1) below shows the multiple linear regression model of the independent variables $X_{1's}$

against the dependent variable Y.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e \quad (1)$$

Equation (2) shows the moderating regression model with moderating term X_5 introduced to thereduced model as follows:

$$Y = \alpha_0 + \alpha_1 X_1 X_5 + \alpha_2 X_2 X_5 + \alpha_3 X_3 X_5 + \alpha_4 X_4 X_5 + e \quad (2)$$

where:

Y: Competitiveness of chartered public universities (Dependent Variable)
X_1: Knowledge creation capability (predictor variable)
X_2: Knowledge organization capability (predictor variable)
X_3: Knowledge sharing capability (predictor variable)
X_4: Knowledge storage capability (predictor variable)
X_5: Information Technology (moderating variable)
β_0 and α_0 are the Y intercepts in equation (1) and (2) respectively
β_i and $\alpha_{i=}$ 1, 2, 3, 4 are the coefficients of the particular independent variables in equation (1) and (2) respectively
$\{X_iX_5;\ i= 1,2,3,4,\}$ refer to the interactive terms capturing the moderating effect e = the error term that is presumed to be normally distributed with mean zero and variance one.

3.11 Diagnostic Tests

3.11.1 Model Assumptions

The study employed multiple linear regression to assess the impact of independent variables namely, knowledge creation, organization, sharing and storage, on the dependent variable, competitiveness. Keith (2019) highlights that multiple regression

is particularly useful when multiple independent variables are involved. Essential assumptions for this model included linear coefficients, common distribution of errors, and normally distributed response errors.

3.11.2 Normality Test

For the multiple regression analysis, the data needed to be normally distributed. Normality was important for understanding the shape of the distribution and predicting the dependent variable outcomes (Hernandez, 2021). The Shapiro-Wilk test was applied to check normality, and a p-value greater than 0.05 confirmed that the residuals of the regression model were normally distributed.

3.11.3 Linearity Test

The linearity of the relationship between the dependent and independent variables was tested before calculating the correlation coefficient and covariance. This step was necessary to ensure that a linear regression model was appropriate for the data (Roustaei, 2024). The Pearson correlation coefficient was applied to assess the strength of the linear relationship. A significant linear relationship was confirmed with a p-value less than 0.05.

3.11.4 Multicollinearity Test

Multicollinearity refers to the correlation between predictor variables, which can distort regression results by inflating standard errors and confidence intervals (Williams et al., 2019). The variance inflation factor (VIF) was used to test for multicollinearity. A VIF greater than 10 indicates a problem with multicollinearity, but all independent variables had a VIF below 10. This confirmed that there was no significant multicollinearity in the model.

3.11.5 Auto-Correlation

Auto-correlation refers to the correlation between successive observations in a dataset. This test was essential to determine whether the data exhibited non-random patterns over time. Durbin-Watson statistics were used to detect auto-correlation. The values

ranged between 1.5 and 2, indicating that there was no auto-correlation in the data (Chaudhary et al., 2022).

3.11.6 Heteroskedasticity

For Ordinary Least Squares (OLS) assumptions to hold, the residuals must have constant variance, known as homoscedasticity. The presence of heteroskedasticity, or unequal variance, was tested using the Breusch-Pagan test. A p-value greater than 0.05 indicated that the residuals followed a constant variance. This confirmed that the regression model met the assumption of homoscedasticity.

3.12 Operationalization of Study Variables

The variables of the study were operationalized as shown in Table 3.3.

Table 3.3: Operationalization of Variables

Variables	Operational Indicator	Operationalization Questionnaire Item
Dependent Variable		
Competitiveness of Chartered Public Universities in Kenya	1. New Student Enrolment 2. Number of Patents 3. Number of Citations	Secondary Data Collection Tool
Independent Variables		
1. Knowledge Creation Capability	1. Social networks 2. Knowledge exchange programs 3. New idea sharing	Questionnaire Section B; 1-12
2. Knowledge Organization Capability	1. Intranet and Extranet 2. Groupware 3. Document Management System	Questionnaire Section B; 13-20
3. Knowledge Sharing Capability	1. Knowledge Application 2. Organization Culture 3. Leadership	Questionnaire Section B; 21-27
4. Knowledge Storage Capability	1. Knowledge Repository 2. Learning System 3. Corporate Portal	Questionnaire Section B; 28-33
Moderating Variable Information Technology	1. IT Infrastructure 2. IT Management 3. IT Skills	Questionnaire Section B; 34-40

3.12.1 Operationalization of Independent Variables

The study examined four components of knowledge management capability as independent variables: knowledge creation, organization, sharing, and storage. These were operationalized using validated constructs drawn from prior empirical studies and tailored to fit the context of Kenyan public universities. Knowledge creation capability was measured using indicators such as social networks, knowledge exchange programs, and new idea sharing. These indicators reflect the university's ability to continuously generate and support innovation among staff and departments (Doval, 2020).

Knowledge organization capability included intranet and extranet platforms, groupware systems, and document management tools. These systems reflect the institution's ability to structure and categorize information for efficient access and use (Rehman et al., 2022). Knowledge sharing capability was measured using knowledge application practices, the role of organizational culture, and leadership support. These factors influence how well knowledge is disseminated and used across departments to improve performance (Gebreyohans et al., 2022). Knowledge storage capability was assessed using knowledge repositories, learning management systems, and corporate portals. These tools preserve institutional memory and ensure knowledge continuity across time and staff transitions (Trivedi & Srivastava, 2022).

3.12.2 Operationalization of the Dependent Variable

The dependent variable, competitiveness of public universities, was measured through three indicators: student enrollment, number of patents, and number of citations of top researchers. These indicators were selected due to their relevance in assessing academic influence, innovation output, and institutional appeal in the Kenyan higher education context (Iqbal et al., 2019). They align with national and global benchmarks of university performance and reflect the ability of universities to attract talent, produce knowledge, and contribute to national development.

3.12.3 Operationalization of the Moderating Variable

Information technology was conceptualized as a moderating variable influencing the strength of the relationship between knowledge management capability and university competitiveness. It was measured using three constructs: IT infrastructure, IT management practices, and IT skills of staff. These dimensions reflect the digital readiness and technological capacity of universities to support knowledge processes effectively (Migdadi, 2022). The inclusion of IT recognizes the growing role of digital platforms and systems in enhancing knowledge accessibility, integration, and institutional performance.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis of data, interpretation and findings based on the study objectives, hypotheses and the attendant discussion; and presents general information about the study respondents and analysis of the dependent and the independent variables. Descriptive and inferential statistics have been adopted to analyze the data. The study undertook different statistical techniques derived by SPSS version 26 in analysis of the data. The data was summarized and presented using tables, pie charts and graphs. This chapter also describes the reliability and validity of the research instrument, tests of assumptions for the regression model, testing of hypotheses, interpretation and presentation of the findings.

4.2 Response Rate

A total of 155 structured questionnaires were distributed to middle-level managers across the 31 targeted universities in Kenya. Out of these, 123 questionnaires were completed and returned, yielding a response rate of 79%, as shown in Table 4.1.

Table 4.1: Response Rate

Category	Frequency	Percentage (%)
Filled and returned	123	79.35
Not returned	32	20.65
Total	**155**	**100**

This response rate of 79.35% is considered very good and sufficient to support valid statistical analysis and generalization of results. According to Babbie (2020), a response rate above 70% is typically considered excellent for survey research, especially in social sciences.

The high response rate achieved in this study can be attributed to the rigorous data collection procedures employed. These included obtaining a research permit from the

National Commission for Science, Technology and Innovation (NACOSTI), pre-notifying the targeted universities and respondents, employing self-administered questionnaires, and making follow-up phone calls to encourage participation.

4.3 Demographic Information

The section examined the demographic information of 123 respondents with regard to their gender, age, the role or position and the number of years the respondent has served in that position. These pertinent attributes offer an understanding of the surveyed population for subsequent research and decision-making processes.

4.3.1 Gender of the Respondents

The study evaluated the gender distribution of the respondents, with the findings illustrated in Figure 4.1.

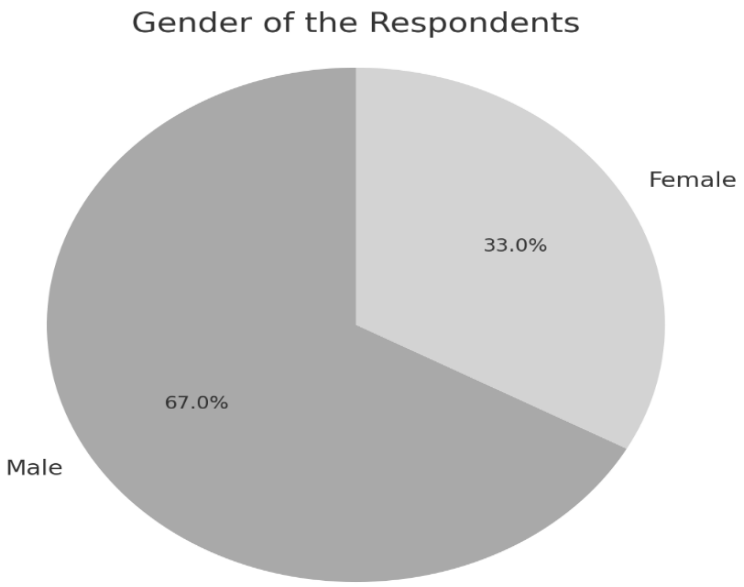

Figure 4.1: Gender of the Respondents

Out of the 123 middle-level university managers who participated in the study, 82 (67%) were male and 41 (33%) were female. This distribution suggests a notable gender imbalance within university leadership structures, despite the presence of the 30% constitutional gender representation rule in Kenya. While the study's findings indicate compliance with the minimum legal threshold, they also reflect the broader

challenge of achieving meaningful gender equity in higher education leadership. The under representation of women in these roles may point to structural or cultural barriers that continue to limit equal participation. This highlights the need for universities to adopt more proactive, gender-responsive strategies such as inclusive recruitment and promotion practices, leadership development programs for women, and gender mainstreaming initiatives to promote equitable participation across all levels of university governance.

4.3.2 Age of the Respondents

The study also examined the age distribution of the respondents and the results were presented in Figure 4.2.

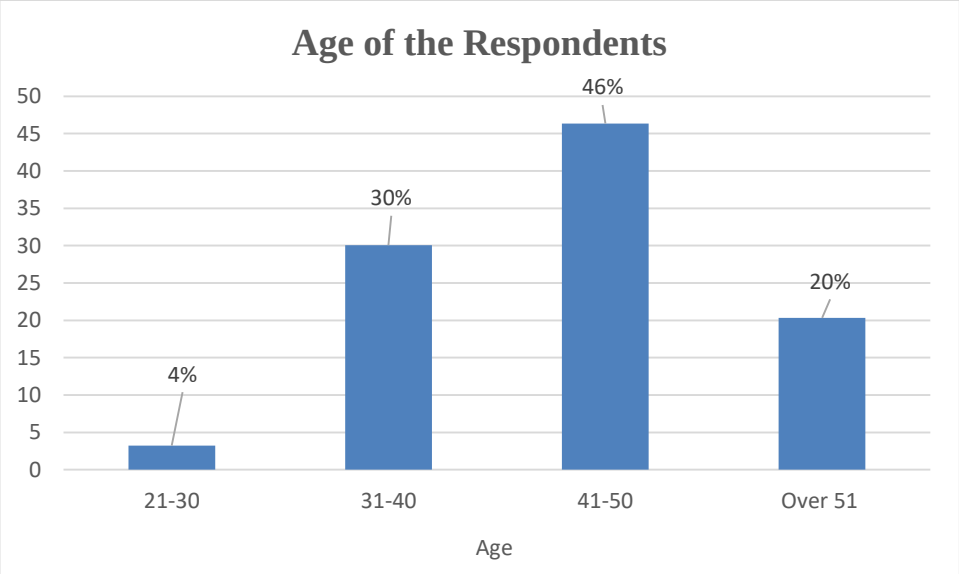

Figure 4.2: Age of the Respondents

A substantial proportion of participants, 46%, were within the 41-50 years age bracket, suggesting a mature and experienced workforce likely to possess deep institutional knowledge and the capacity to mentor younger staff members. Another 30% of the respondents fell within the 31-40 years age range, while 20% were over 51 years old. This indicates a considerable presence of senior professionals with long-term institutional experience. The remaining 4% of respondents were aged between 21 and 30 years, reflecting a small but potentially dynamic group capable of adopting

emerging knowledge management (KM) practices. This mix of experience and youth suggests that public universities possess a diverse human capital base, which is critical for balancing knowledge preservation with innovation. Such demographic diversity plays a vital role in strengthening KM systems and supporting the long-term competitiveness of higher education institutions.

4.3.3 Role Served by the Respondent

The study examined the professional roles of the respondents to capture a comprehensive and multidisciplinary view of knowledge management practices within public universities. The results were presented in Figure 4.3

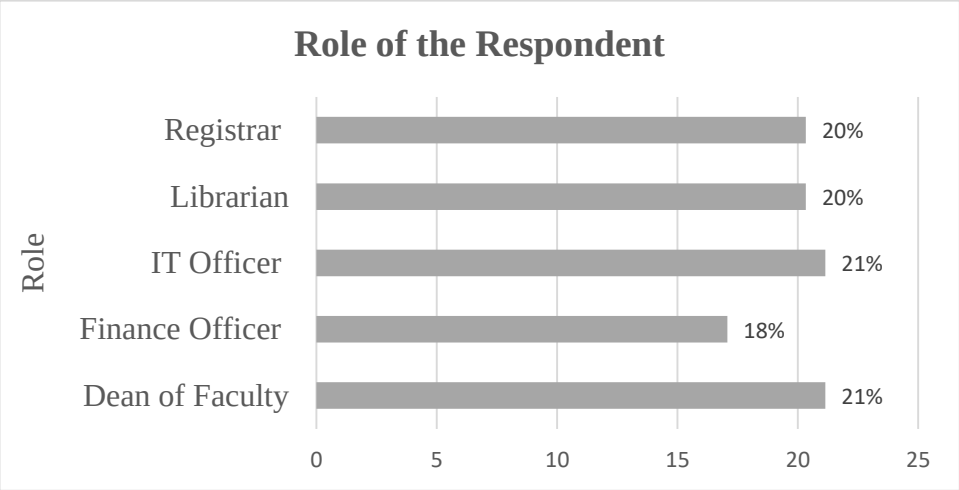

Figure 4.3: Role of the Respondent

The results indicate that out of the 123 respondents, 26 (21%) were Deans of Faculty, 25 (20%) were Registrars, 25 (20%) were Librarians, 26 (21%) were ICT Officers, and 21 (18%) served as Finance Officers. This distribution indicates a fairly balanced representation across key administrative and academic roles within the universities. The involvement of respondents from diverse functions provides a well-rounded perspective on institutional processes related to knowledge creation, organization, sharing, storage and application. Their varied responsibilities ensure that the insights captured reflect not only the operational realities of knowledge management but also strategic and technical considerations, thereby enhancing the validity and richness of the study's findings.

4.3.4 Years Served by the Respondent

The study assessed the respondents' tenure in their current roles, as presented in Figure 4.4.

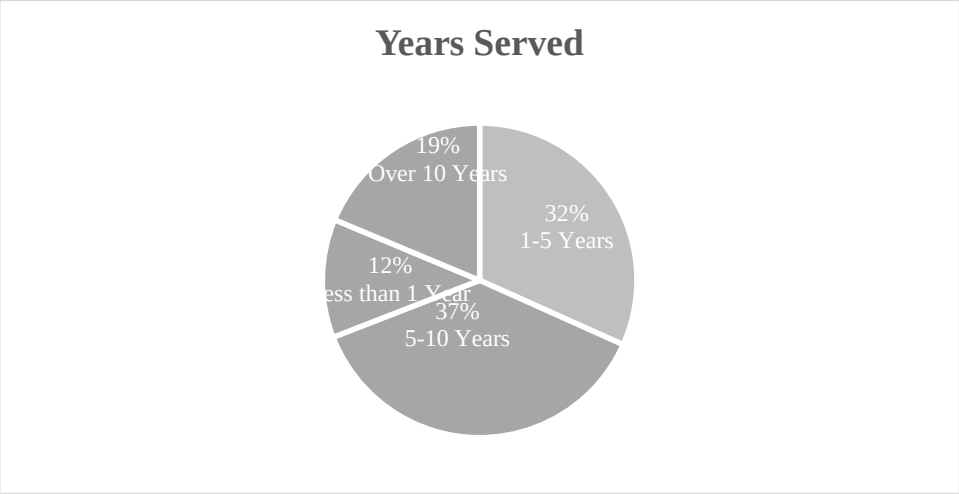

Figure 4.4: Years Served by the Respondent

The findings indicate that 46 respondents (37.4%) had served between 5 and 10 years, while 23 respondents (19%) had served for over 10 years. This means that over 56% of participants possessed long-term work experience in the university sector. Such tenure reflects not only institutional stability, but also the presence of knowledgeable individuals capable of supporting internal processes such as staff induction, technical orientation, and informal mentoring.

The findings suggest that the respondent pool is composed of individuals with significant organizational insight, particularly into knowledge-related activities. This aligns with recent research emphasizing the importance of experienced managerial staff in driving knowledge management initiatives within higher education institutions. According to Qandah et al. (2021) and Ondieki (2023), employees with longer tenure tend to have better awareness of institutional processes, are more likely to participate in knowledge sharing, and play a critical role in maintaining organizational memory and shaping strategic direction. Therefore, the tenure profile of the respondents enhances the credibility of the study, ensuring that the data collected reflects informed perspectives on institutional knowledge management capabilities.

4.4 Pilot Study Results

The pilot study aimed to refine the research instrument for clarity, validity, and reliability before full deployment. Thirteen respondents from Turkana University College, Tharaka Nithi University College, and Kaimosi Friends University representing 10% of the sample participated. The pilot helped detect ambiguities and confirm internal consistency of the items. As emphasized by Vosoughi et al. (2025), pilot studies are essential in validating instruments and improving measurement accuracy. Similarly, Mwandikwa et al., (2025) note that piloting supports both reliability and construct validity through iterative testing. Reliability testing (Cronbach's alpha) and expert validation confirmed that the tool could effectively collect quality data for the main study, and adjustments were made based on pilot feedback.

4.4.1 Reliability of Research Instrument

Reliability refers to the consistency with which an instrument measures a given construct across time and various contexts. In this study, Cronbach's alpha was used to assess the internal consistency of the items for each construct. A Cronbach's alpha coefficient of 0.70 or higher is generally considered acceptable for social science research (Taber, 2018). Reliability coefficients were computed using SPSS Version 24, and the results are presented in Table 4.2.

Table 4.2: Reliability Statistics

Variables	Cronbach's Alpha	No. of items
Knowledge Creation Capability	0.756	12
Knowledge Organization Capability	0.872	8
Knowledge Sharing Capability	0.807	7
Knowledge Storage Capability	0.770	6
Information Technology	0.841	7

As shown, knowledge creation capability yielded a Cronbach's alpha of 0.756, knowledge organization capability 0.872, knowledge sharing capability 0.807, knowledge storage capability 0.770 and information technology capability 0.841. All values exceeded the acceptable threshold, indicating strong internal consistency across

constructs.

The variation in the number of items per variable ranging from 6 to 12 was intentional and grounded in the conceptual complexity of the constructs. For example, Knowledge Creation involved diverse processes such as idea generation, experimentation, and collaboration, which required a broader set of items (12) to capture its multidimensional nature. In contrast, constructs like Knowledge Storage, which are more operational and narrowly defined, were measured effectively with fewer items (6) without compromising reliability.

This approach is supported by DeVellis and Thorpe (2021) and Taber (2018), who argue that the number of items per scale should reflect the scope and dimensionality of the construct rather than impose uniformity. Similarly, Wang et al., (2023) recommends that instrument design prioritize content validity and measurement precision, even if this results in unequal item counts across constructs. The acceptable alpha values confirm that the instrument was both reliable and methodologically sound.

4.4.2 Validity of Research Instrument

Validity refers to the extent to which an instrument measures what it is intended to measure. According to Babbie (2020), validity ensures that the results of data analysis accurately reflect the concept under investigation. This study evaluated face validity, content validity, and construct validity to ensure the robustness of the research instrument.

Face validity involves the degree to which items appear to be suitable and relevant at face value. As Creswell and Creswell (2017) explain, pre-testing the instrument enhances face validity by allowing for refinement of items that may be misinterpreted or unclear. In this study, face validity was enhanced through a pilot test, during which ambiguous or confusing questions were revised to improve clarity.

Content validity (also referred to as logical validity) assesses whether an instrument fully captures all relevant components of a construct. According to Spoto et al., (2025),

content validity is established through expert evaluation. In this case, supervisors and subject-matter experts were consulted to review and refine the questionnaire, ensuring it aligned with theoretical definitions and the study objectives.

Construct validity examines whether the instrument accurately measures the theoretical construct it is intended to assess. As noted by Tavakol & Wetzel (2020), this involves evaluating the relationship between instrument items and other theoretically related variables. Construct validity in this study was assessed through Average Variance Extracted (AVE) using SPSS AMOS version 24. Dos Santos & Cirillo (2023) argue that for construct validity to be acceptable, items should explain at least 50% of the variance (i.e., AVE > 0.50), with a minimum AVE of 0.40 considered adequate for newly developed constructs. The AVE were tested and the results presented in Table 4.3.

Table 4.3: Average Variance Explained for the Variables

Variables	Average Variance explained
Knowledge Creation Capability	0.754
Knowledge Organization Capability	0.827
Knowledge Sharing Capability	0.778
Knowledge Storage Capability	0.820
Information Technology	0.819

The AVE values for all constructs exceeded the 0.50 benchmark, ranging from 0.754 to 0.827, which confirms that the instrument demonstrated strong construct validity. These results support the conclusion that the questionnaire items were well-aligned wth the theoretical constructs they were designed to measure, validating the instrument's use in the study.

4.5 Descriptive Statistics

Descriptive statistics covers the description of the study findings as observed (Kaur et al., 2018) and give the researcher the direction to give inferences and implications of the study findings. The respondents were asked to provide their opinions by indicating agreement or disagreement with specific statements. The use of tick (√) or cross mark (x) was employed to gather their responses, shedding light on the extent of their agreement regarding various aspects of knowledge management and competitiveness within the university context. The areas of context included knowledge creation, knowledge organization, knowledge sharing, knowledge storage and information technology while assessing competitiveness of the public universities.

4.5.1 Knowledge Creation Capability

The survey aimed to explore the relationship between knowledge creation capability and competitiveness in Kenyan public universities. Respondents' agreement levels were assessed on twelve factors of knowledge creation that were rated on a scale ranging from strongly disagree (1) to strongly agree (5). Table 4.4 shows the responses received.

Table 4.4: Descriptive Statistics for Knowledge Creation Capability

Knowledge Creation Capability	SD	D	N	A	SA	Mean	SD
The university has a written policy on knowledge creation	11.4%	10.6%	30.1%	32.5%	15.45%	3.301	1.194
The university captures and utilizes knowledge acquired from other sources like industry regulators, suppliers, clients, affiliations, and competitors.	1.6%	3.25%	23.6%	39.8%	31.7%	3.967	.914
Key expert information is often captured in a computerized system in the university	3.3%	7.3%	25.2%	39.0%	25.2%	3.756	1.019
We have a staff mentoring program within the university	5.7%	3.3%	24.4%	35.0%	31.7%	3.837	1.089
The university processes are compiled into operational manuals such as audit manual, credit manual, admission manual, code of conduct manual, HR manual.	1.6%	1.6%	8.1%	32.5%	56.1%	4.398	.837
Individual learning is normally transformed to group learning by documenting such knowledge into the university repository	3.2%	2.4%	23.6%	38.2%	32.5%	3.943	.978
There are lessons learned and best practices repositories within the university	4.1%	12.2%	18.7%	35.8%	29.3%	3.74	1.13
The university encourages the staff to go for further relevant studies by meeting cost of tuition	6.5%	10.6%	24.4%	36.6%	22.0%	3.569	1.139

Knowledge Creation Capability	SD	D	N	A	SA	Mean	SD
Key lessons learned are shared amongst staff in the areas where they can benefit.	1.4%	6.5%	28.5%	38.2%	24.4%	3.756	.978
There are knowledge fairs and exchange opportunities within the university to bring on board new	4.9%	13.0%	25.2%	35.0%	22.0%	3.561	1.117
There are knowledge fairs and exchange opportunities within the university to bring on board new	0.8%	7.3%	22.0%	35.8%	34.2%	3.951	.965
Staff usually have time to talkinformally with their colleagues	0.8%	2.4%	17.1%	44.7%	35.0%	4.106	.828
Knowledge Creation Capability						**3.824**	**1.02**

KEY: *n= 123, SA=Strongly Agree, A= Agree, N= Neutral, D=Disagree, SD= Strongly Disagree, SD= Standard Deviation*

As shown, the overall mean score for this construct was 3.82 (SD = 1.02), indicating general agreement across most of the measured aspects. However, respondents expressed uncertainty about the existence of a written knowledge creation policy, with a mean of 3.30 (SD = 1.19). This neutral stance may signal a lack of formal documentation, limited awareness, or ineffective communication regarding such policies within institutions.

By contrast, respondents demonstrated stronger agreement on operational and experiential indicators of knowledge creation. For instance, the existence of documented operational manuals (such as audit, HR, and admissions) received the highest agreement (mean = 4.40, SD = 0.84), reflecting well-established procedures. Similarly, respondents agreed that external knowledge sources (e.g., industry partners and regulators) are actively utilized (mean = 3.97), that mentorship programs are available (mean = 3.84), and that individual learning is captured through institutional repositories (mean = 3.94). Additionally, informal knowledge exchange appears well

supported, as shown by the high mean for staff having time to talk informally with colleagues (mean = 4.11, SD = 0.83).

While areas like knowledge fairs (mean = 3.56) and support for further study (mean = 3.57) showed moderate agreement, the consistency in responses suggests that universities possess foundational systems for both structured and informal knowledge generation and sharing. These findings align with Mwangi & Mwanzu (2025), who emphasized that institutions promoting environments of continuous learning, interdepartmental collaboration, and mentorship are more likely to develop innovative solutions and achieve sustained competitiveness. Their study reinforces the idea that embedding knowledge creation practices within university structures is not just a matter of policy but a strategic imperative for long-term organizational success.

4.5.2 Knowledge Organization Capability

Participants were queried about their level of concurrence with statements related to knowledge organization, as part of an investigation into the correlation between knowledge organization and the competitiveness of chartered public universities in Kenya. Eight (8) aspects pertaining to knowledge organization were evaluated on a scale spanning from strong disagreement (1) to strong agreement (5). Table 4.5 shows the responses received.

Table 4.5: Descriptive Statistics for Knowledge Organization Capability

Knowledge Organization Capability	SD	D	N	A	SA	Mean	SD
The university's organizational knowledge is stored in a database that encourages re-use and sharing	0.8%	8.1%	20.3%	36.6%	34.2%	3.951	0.97
Employees use intranet to share and exchange knowledge and experiences	1.6%	2.4%	24.4%	44.8%	26.8%	3.927	0.87
The university uses technology to monitor its competition and business partners	3.3%	9.8%	26.0%	38.2%	22.8%	3.675	1.04
The university uses technology to that allows people in multiple locations to interact as group	0.8%	3.3%	15.5%	41.5%	39.0%	4.146	0.86
The university has a document management system on the portal that allows for transfer of knowledge	4.1%	8.1%	24.4%	36.6%	26.8%	3.74	1.07
The university has a comprehensive database which is available for all personnel	1.6%	15.5%	22.0%	35.0%	26.0%	3.683	1.07
The university has allowed free flow of information	0.8%	8.1%	25.2%	32.5%	33.3%	3.894	0.99
The knowledge that I require to perform my job is available in the university portal	4.1%	15.5%	17.1%	38.2%	25.2%	3.65	1.14
Knowledge Organization Capability						**3.833**	**0.74**

KEY: *n= 123, SA=Strongly Agree, A= Agree, N= Neutral, D=Disagree, SD= Strongly Disagree, SD= Standard Deviation*

The study assessed participants' views on the presence and effectiveness of knowledge organization systems within chartered public universities in Kenya. Eight items were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly

agree (5).

Participants generally agreed that universities have established systems that facilitate knowledge organization. Respondents indicated that organizational knowledge is stored in a database that encourages re-use and sharing (mean = 3.95, SD = 0.97), and that employees use intranet platforms to exchange knowledge and experiences (mean = 3.93, SD = 0.87). There was also agreement that technological tools are used to support group collaboration across locations (mean = 4.15, SD = 0.86), and that universities have document management systems and databases accessible to staff (means ranging from 3.68 to 3.74). The lowest agreement was recorded for the availability of required knowledge in university portals (mean = 3.65, SD = 1.14), and for the use of technology to monitor competition (mean = 3.68, SD = 1.04). Nonetheless, the overall mean score was 3.83 (SD = 0.74), indicating a broad consensus that universities have taken meaningful steps to organize knowledge assets in accessible and structured ways.

These findings are supported by Olan et al. (2022), who emphasized that structured digital knowledge systems, particularly those enhanced by AI and collaborative platforms, contribute significantly to organizational performance and strategic responsiveness. Likewise, Rehman et al. (2022) identified knowledge organization as a key enabler linking intellectual capital to competitive outcomes, noting that efficient storage, classification, and retrieval mechanisms improve service delivery and innovation. These systems ensure that critical insights are not only preserved but also shared effectively across organizational units, enhancing institutional agility and long-term competitiveness. Taken together, the findings from this study suggest that public universities in Kenya are making substantive progress in implementing knowledge organization practices that support both internal efficiency and external competitiveness.

4.5.3 Knowledge Sharing Capability

Participants were asked to express their agreement level with statements concerning knowledge sharing, as a component of an inquiry into the potential relationship between knowledge sharing and the competitiveness of chartered public universities

in Kenya. Seven (7) facets related to knowledge sharing were assessed on a scale ranging from strong disagreement (1) to strong agreement (5).

This section assessed the extent to which knowledge sharing is embedded within chartered public universities in Kenya. Respondents were asked to rate their agreement with seven statements related to knowledge sharing, using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The descriptive statistics are presented in Table 4.6.

Table 4.6: Descriptive Statistics for Knowledge Sharing Capability

Knowledge Sharing Capability	SD	D	N	A	SA	Mean	SD
The university has a system and policies in place which are intended to promote knowledge sharing	0.8%	13.0%	13.0%	44.8%	28.5%	3.87	1
The university encourages experienced workers to share their knowledge with new or in-experienced workers.	0%	5.7%	16.3%	48.8%	29.3%	4.016	0.83
The university conducts seminars, induction trainings, mentorship and Job shadowing to facilitate knowledge transfer	1.6%	4.1%	15.5%	42.28%	36.6%	4.081	0.911
Staff are promoted and rewarded based on their ability to share their knowledge and mentor others	6.5%	14.6%	26.8%	32.5%	19.5%	3.439	1.15
The university has an institutional point of contact for	4.1%	12.2%	22.0%	40.7%	21.1%	3.626	1.07

Knowledge Sharing Capability	SD	D	N	A	SA	Mean	SD
historical materials and documents about prior projects and programs							
The university encourages a culture of knowledge sharing as opposed to knowledge hoarding	0.8%	7.3%	17.1%	44.7%	30.1%	3.959	0.92
The university has adequate infrastructure for knowledge sharing	0.8%	4.9%	25.2%	47.2%	22.0%	3.846	0.85
Knowledge Sharing Capability						**3.83**	**.75**

KEY: *n= 123, SA=Strongly Agree, A= Agree, N= Neutral, D=Disagree, SD= Strongly Disagree, SD= Standard Deviation*

The analysis revealed that most respondents agreed that their universities have mechanisms in place to promote knowledge sharing. Specifically, respondents affirmed that universities encourage experienced staff to share knowledge with newer colleagues (mean = 4.02, SD = 0.83), organize seminars, mentorship programs, and job shadowing (mean = 4.08, SD = 0.91), and have supportive systems and policies for knowledge exchange (mean = 3.87, SD = 1.00). Respondents also acknowledged the existence of institutional infrastructure to support these practices (mean = 3.85) and an organizational culture that favors knowledge sharing over hoarding (mean = 3.96).

However, the lowest rated item was whether staff promotions and rewards are based on knowledge sharing and mentoring (mean = 3.44, SD = 1.15), suggesting uncertainty or inconsistency in how these practices are incentivized. This finding implies a potential gap between the formal promotion criteria and the university's knowledge management goals. The overall mean score for knowledge sharing capability was 3.83

(SD = 0.75), indicating widespread agreement that the universities foster a positive environment for knowledge dissemination and collaboration.

These results are consistent with Gebreyohans et al., (2022), who emphasized that digital and cultural enablers of knowledge sharing such as collaborative platforms and mentorship structures strengthen innovation and academic performance in higher education. Similarly, Ravikumar et al. (2022) found that knowledge sharing enhances responsiveness to institutional goals and promotes employee innovation. The presence of structured mechanisms for knowledge transfer in public universities reinforces their strategic capacity to adapt, innovate, and compete effectively in a knowledge-driven environment. Nonetheless, the uncertainty around reward-based incentives points to a potential area for improvement. As supported by Omanyo and Ndiege (2025), the alignment of knowledge sharing behaviors with tangible rewards and recognition systems could further strengthen staff engagement and institutional competitiveness.

4.5.4 Knowledge Storage Capability

The study explored the respondents' extent of agreement with six statements regarding knowledge storage that were rated on a scale ranging from strongly disagree (1) to strongly agree (5). Table 4.7 shows the responses received for knowledge storage.

Table 4.7: Descriptive Statistics for Knowledge Storage Capability

Knowledge Storage Capability	SD	D	N	A	SA	Mean	SD
The university has a policy on the information backups as well as system backups	1.6%	2.4%	13.8%	38.2%	44.0%	4.203	0.89
The university has invested in an IT platform that support data warehousing	0.8%	7.3%	10.6%	43.1%	38.2%	4.106	0.92
The university has a succession plan which provides for capture of knowledge of exiting staff	6.5%	11.4%	27.6%	30.9%	23.6%	3.537	1.16
The university has a program to preserve institutional memory for future use	4.9%	11.4%	17.1%	39.8%	26.8%	3.724	1.13
The university has adequate physical and electronic infrastructure for knowledge storage	0.8%	5.7%	26.0%	39.0%	28.5%	3.886	0.92
The university has a library function that deals with archiving documents, manuals, pamphlets, reports and other published information	1.6%	0.8%	17.1%	33.3%	47.2%	4.236	0.88
Knowledge Storage Capability						**3.9485**	**0.74**

KEY: *n= 123, SA=Strongly Agree, A= Agree, N= Neutral, D=Disagree, SD= Strongly Disagree, SD= Standard Deviation*

The study examined the extent to which universities have established systems and infrastructure for knowledge storage. As shown in Table 4.7, the overall mean score was 3.95 (SD = 0.74), indicating general agreement among respondents that their institutions have implemented practices supporting the storage and preservation of institutional knowledge.

Respondents agreed most strongly that their universities have a policy on information

and system backups (mean = 4.20, SD = 0.89) and that the library function actively archives key documents, manuals, and reports (mean = 4.24, SD = 0.88). Similarly, there was agreement that institutions have invested in IT platforms for data warehousing (mean = 4.11) and possess adequate physical and electronic infrastructure to support knowledge storage (mean = 3.89).

However, slightly lower means were observed for succession planning (mean = 3.54) and institutional memory programs (mean = 3.72), suggesting room for improvement in capturing the knowledge of departing staff or preserving historical organizational insights. These findings indicate that while the technological and archival components of knowledge storage are well established, the human and experiential dimensions (like tacit knowledge retention) may require further strategic attention.

The results are consistent with Trivedi and Srivastava (2022), who emphasized that well-designed knowledge storage systems enhance institutional memory, improve decision-making, and support continuous learning. Their study showed that organizations with robust storage capabilities are better positioned to maintain competitive advantage, especially in dynamic environments. Thus, the presence of data warehousing platforms, IT infrastructure, and archiving systems in universities reflects a growing maturity in digital knowledge management practices, which contributes to institutional stability and long-term performance.

4.5.5 Information Technology

This section sought to explore the moderating role of Information Technology on knowledge management capability and competitiveness of chartered public universities in Kenya. Seven aspects associated with Information Technology were evaluated, using a scale that ranged from strong disagreement (1) to strong agreement (5). Table 4.8 shows the responses.

This section examined the moderating role of Information Technology (IT) in the relationship between knowledge management capabilities and competitiveness in chartered public universities in Kenya. Seven statements related to IT capability were presented to respondents, using a five-point Likert scale ranging from strongly

disagree (1) to strongly agree (5). The results are summarized in Table 4.8.

Table 4.8: Responses for Information Technology

Information Technology	**SD**	**D**	**N**	**A**	**SA**	**Mean**	**SD**
The university has written procedures to guide management of knowledge resources	0.8%	10.6%	23.6%	35.0%	30.1%	3.829	1.01
Use of IT at the university reduces dependence on certain specific personnel	0.8%	2.4%	17.9%	46.3%	32.5%	4.073	0.82
IT infrastructure in the university is consistent with corporate strategy	0.8%	1.6%	16.3%	51.2%	30.1%	4.081	0.78
IT reduces the uncertainty of knowledge loss	1.6%	1.6%	15.5%	40.7%	40.7%	4.171	0.87
Top management of the university is capable of applying IT in their daily operations	0%	1.6%	10.6%	44.0%	44.0%	4.301	0.72
IT is comprehensively utilized by members of staff in the university to obtain and utilize the organizational knowledge	0%	2.4%	17.1%	50.4%	30.1%	4.081	0.75
Knowledge management resources are readily available for use in problem solving and decision making	0%	3.3%	28.5%	42.3%	26.0%	3.911	0.82
Information Technology						**4.06**	**0.61**

KEY: *n= 123, SA=Strongly Agree, A= Agree, N= Neutral, D=Disagree, SD= Strongly Disagree, SD= Standard Deviation*

As shown in Table 4.8, the respondents generally agreed that IT plays a significant role in supporting knowledge management in their institutions. They affirmed that universities have written procedures to guide knowledge resource management (mean = 3.83, SD = 1.01) and that IT use reduces over-reliance on specific individuals (mean = 4.07, SD = 0.82). There was strong agreement that IT infrastructure aligns with the university's corporate strategy (mean = 4.08, SD = 0.78), and that IT minimizes the risk of knowledge loss (mean = 4.17, SD = 0.87). Respondents also acknowledged that top management is proficient in applying IT in day-to-day operations (mean = 4.30, SD = 0.72), and that staff extensively utilize IT to access and apply organizational knowledge (mean = 4.08, SD = 0.75). Lastly, there was agreement that KM resources are readily available for decision-making and problem-solving (mean = 3.91, SD = 0.82). The overall mean score for IT capability was 4.06 (SD = 0.61), reflecting a strong institutional capacity to support knowledge processes through digital tools and platforms. The relatively low standard deviation across items suggests a shared understanding and consistent perceptions among respondents.

These findings are supported by Galynska et al. (2021), who found that innovative technologies, including digital collaboration tools and virtual platforms, enhance academic competitiveness through improved service delivery and student readiness. Likewise, Kholiavko et al. (2021) emphasized the strategic role of ICT in adapting universities to the demands of the digital economy. In the Kenyan context, Chege et al., (2020) also demonstrated that IT innovation significantly improves institutional performance, especially when combined with strategic leadership.

Overall, the results affirm that strong IT infrastructure and usage not only support knowledge storage, sharing, and retrieval but also serve as a key enabler of organizational responsiveness and competitiveness in a knowledge-intensive environment like higher education.

4.5.6 Competitiveness of Chartered Public Universities

The competitiveness of public universities was measured using New Student Enrolment, Patents, and Number of Citations by top ten most cited researchers as recorded for 5 years from 2018 to 2022. The trends were used to assess institutional

competitiveness for the sampled chartered universities. The trends are as indicated in Figure 4.5.

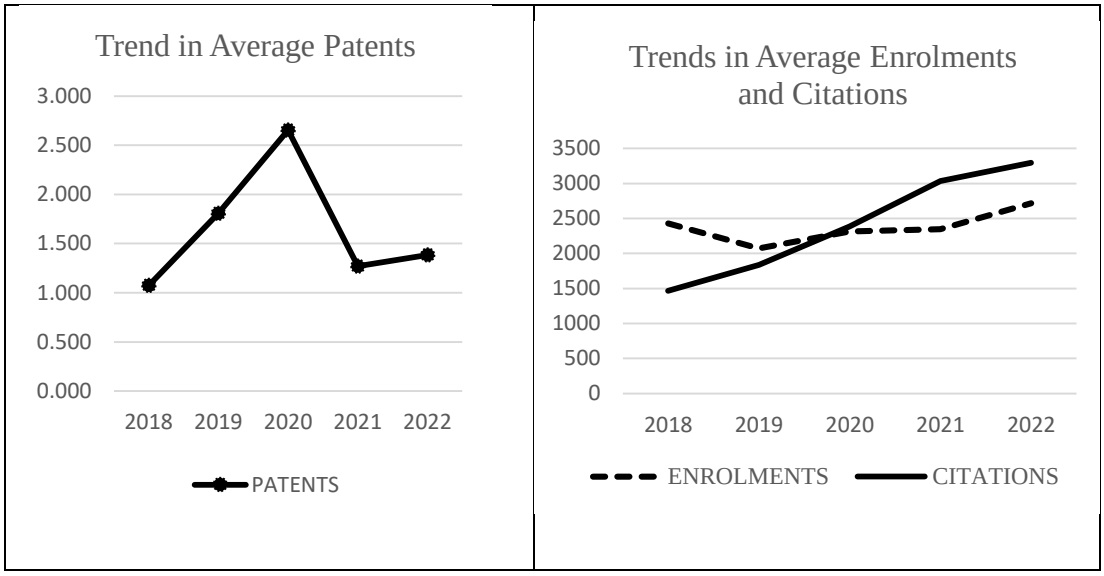

Figure 4.5: Trends of Patents, Student Enrolment and Citations

Student enrolment followed a more stable trend. There was a decline from 2,426.73 students in 2018 to 2,072.54 in 2019, possibly reflecting challenges such as policy shifts, funding cuts, or competition. However, enrolment gradually increased over the next three years, reaching 2,716.81 in 2022. This suggests a recovery and potential improvement in the universities' attractiveness and market positioning.

Patent registrations, which reflect innovation capability, showed an upward trend from 1.08 in 2018 to a peak of 2.65 in 2020, followed by a decline to 1.27 in 2021. A slight increase to 1.38 in 2022 may signal renewed interest or recovery in research and innovation activities. However, the relatively low and inconsistent figures across years point to structural or funding limitations in R&D investment within the universities. Citation counts, used as a proxy for research impact, demonstrated strong and consistent growth. From 1,468.08 citations in 2018, the number rose each year, reaching 3,293.58 in 2022. This upward trajectory suggests that Kenyan public universities are gaining visibility in academic research and increasingly contributing to global knowledge through scholarly publications. Overall, the data reveals mixed trends. While research output (citations) shows clear improvement, innovation output

(patents) remains volatile. Student enrolment, meanwhile, indicates moderate and steady recovery. These insights underscore the multifaceted nature of university competitiveness and highlight the importance of strengthening financial management and research support systems to complement academic output.

a) Student enrollment

Student enrolment serves as a fundamental indicator of a university's competitiveness and appeal in the higher education marketplace. It reflects how well a university meets the academic, professional, and personal aspirations of its target population. As highlighted by Raja (2023), consistent or increasing student numbers are a marker of institutional attractiveness, program relevance, and stakeholder trust factors central to competitiveness. Table 4.9 presents data on new student enrolment from 2018 to 2022.

Table 4.9: Descriptive Statistics for New Student Enrolment

Variable	N	Mean	Std. Dev.
Enrollment 2018	26	2426.7	2161.3
Enrollment 2019	26	2072.5	2004.7
Enrollment 2020	26	2312.4	2085.2
Enrollment 2021	26	2346.1	1586.4
Enrollment 2022	26	2716.8	1912.8

The analysis shows patterns of decline, recovery, and growth, reflecting broader institutional and contextual factors such as funding policies, changes in secondary school transition rates, or improvements in academic offerings.

Across the five-year period, enrolment experienced both fluctuation and growth. There was a dip from 2018 (Mean = 2,426.7) to 2019 (Mean = 2,072.5), possibly linked to external factors such as economic constraints or policy shifts. However, the numbers improved from 2020 onward, reaching 2,716.8 students in 2022 the highest during the period. Standard deviation values (ranging from 1,586.4 to 2,161.3) suggest substantial variability in enrolment levels across universities. This indicates that while some universities attracted significantly large cohorts (e.g., over 10,000 students), others had notably lower intakes. Such disparities may arise from institutional branding, program diversity, location, infrastructure, or online presence.

The enrolment data has direct implications for university competitiveness. First, an upward trend in enrolment reflects improving institutional visibility and trust among prospective students. Second, the variability highlights the uneven competitiveness of universities a critical area for policy intervention. Universities with lower enrolments may need to re-evaluate their program offerings, marketing strategies, and stakeholder engagement. These findings align with Gibson (2024), who note that student enrolment patterns are increasingly influenced by institutional innovation, perceived academic quality, and responsiveness to labour market demands.

b) Patents

Technological innovation plays a vital role in socio-economic development and institutional competitiveness. In the context of universities, innovation reflects the ability to transform knowledge into commercially viable products and processes, often facilitated through structured research and development (R&D). As a result, patenting serves as a tangible outcome of such innovation activities, demonstrating both research productivity and strategic knowledge application. This study examined the trend in patent registrations across 26 chartered public universities in Kenya between 2018 and 2022 as shown in Table 4.10.

Table 4.10: Descriptive Statistics for Patents by Year

Year	N	Mean	Std. Dev.
Number of Patents 2018	26	1.1	2.5
Number of Patents 2019	26	1.8	4.9
Number of Patents 2020	26	2.7	5.4
Number of Patents 2021	26	1.3	5.5
Number of Patents 2022	26	1.4	6.5

Between 2018 and 2020, the mean number of patents steadily increased from 1.1 to 2.7, suggesting growing engagement in innovation-related activities among the universities. However, this trend reversed in 2021, with the average number of patents falling to 1.3, before slightly improving to 1.4 in 2022. Despite these fluctuations, the standard deviations were consistently high, especially in 2022 (SD = 6.5), indicating significant variation in innovation output. While a few institutions demonstrated strong performance in patenting, others showed minimal activity or failed to report data

altogether. This inconsistency highlights disparities in research capabilities, institutional focus on innovation, and possibly the effectiveness of knowledge management systems.

The observed trends suggest that patenting is not yet fully institutionalized across the higher education sector in Kenya. Universities with structured knowledge management practices may have a competitive edge in producing and protecting intellectual property. Inconsistent reporting also raises concerns about institutional commitment to documenting innovation outcomes. As previous studies confirm, effective knowledge management frameworks especially those supported by digital infrastructure and organizational leadership contribute to improved innovation performance and competitiveness in higher education (Alves & Pinheiro, 2022).

The implications of this are twofold. First, universities should develop robust knowledge management strategies that prioritize capturing, sharing, and utilizing institutional knowledge for innovation. Second, government bodies and university councils should support standardized reporting mechanisms and incentivize research outputs that lead to patentable technologies. This will strengthen institutional visibility, attract partnerships, and promote the commercialization of research. Overall, the data reinforces the view that knowledge-based innovation is central to university competitiveness. Universities that embrace knowledge management as a strategic asset are more likely to develop new offerings, respond to societal needs, and position themselves as leaders in knowledge economies.

c) Number of Citations by Top Ten Most Cited Researchers

Citations serve as a key indicator of research impact and institutional visibility within the global academic landscape. They reflect not only the frequency with which a university's work is referenced by others, but also the perceived value and relevance of its knowledge outputs. High citation counts often correlate with research excellence, global knowledge integration, and a university’s influence on academic and societal advancement. Citation metrics are thus increasingly used in global rankings and performance assessments, especially in research-intensive universities. In this study, citation data from the top ten most cited researchers in each of the 26 chartered public

universities was analyzed across a five-year period (2018-2022) to assess competitiveness in terms of research impact. The results were presented in Table 4.11.

Table 4.11: Descriptive Statistics for Number of Citations by Year

Year	N	Mean	Std. Dev.
Number of Citations 2018	26	1468.1	2366.2
Number of Citations 2019	26	1837.6	3331.0
Number of Citations 2020	26	2385.5	4706.8
Number of Citations 2021	26	3034.2	6085.4
Number of Citations 2022	26	3293.6	6620.1

The results reveal a consistent upward trend in average citation counts over the five years. In 2018, the mean number of citations was 1,468 (SD = 2,366.2), increasing to 1,837 in 2019 (SD = 3,331.0). The mean continued to rise in 2020 to 2,385 (SD = 4,706.8), followed by a notable jump in 2021 to 3,034 (SD = 6,085.4). By 2022, the average had reached 3,294 (SD = 6,620.1). This steady growth in citation volume points to improving research recognition and output among Kenyan public universities. However, the consistently high standard deviations suggest wide disparities among institutions. While some universities achieved high citation rates, others recorded relatively low figures, indicating uneven performance in terms of global academic visibility.

These findings imply that a subset of institutions is emerging as leaders in knowledge production and dissemination, while others may lack the capacity, strategic focus, or systems needed to support impactful research. Universities that invest in knowledge management systems, digital repositories, research training, and international collaboration are more likely to enhance their citation profiles and global standing. Previous research underscores the role of strategic citation tracking and knowledge-sharing platforms in enhancing institutional performance and visibility (Aria & Cuccurullo, 2017; Majhi et al., 2023).

In the context of this study, citations were used as one dimension of competitiveness. The upward trend suggests a positive shift in research engagement, but the high variability signals the need for more equitable support structures. As global norms increasingly prioritize research influence and knowledge exchange, it is critical that

Kenyan public universities strengthen their knowledge management capabilities to boost their citation impact. Doing so will not only improve their rankings but also enhance their societal contribution through impactful research.

4.6 Diagnostic Tests Results

The study sought to establish whether the collected data was suitable for correlation and regression analysis. To ascertain this, diagnostic tests were done by testing the assumptions of normality, multi-collinearity and heteroscedasticity.

4.6.1 Normality Test

Kolmogorov-Smirnov and Shapiro-Wilk tests were used to test for normality of the data. Shapiro-Wilk (S-W) test results are displayed alongside Kolmogorov-Smirnov (K-S) test results in Table 4.12, although the S-W test was utilized in this investigation to determine whether the variables were normal.

Table 4.12: Tests of Normality

	Kolmogorov-Smirnova			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Knowledge creation capability	0.239	123	0.057	0.85	123	0.063
Knowledge Organization capability	0.227	123	0.131	0.831	123	0.136
Knowledge sharing capability	0.218	123	0.072	0.871	123	0.078
Knowledge storage capability	0.384	123	0.053	0.752	123	0.058
IT	0.224	123	0.055	0.859	123	0.061

a Lilliefors Significance Correction

The basis of the Kolmogorov-Smirnov test is an easy technique for measuring the disparity between the predicted and observed distributions. Nevertheless, it turned out that it is overly easy and ineffective in differentiating between the cases where the data is sampled from a Gaussian distribution. Because of the sensitivity of Shapiro-Wilk's test to detect normalcy in a data set, Creswell & Creswell, (2017) suggests using it for small and medium samples up to n = 2000.

The correlation between a particular set of data and the related normal scores is equivalent to Shapiro-Wilk, with S-W = 1 indicating that their correlation is perfectly normal. This shows that a significantly ($p < .05$) smaller S-W than 1 imply that the normality is not met. Hence, the data is normal when Shapiro-Wilk (S-W) $\geq .05$. Since no statistically significant variations were found between any of the variables and their corresponding normal scores, Table 4.12 makes it clear that all of the variables follow a normal distribution

4.6.2 Multi-Collinearity

The aim of the study was to assess if the multi-collinearity assumptions were satisfied by the data. This was done in order to determine whether predictor variables in the multiple regression model could be reasonably accurately predicted linearly from the others. According to de Winter (2025), multi-collinearity is an abnormally high degree of inter-correlation among the independent variables, making it difficult to separate the independent factors' impacts from one another when examining the dependent variable. While correlation matrices are typically utilized to examine the pattern of intercorrelation across all the variables, they are insufficient for identifying indications of a lack of multi-collinearity among the variables. Tolerance and the Variance Inflation Factor (VIF) were used to determine the multi-collinearity assumption.

The percentage of a predictor's variance that cannot be accounted for by the other predictors is referred to as its tolerance. There are strong multi-collinearity and an exaggerated standard error of the regression coefficients when the tolerances are near 0. Tolerance levels less than 0.1 may necessitate additional research, as a tiny value suggests that a predictor is not significant. The reciprocal of the variable's tolerance, or VIF, is equal to 1-R2. More investigation is usually needed when the value of VIF is greater than 10. It is not recommended to include the variable under consideration in the regression since a small tolerance value indicates it is almost a perfect linear combination of the other independent variables already present in the equation. The Multi – Collinearity test was conducted and results presented in Table 4.13.

Table 4.13: Tolerance and the Variance Inflation Factor (VIF) Statistics

Model		Collinearity Statistics	
		Tolerance	VIF
	Knowledge Creation capability	0.271	3.686
	Knowledge Organization capability	0.285	3.512
	Knowledge sharing capability	0.476	2.100
	Knowledge storage capability	0.863	1.158
	IT	0.500	1.998

a. Dependent Variable: Competitiveness of public universities

The results revealed that there was no multicollinearity since all the tolerance values were above 0.10 and VIF values were less than 10. The study variables therefore met the requirements for regression analysis.

4.6.3 Heteroscedasticity

When the assumption homoscedasticity is violated, there is the possibility of inhibiting a proper evaluation of the forecast errors resulting from the standard deviation. The presence of heteroscedasticity results in inconsistent confidence intervals that can be too wide or narrower than anticipated. Breusch-Pagan tests the hypothesis that the variances of the errors are equal, therefore implying that a p-value greater than 0.05 represents homoscedasticity (Djalic & Terzic, 2021). The null hypothesis for this test was that the error variances were equal and were a multiple function of variables. Homoscedasticity normally occurs when the p-value is greater than the significance level (0.05). Table 4.14 shows the heteroscedasticity test.

Table 4.14: Breusch- Pagan test for Heteroscedasticity

H0: Homoscedasticity is present	
Chi2(1)	1.685
Prob>chi2	0.640

Since the p-value was found to be 0.640>0.05, we fail to reject the null hypothesis and conclude that homoscedasticity is present.

4.6.4 Linearity

The Pearson correlation coefficient is the most common way to measure linearity in an equation. It lays between -1 and 1 and measures the strength and direction of the relationship between two variables. The statistic is taken to be strongly correlated if above 0.5. A value below 0.5 is considered a weak correlation. Its positivity or negativity determines the direction of the relationship. A significant value less than 0.05 shows the presence of correlation (Kwak, 2023). Table 4.15 presents the correlation statistics for this study.

Table 4.15: Correlation Statistics

		Knowledge creation capability	Knowledge organization capability	Knowledge sharing capability	Knowledge storage capability	IT	Competitiveness
Knowledge Creation capability	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	123					
Knowledge Organization capability	Pearson Correlation	.833**	1				
	Sig. (2-tailed)	0.034					
	N	123	123				
Knowledge sharing capability	Pearson Correlation	.581**	.535**	1			
	Sig. (2-tailed)	0.000	0.000				
	N	123	123	123			
Knowledge Storage capability	Pearson Correlation	.315**	.229*	.301**	1		
	Sig. (2-tailed)	0.000	0.011	0.001			
	N	123	123	123	123		
IT	Pearson Correlation	.532**	.564**	.656**	0.143	1	
	Sig. (2-tailed)	0.018	0.000	0.000	0.115		
	N	123	123	123	123	123	
Competitiveness	Pearson Correlation	.756**	.763**	.705**	.344**	.690**	1
	Sig. (2-tailed)	0.004	0.001	0.002	0.036	0.000	
	N	123	123	123	123	123	123

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

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

The results show a strong, positive, and statistically significant relationship between knowledge creation and the competitiveness of chartered public universities in Kenya ($r = 0.756$, $p = 0.004$). Similarly, a strong positive correlation was observed between knowledge organization and competitiveness ($r = 0.763$, $p = 0.001$). Knowledge sharing also exhibited a strong positive association with competitiveness ($r = 0.705$, $p = 0.002$). A weak positive correlation was found between knowledge storage and competitiveness ($r = 0.344$, $p = 0.036$). Additionally, a strong positive correlation was identified between IT capability and competitiveness ($r = 0.690$, $p = 0.000$).

4.7 Regression Analysis

This research employed multiple regression analysis to determine the linear statistical relationship between the independent and dependent variables. According to Young (2018), regression analysis helps explain the statistical relationship between variables thus enhancing the ability of the study to make substantive conclusions and recommendations. The statistical objective of regression analysis is to show high R2 and significant t-values, thus rejecting the null hypothesis. Parameters with an absolute t-value greater than 1.96 indicate a significant level of 0.05($p < 0.05$). The five null hypotheses stated in Chapter one of this study were thus tested using regression analysis.

4.7.1 Knowledge Creation Capability

This study examined the effect of knowledge creation capability on the competitiveness of chartered public universities in Kenya. Knowledge creation is considered a cornerstone of knowledge management, particularly in knowledge-intensive environments such as higher education institutions. Universities that consistently generate new knowledge through research, innovation, and collaborative processes are better positioned to respond to changing demands and maintain a competitive edge. To test this relationship, the following hypothesis was formulated and tested:

H_{01}: Knowledge creation capability has no effect on competitiveness of chartered

public universities in Kenya.

To assess the hypothesis, a simple linear regression analysis was performed and the results presented in Table 4.16.

Table 4.16: Regression Model Results on Knowledge Creation Capability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	0.793	0.629	0.626	0.61416		
a. Predictors: (Constant), Knowledge Creation Capability						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	77.287	1	77.287	204.9	.000b
	Residual	45.64	121	0.377		
	Total	122.927	122			
a Dependent Variable: Competitiveness						
b Predictors: (Constant), Knowledge Creation capability						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	0.959	0.218		4.399	.000
	Knowledge Creation capability	0.767	0.054	0.793	14.314	.000
a Dependent Variable: Competitiveness						

Regression Model for Knowledge Creation Capability

Competitiveness = 0.959 + 0.767 (Knowledge Creation Capability) + ε

The analysis revealed a strong and statistically significant relationship between knowledge creation and competitiveness. The R-squared value of 0.629 indicates that knowledge creation capability accounts for approximately 62.9% of the variance in competitiveness among the universities. This suggests that institutions which actively promote knowledge generation processes such as supporting academic research, idea incubation platforms, staff collaborations, and innovation hubs are likely to be more competitive in attracting students, generating research output, and maintaining financial sustainability.

The regression model also produced an F-statistic of 204.900 with a significance value

of $p < 0.001$, indicating that the model is statistically significant. The coefficient for knowledge creation was 0.767 ($p < 0.001$), meaning that a one-unit increase in knowledge creation capability leads to a 0.767-unit increase in the competitiveness index. These findings support the rejection of the null hypothesis, confirming that knowledge creation capability significantly influences university competitiveness.

These results align with the findings of Panjaitan et al. (2021), who observed that organizations prioritizing knowledge creation through academic collaborations and continuous innovation achieve improved strategic outcomes and stakeholder satisfaction. Their study emphasized that it is not merely the possession of knowledge, but the dynamic process of creating and applying it, that drives institutional success. Similarly, Doval (2020) found that deliberate knowledge creation enhances innovation and adaptability, which are crucial for organizations operating in rapidly evolving environments. The present study supports these conclusions and extends them to the context of public universities in Kenya, offering empirical evidence that institutional knowledge creation is a key lever for sustained competitiveness.

The implications are substantial. University administrators and policymakers should consider institutionalizing structures and cultures that support continuous knowledge generation. This includes enhancing research funding, facilitating interdepartmental collaboration, encouraging mentorship and staff learning, and embedding innovation in teaching and administrative processes. Such strategies not only strengthen academic excellence but also improve the university's reputation, stakeholder trust, and national and global competitiveness.

4.7.2 Knowledge Organization Capability

This study sought to determine the effect of knowledge organization capability on the competitiveness of chartered public universities in Kenya. Based on this objective, the third hypothesis was formulated as follows:

***H_{03}**: Knowledge organization capability has no effect on competitiveness of chartered public universities in Kenya.*

To test this hypothesis, a simple linear regression analysis was conducted. The coefficient of determination (R^2) was computed to assess the extent to which knowledge organization capability predicts variations in competitiveness. The results were presented in Table 4.17.

Table 4.17: Regression Model Results on Knowledge Organization Capability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.743a	0.552	0.548	0.67469		

a Predictors: (Constant), knowledge organization capability
b Dependent Variable: Competitiveness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.846	1	67.846	149.043	.000b
	Residual	55.081	121	0.455		
	Total	122.927	122			

a Dependent Variable: Competitiveness
b Predictors: (Constant), Knowledge organization capability

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.755	0.271		2.789	0.006
	Knowledge organization capability	0.797	0.065	0.743	12.208	0.000

a Dependent Variable: Competitiveness

The results reveal that knowledge organization capability explains 55.2% ($R^2 = 0.552$) of the variance in competitiveness among chartered public universities. This suggests that more than half of the changes in competitiveness can be attributed to the university's ability to systematically structure, access, and manage internal knowledge.

Further, the ANOVA results in the same table confirm the statistical significance of the model with $F(1,122) = 149.043$, $p < .000$, indicating that knowledge organization capability significantly predicts university competitiveness. As a result, the null

hypothesis was rejected. This implies that knowledge organization capability has a statistically significant effect on the competitiveness of chartered public universities in Kenya.

The regression coefficients further support this conclusion. The unstandardized coefficient for knowledge organization capability was 0.797 with a p-value of .000, indicating a highly significant effect. The derived regression equation is:

$Y=0.755+0.797$ (knowledge organization capability) $+\varepsilon$

This model implies that a unit increase in knowledge organization capability results in a 0.797 unit increase in the competitiveness of a chartered public university, holding other factors constant.

These findings align with prior literature. For example, Mahdi et al., (2019) found that systematically organizing and managing knowledge assets enhances service delivery and supports sustainable competitive positioning in universities. Similarly, Rehman et al. (2022) emphasized that organized knowledge systems allow firms to better leverage intellectual capital, leading to faster innovation and improved market responsiveness.

In the context of Kenyan public universities, these results suggest that institutions with structured knowledge management practices such as classification systems, centralized repositories, and accessible documentation are more likely to improve internal collaboration, decision-making, and operational continuity. These benefits ultimately translate to enhanced institutional competitiveness, particularly in a dynamic educational landscape where responsiveness, innovation, and transparency are critical.

4.7.3 Knowledge Sharing Capability

This study aimed to examine the effect of knowledge sharing capability on the competitiveness of chartered public universities in Kenya. From this, the fourth hypothesis was proposed:

H_{04} *Knowledge sharing capability has no effect on competitiveness of chartered public universities in Kenya*.

To test the hypothesis, a simple linear regression was conducted and the findings presented in Table 4.18.

Table 4.18: Regression Model Results on Knowledge Sharing Capability

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**		
1	.900a	0.81	0.809	0.43926		
a Predictors: (Constant), Knowledge sharing capability b Dependent Variable: Competitiveness						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	99.58	1	99.58	159.335	.000b
	Residual	23.347	121	0.193		
	Total	122.927	122			
a Dependent Variable: Competitiveness b Predictors: (Constant), Knowledge sharing capability						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	Std. Error	Beta		
1	(Constant)	0.452	0.16		2.826	0.005
	Knowledge sharing capability	0.899	0.04	0.9	22.717	0.000
a Dependent Variable: Competitiveness						

As shown in Table 4.18, the model yielded a coefficient of determination ($R^2 = 0.810$), meaning that 81.0% of the variance in competitiveness can be explained by knowledge sharing capability. The model was statistically significant, as confirmed by the ANOVA results ($F(1, 122) = 159.335$, $p < .000$), suggesting a strong predictive relationship between knowledge sharing and competitiveness.

The regression coefficient for knowledge sharing capability was also significant ($B = 0.899$, $p < .05$), indicating that a one-unit increase in knowledge sharing capability

leads to a 0.899 increase in the competitiveness score of public universities. This gave rise to the following model:

$Y=0.452+0.899$ (Knowledge sharing capability) $+\varepsilon$

Based on these findings, the null hypothesis (H_{04}) was rejected. The study therefore concludes that knowledge sharing capability has a statistically significant effect on the competitiveness of chartered public universities in Kenya.

These results are consistent with the findings of Gebreyohans et al. (2022), who emphasized that digital knowledge sharing in higher education fosters innovation and academic performance by enabling continuous knowledge flows across institutional departments. Similarly, Mwambasa (2021) found that structured knowledge sharing practices such as departmental meetings, digital repositories, and collaborative tools enhance institutional responsiveness and strategic outcomes in Kenyan public universities.

These findings have important implications. In the context of Kenyan public universities, the results highlight that institutions which actively promote knowledge sharing through digital platforms, mentorship programs, cross-functional collaboration, and open communication are more likely to experience improvements in innovation, decision-making, and service delivery. This in turn enhances their ability to attract top faculty, engage students, and respond swiftly to changing policy and market conditions. Given the growing pressure on public universities to be more accountable, transparent, and competitive both locally and globally, investing in knowledge sharing is not optional it is a strategic imperative. In sum, knowledge sharing emerges not just as a supportive process but as a critical driver of institution.

4.7.4 Knowledge Storage Capability

Knowledge storage plays a foundational role in the broader knowledge management framework by enabling organizations to systematically collect, preserve, and retrieve institutional memory. This study examined the effect of knowledge storage capability

on the competitiveness of chartered public universities in Kenya. From this, the second hypothesis was drawn:

H_{02}: *knowledge storage capability has no effect on competitiveness of chartered public universities in Kenya*

To test this hypothesis, a simple linear regression was conducted and the findings presented in Table 4.19.

Table 4.19: Regression Model Results on Knowledge Storage Capability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.474a	0.225	0.218	0.88751

a Predictors: (Constant), Knowledge storage capability
b Dependent Variable: Competitiveness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.619	1	27.619	35.064	.000b
	Residual	95.308	121	0.788		
	Total	122.927	122			

a Dependent Variable: Competitiveness
b Predictors: (Constant), Knowledge storage capability

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.867	0.365		5.116	.000
	Knowledge storage capability	0.546	0.092	0.474	5.921	.000

a Dependent Variable: Competitiveness

The model yielded a coefficient of determination (R^2) of 0.225, indicating that 22.5% of the variation in competitiveness could be explained by knowledge storage capability. This suggests that knowledge storage plays a meaningful, though partial, role in shaping institutional competitiveness. The Analysis of Variance (ANOVA) further confirmed the model's significance, with $F(1, 122) = 35.064$, $p < 0.001$, indicating a statistically significant relationship between the two variables. The regression coefficient for knowledge storage capability was 0.546, with a p-value of

0.000, well below the standard alpha level of 0.05.

Regression Model for Knowledge Storage Capability was thus derived as;

Competitiveness = 1.867 + 0.546 (Knowledge Storage Capability) + ε

These results mean that for every unit increase in knowledge storage capability, the competitiveness of a university increases by approximately 0.546 units, holding other variables constant. Consequently, the study rejected the null hypothesis (H_{02}) and concluded that knowledge storage capability has a statistically significant effect on the competitiveness of chartered public universities in Kenya.

This finding is supported by recent studies. Trivedi and Srivastava (2022) emphasized that robust knowledge storage allows institutions to retain institutional memory and sustain learning, which are vital for consistent performance. Likewise, Ngah and Wong (2020) highlighted that organized knowledge repositories enable faster knowledge retrieval, improve operational efficiency, and foster innovation which are key ingredients for long-term competitiveness in knowledge-intensive environments.

In the context of Kenyan public universities, this result suggests that institutions that have invested in digital repositories, documentation practices, and systematic storage of knowledge assets are more likely to improve their decision-making, research continuity, and training outcomes. These improvements ultimately translate into better competitiveness in the higher education sector, especially as universities face growing pressure for transparency, innovation, and responsiveness to student and stakeholder needs. Effective knowledge storage becomes not only a technical enabler but a strategic differentiator in ensuring sustainability, agility, and relevance in a dynamic academic landscape.

4.7.5 Multivariate Regression Analysis

This section presents the results of the multivariate regression analysis conducted to assess the combined influence of knowledge creation, knowledge organization,

knowledge sharing and knowledge storage capabilities on the competitiveness of chartered public universities in Kenya. Unlike the individual regressions that examined each predictor separately, this approach considered all the variables simultaneously to determine their joint explanatory power and statistical significance in shaping university competitiveness.

The regression analysis revealed a strong relationship between knowledge management capabilities and competitiveness as shown in Table 4.20.

Table 4.20: Multivariate Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.882a	0.778	0.769	0.49152

a Predictors: (Constant), Knowledge creation capability, Knowledge storage capability, Knowledge organization capability, Knowledge sharing capability

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	79.313	4	19.828	170.982	.000b
	Residual	43.617	118	0.369		
	Total	122.927	122			

a Dependent Variable: Competitiveness

b Predictors: (Constant), Knowledge creation capability, Knowledge organization capability, Knowledge sharing capability, Knowledge storage capability

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.331	0.196		0.387	0.008
	Knowledge creation capability	0.241	0.048	0.23	2.126	.000
	Knowledge organization capability	0.466	0.054	0.462	4.371	.000
	Knowledge sharing capability	0.337	0.071	0.328	5.844	0.001
	Knowledge storage capability	0.359	0.074	0.354	1.356	0.019

a Dependent Variable: Competitiveness

The model yielded an R Square of 0.778, indicating that 77.8% of the variance in competitiveness among chartered public universities could be explained by the combined effect of the four knowledge management capabilities. This shows that public universities that actively invest in a comprehensive approach to managing knowledge through its creation, organization, sharing and storage are significantly

more likely to enhance their competitive position within the higher education sector.

Further analysis through ANOVA confirmed the model's statistical significance. The results showed that the model was a good fit, with $F(4, 118) = 170.982$ and $p < .001$, suggesting that the regression equation as a whole was statistically significant. Each of the four independent variables was also found to contribute positively and significantly to competitiveness. Knowledge organization capability had the strongest standardized beta coefficient ($\beta = 0.462$, $p = .000$), followed by knowledge sharing ($\beta = 0.328$, $p = .001$), knowledge storage ($\beta = 0.354$, $p = .019$), and knowledge creation ($\beta = 0.230$, $p = .000$). These findings suggest that while all KM capabilities are essential, certain processes particularly those related to organizing and sharing knowledge may have stronger influence on institutional competitiveness.

The null hypothesis that knowledge management capabilities have no effect on the competitiveness of chartered public universities in Kenya was rejected. The evidence supported the alternative hypothesis, confirming that the collective strength of these capabilities significantly predicts competitive outcomes. From the coefficients, the following model was achieved;

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

Hence, the linear regression model was;

$$Y = 0.331 + 0.241\ (\textit{Knowledge Creation Capability}) + 0.466\ (\textit{Knowledge Organization Capability}) + 0.337(\textit{Knowledge Sharing Capability}) + 0.359\ (\textit{Knowledge Storage Capability}) + \varepsilon$$

The implications of these findings are critical for public universities striving to remain relevant and responsive in a rapidly evolving academic environment. The results suggest that competitiveness is no longer a product of isolated knowledge initiatives, but rather the result of a coherent and integrated knowledge management strategy. Institutions that develop robust knowledge ecosystems are better positioned to improve research outputs, respond to stakeholder demands, and maintain academic

excellence.

These findings align with the work of Rehman et al. (2022), who found that institutions that systematically invest in knowledge creation, organization, sharing and storage are more agile and better equipped to innovate and maintain competitiveness. Similarly, Gebreyohans et al. (2022) confirmed that higher education institutions benefit significantly from integrated knowledge processes, particularly through enhanced collaboration, improved academic performance, and increased stakeholder trust. In conclusion, the multivariate model demonstrated that knowledge management capabilities are not only individually important but collectively essential for strengthening the competitive standing of public universities in Kenya**.**

4.7.7 Optimal Model

This section presents the results of the optimal regression model, which tested the moderating effect of information technology (IT) capability on the relationship between knowledge management (KM) capabilities and the competitiveness of chartered public universities in Kenya. The analysis was guided by the following hypothesis:

H_{05}: *IT has no moderating effect on the relationship between knowledge management capability and competitiveness of chartered public universities in Kenya.*

To test this hypothesis, a moderated regression analysis was conducted. The model included interaction terms between IT capability and each of the four KM capabilities knowledge creation, storage, organization, and sharing. The moderation model was specified as:

$$\mathbf{Y= \beta_0 + \beta_1 X_1 * Z + \beta_2 X_2 * Z + \beta_3 X_3 * Z + \beta_4 X_4 * Z + \varepsilon}$$

The results of the overall moderation model were as presented in Table 4.21.

Table 4.21: Results of the Overall Moderated Model

Model	R	R Square	Adjusted R Square
1	.899a	0.808	0.801

a Predictors: (Constant), knowledge creation capability, knowledge organization capability, knowledge sharing capability, knowledge storage capability
b Dependent Variable: Competitiveness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	75.433	1	75.433	148.5 18	.000b
	Residual	47.494	121	0.393		
	Total	122.927	122			

a Dependent Variable: Competitiveness
b Predictors: (Constant), knowledge creation capability, knowledge organization capability, knowledge sharing capability, knowledge storage capability.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	0.451	0.224		0.187	0.014
	Knowledge creation capability *IT	0.338	0.085	0.335	2.196	0.001
	Knowledge organization capability *IT	0.443	0.123	0.39	4.362	0.000
	Knowledge sharing capability *IT	0.349	0.249	0.356	5.875	0.000
	Knowledge storage capability *IT	0.398	0.156	0.365	1.647	0.006

a Dependent Variable: Competitiveness

The regression results showed that the R square increased from 0.778 (pre-moderation) to 0.808 (post-moderation), indicating an improved explanatory power by 3.01%. This suggests that IT capability strengthens the influence of KM capabilities on competitiveness. Each of the interaction terms was statistically significant ($p < 0.05$), confirming that IT significantly moderates the relationship between each KM dimension and university competitiveness.

These findings support the rejection of the null hypothesis (H_{05}) and affirm that IT capability has a significant moderating effect. The final regression equation, based on the coefficient estimates, was modeled as:

Y= 0.451 + 0.338 (Knowledge creation capability) (IT capability) + 0.443 (Knowledge organization capability) (IT capability) + 0.349 **(**Knowledge sharing capability**)** (IT capability) + 0.398 (Knowledge storage capability) (IT capability) + Ɛ

This means that when IT capability interacts with knowledge creation, for example, it contributes an additional 0.338 units to competitiveness; similarly, its interaction with knowledge sharing contributes 0.349 units. This evidence confirms that institutions leveraging IT tools such as learning management systems, digital libraries, or cloud-based platforms can boost the value of knowledge management efforts.

The results are consistent with previous findings by Olan et al. (2022), who observed that the integration of digital platforms with structured knowledge systems improved both access and responsiveness in knowledge-intensive organizations. Likewise, Omanyo and Ndiege (2025) emphasized that knowledge-sharing features embedded in university IT systems (e.g., LMS discussion forums, collaborative assignments) enhance institutional collaboration and adaptability. These studies support the idea that IT does not only facilitate KM but amplifies its effect, especially in academic environments.

In the context of public universities in Kenya, this finding suggests that those institutions which align their KM capabilities with robust IT systems are more likely to enhance their strategic competitiveness. For example, by embedding digital tools into processes such as research storage, course content delivery, interdepartmental collaboration, and innovation tracking, universities can transform latent knowledge into usable, impactful outcomes. This is particularly critical in today's environment, where universities are expected to be agile, innovative, and aligned with stakeholder expectations.

This study contributes to knowledge by empirically validating the moderating role of IT within a developing country context an area that has often been theorized but underexplored empirically. It extends existing KM frameworks by showing that IT not only supports KM functions but enhances their strategic outcomes, especially in non-commercial, knowledge-intensive institutions such as public universities. Furthermore, this research refines our understanding of how digital transformation aligns with knowledge strategies to create sustainable competitive advantages.

4.7.8 Summary of Hypothesis Testing

The p-value of each of the five hypotheses was found to be 0.000 thus the hypothesis was rejected. The test of hypothesis is as summarized in Table 4.22.

Table 4.22: Summary of Hypothesis Testing

Hypothesis	R2	Beta	P-Value	Decision
H01: Knowledge creation capability has no effect on competitiveness of chartered public universities in Kenya	0.629	0.793	0.000	Reject the null hypothesis
H02: Knowledge organization capability has no effect on competitiveness of chartered public universities in Kenya.	0.552	0.743	0.000	Reject the null hypothesis
H03: Knowledge sharing capability has no effect on competitiveness of chartered public universities in Kenya	0.810	0.900	0.000	Reject the null hypothesis
H04 Knowledge storage capability has no effect on competitiveness of chartered public universities in Kenya.	0.225	0.474	0.000	Reject the null hypothesis
H05: Information Technology has no statistically significant moderating effect competitiveness of chartered public universities in Kenya	0.808	0.451	0.000	Reject the null hypothesis

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of major findings, the conclusions and recommendations of the study. The Chapter also highlights the contributions to existing knowledge and areas of further research.

5.2 Summary of Findings

This section summarizes the findings of the study. The general objective of this study was to examine the effect of knowledge management capability on competitiveness of chartered public universities in Kenya. The capabilities were knowledge creation, knowledge organization, knowledge sharing and knowledge storage and the moderating role of information technology. The study obtained quantitative data which was analyzed by use of descriptive and inferential statistics. Prior to the final study, the research instruments were used in the pilot study, and reliability and validity tests carried out. The collected qualitative data was analyzed through content analysis while quantitative data was analyzed using statistical measures, both embedded in SPSS version 26.

5.2.1 Knowledge Creation Capability and Competitiveness of Chartered Public Universities in Kenya

The study found that knowledge creation capability significantly influences university competitiveness. With an R^2 of 0.629 and a standardized beta coefficient ($\beta = 0.793$, $p < 0.001$), knowledge creation emerged as a strong predictor. The regression model showed that a unit increase in this capability contributes a 0.767-unit increase in competitiveness, leading to the rejection of the null hypothesis.

5.2.2 Knowledge Organization Capability and Competitiveness of Chartered Public Universities in Kenya

This capability demonstrated strong predictive power with $R^2 = 0.552$ and $\beta = 0.743$ ($p < 0.001$). The regression results showed that a unit increase in knowledge organization led to a 0.797 increase in competitiveness. This suggests that universities with structured knowledge systems such as classification tools, accessible repositories, and documentation perform better strategically.

5.2.3 Knowledge Sharing Capability and Competitiveness of Chartered Public Universities in Kenya

Knowledge sharing emerged as the most significant individual predictor ($R^2 = 0.810$, $\beta = 0.900$, $p < 0.001$). The regression coefficient ($B = 0.899$) confirmed that consistent and open knowledge exchange enhances innovation, collaboration, and institutional responsiveness. This led to the rejection of the null hypothesis.

5.2.4 Knowledge Storage Capability and Competitiveness of Chartered Public Universities in Kenya

Knowledge storage capability was also found to significantly impact competitiveness ($R^2 = 0.225$, $\beta = 0.474$, $p < 0.001$). The regression coefficient ($B = 0.546$) indicated that improving storage systems enhances the ability of institutions to maintain continuity, recall institutional memory, and improve decision-making key components of competitiveness.

5.2.5 Moderating Effect of Information Technology on the Relationship between Knowledge Management Capability and Competitiveness of Chartered Public Universities in Kenya

When IT capability was introduced as a moderator, the overall explanatory power of the model increased from $R^2 = 0.778$ to $R^2 = 0.808$, indicating a 3.01% improvement. All interaction terms between IT and the KM variables were statistically significant (p

< 0.05), suggesting that IT capability strengthens the effects of KM capabilities on university competitiveness.

5.3 Conclusions of the Study

This study concludes that knowledge management capabilities significantly and positively influence the competitiveness of chartered public universities in Kenya. Specifically, knowledge sharing and knowledge organization had the strongest effects, highlighting the need for collaboration and structured systems in the management of institutional knowledge.

Furthermore, the moderating role of IT capability was confirmed. IT not only supports the implementation of KM strategies but enhances their effectiveness. Universities that align their digital infrastructure with knowledge management initiatives are more likely to strengthen their institutional responsiveness, innovation, and stakeholder engagement. Overall, the study contributes to theory and practice by demonstrating that KM capabilities when supported by IT are critical levers for strategic competitiveness in knowledge-intensive, non-commercial institutions such as public universities.

5.4 Recommendations of the Study

Based on the findings, several recommendations are made for policy and practice:

First, public universities should prioritize knowledge organization capability, given its strong effect on competitiveness. Institutions need to invest in structured classification systems, centralized repositories, and knowledge retrieval processes. This ensures academic continuity and institutional memory retention.

Second, knowledge sharing mechanisms must be strengthened through formal and informal platforms. Universities should institutionalize cross-departmental collaboration, mentorship, and digital content sharing using tools like learning management systems (LMS) and intranets. These practices enhance responsiveness and innovation.

Third**,** knowledge storage capability can be improved by adopting secure, scalable, and user-friendly digital repositories. Proper documentation of research, training materials, and policy documents ensures long-term strategic advantage.

Fourth, while knowledge creation capability had a relatively lower beta value, it remains critical. Universities must support research initiatives, staff training, and innovation hubs to fuel new knowledge generation, which underpins long-term competitiveness.

Lastly, policymakers and university administrators should recognize that information technology is a key enabler of knowledge management. Digital infrastructure should not be treated as an operational add-on but as a strategic resource. Investments in IT platforms should be aligned with KM goals to maximize their synergistic effect.

5.5 Contribution to Existing Knowledge

This study provides empirical evidence on how individual KM capabilities influence institutional competitiveness in the context of Kenyan public universities an area that has been underexplored. It extends existing KM frameworks by demonstrating that IT capability moderates the relationship between KM and competitiveness. The study also provides a revised conceptual framework, grounded in data, that can inform strategy, planning, and performance management in universities.

5.6 Areas for Further Research

Future studies could explore the role of organizational culture and leadership styles in strengthening the effect of KM capabilities on competitiveness. In addition, a comparative study involving private universities or institutions across different African countries would offer a broader perspective. Finally, longitudinal research could help understand how changes in KM practices and IT investments affect competitiveness over time.

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APPENDICES

Appendix I: Primary Data Questionnaire

The purpose of this questionnaire is to collect data on *knowledge management capability and competitiveness of Chartered Public universities in Kenya*. All the information provided will be treated with strict confidence.

SECTION A: GENERAL INFORMATION

1: UNIVERSITY PARTICULAR

a) Name of the University (Optional) ……

b) Date Chartered……

2: RESPONDENT PARTICULARS

Gender: Male ☐ Female ☐

Age Bracket (tick as appropriate)

No	Age Bracket	Tick as Appropriate
i.	21-30	
ii.	31-40	
iii.	41-50	
iv.	Over 50	

Role served (tick as appropriate)

No	Department	Tick as Appropriate

i.	Registrar	
ii.	Finance Officer	
iii.	Dean of Faculty	
iv.	IT Officer	
v.	Librarian	

How long have you served in the above role (tick as appropriate)

No	Period	Tick as appropriate
i.	Less than 1 year	
ii.	Btw 1-5 years	
iii.	Btw 5-10 years	
iv.	Over 10 years	

SECTION B: INVESTIGATING KNOWLEDGE MANAGEMNET CAPABILITY AND COMPETITIVENESS OF CHARTERED PUBLIC UNIVERSITIES IN KENYA

This section contains statements regarding the knowledge management capability and competitiveness of chartered public universities. Kindly provide the response which matches your opinion by ticking as appropriate using a tick (√) or cross mark (x).

No.	Statement	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
		1	2	3	4	5
Knowledge Creation						
1	The university has a written policy on knowledge creation					
2	The university captures and utilizes knowledge acquired from other sources like industry regulators, suppliers, clients, affiliations, and competitors.					

3	Key expert information is often captured in a computerized system in the university					
4	We have a staff mentoring program within the university					
5	The university processes are compiled into operational manuals such as audit manual, credit manual, admission manual, code of conduct manual, HR manual.					
6	Individual learning is normally transformed to group learning by documenting such knowledge into the university repository					
7	There are lessons learned and best practices repositories within the University					
8	The university encourages the staff to go for further relevant studies by meeting cost of tuition					
9	Key lessons learned are shared amongst staff in the areas where they can benefit.					
10	There are knowledge fairs and exchange opportunities within the university to bring on board new colleague-to-colleague relationships					
11	The university's office layout is conducive for staff to speak with colleagues and meet other people					
12	Staff usually have time to talk informally with their colleagues					
Knowledge Organization						
13	The university's organizational knowledge is stored in a database that encourages re-use and sharing					

14	Employees use of intranet to share and exchange knowledge and Experiences					
15	The university uses technology to monitor its competition and business partners					
16	The university uses technology to that allows people in multiple locations to interact as group					
17	The university has a document management system on the portal that allows for transfer of Knowledge					
18	The university has a comprehensive database which is available for all Personnel					
19	The university has allowed free flow of information					
20	The knowledge that I require to perform my job is available in the university portal					
Knowledge Sharing						
21	The university has a system and policies in place which are intended to promote knowledge sharing					
22	The university encourages experienced workers to share their knowledge with new or in- experienced workers.					
23	The university conducts seminars, induction trainings, mentorship and job shadowing to facilitate knowledge transfer					
24	Staff are promoted and rewarded based on their ability to share their knowledge and mentor others					

25	The university has an institutional point of contact for historical materials and documents about prior projects and programs					
26	The university encourages a culture of knowledge sharing as opposed to knowledge hoarding					
27	The university has adequate infrastructure for knowledge sharing					
Knowledge Storage						
28	The university has a policy on the information backups as well as system backups					
29	The university has invested in an IT platform that support data warehousing					
30	The university has a succession plan which provides for capture of knowledge of exiting staff					
31	The university has a program to preserve institutional memory for future use					
32	The university has adequate physical and electronic infrastructure for knowledge storage					
33	The university has a library function that deals with archiving of documents, manuals, pamphlets, reports and other published Information					
Information Technology						
34	The university has written procedures to guide management of knowledge resources					
35	Use of IT at the university reduces dependence on certain specific personnel					
36	IT infrastructure in the university is consistent with corporate Strategy					

37	IT reduces the uncertainty of knowledge loss					
38	Top management of the university is capable of applying IT in their daily operations					
39	IT is comprehensively utilized by members of staff in the university to obtain and utilize the organizational Knowledge					
40	Knowledge management resources are readily available for use in problem solving and decision Making					

Thank you for spending some time to fill this questionnaire

Appendix II: Secondary Data Collection Tool

This questionnaire is meant to collect secondary data on *knowledge management capability and competitiveness of Chartered Public Universities in Kenya*. The data will be treated with strict confidence.

a) Name of the University …….

2: Indicators of organizational competitiveness in years:

Indicator	**2018**	**2019**	**2020**	**2021**	**2022**
New Student Enrollment in Numbers					
Number of Patents					
Citations by Top Ten Most Cited Researchers					

Thank you for spending some time to fill this questionnaire

Appendix III: Statistics for New Student Enrollment by University

	Student Enrolment						
University	**2018**	**2019**	**2020**	**2021**	**2022**	**Mean**	**SD**
Chuka University	1752	1605	1783	1830	2012	1796.40	146.97
Cooperative University	976	1068	1249	1320	1420	1206.60	182.06
Dedan Kimathi	1917	1572	1615	1869	2112	1817.00	223.92
Garissa University	357	438	540	630	873	567.60	199.42
JKUAT	10839	10143	11373	8064	9654	10014.60	1272.42
JOOUST	1790	1524	2070	2106	2698	2037.60	437.88
Kabianga University	1972	1405	1469	1570	1748	1632.80	229.67
Kibabii University	850	975	1120	1376	5840	2032.20	2137.60
Kirinyaga University	2338	1354	1800	3026	2912	2286.00	715.37
Kisii University	4850	2566	3180	3210	3329	3427.00	849.11
Laikipia University	1513	924	1400	1492	1548	1375.40	258.21
Maasai Mara University	2300	2021	2101	2180	2210	2162.40	106.39
Machakos University	2006	1592	1579	1436	1583	1639.20	214.97
Masinde Muliro University	1643	1510	1678	1725	1830	1677.20	117.00
Moi University	4350	3825	3940	4126	4506	4149.40	281.53
Multimedia University	2429	2052	1679	1724	1896	1956.00	302.94
Murang'a University of Technology	1487	1150	1694	1723	1853	1581.40	274.55
Pwani University	1831	1122	1516	1723	1807	1599.80	294.48
Rongo University	969	1389	1723	1845	1921	1569.40	392.49
South Eastern Kenya University	1486	1004	1255	1325	1450	1304.00	191.89
Taita Taveta University	781	555	938	1036	1258	913.60	264.75
Technical University of Kenya	3138	2879	3393	3450	3519	3275.80	264.42
Technical University of Mombasa	2019	1954	2250	2367	2450	2208.00	215.55
University of Eldoret	1480	1612	1741	1826	1928	1717.40	176.19
University of Embu	1661	1493	1983	2196	2217	1910.00	322.98
University of Nairobi	6361	6154	5053	5824	6063	5891.00	506.55

Appendix IIII: Statistics for Patents

Name of University	Patents						
	2018	2019	2020	2021	2022	Mean	SD
Chuka University	0	0	1	0	0	0.20	0.45
Cooperative University	0	0	0	0	0	0.00	0.00
Garissa University	0	0	0	0	0	0.00	0.00
JOOUST	0	0	0	0	0	0.00	0.00
Kabianga University	0	0	0	0	0	0.00	0.00
Kibabii University	0	0	0	0	0	0.00	0.00
Kirinyaga University	0	0	0	0	0	0.00	0.00
Kisii University	0	0	0	0	0	0.00	0.00
Laikipia University	1	0	0	0	0	0.20	0.45
Maasai Mara University	0	1	15	0	0	3.20	6.61
Machakos University	0	0	0	0	0	0.00	0.00
Masinde Muliro University	0	0	0	0	0	0.00	0.00
Moi University	0	0	0	0	0	0.00	0.00
Multimedia University	0	2	4	0	0	1.20	1.79
Murang'a University of Technology	0	0	1	0	0	0.20	0.45
Pwani University	0	0	0	0	0	0.00	0.00
Rongo University	0	0	0	0	0	0.00	0.00
South Eastern Kenya University	2	0	2	0	0	0.80	1.10
Taita Taveta University	0	0	0	0	0	0.00	0.00
Technical University of Kenya	0	0	0	0	0	0.00	0.00
Technical University of Mombasa	7	10	13	0	0	6.00	5.87
University of Eldoret	0	1	5	0	0	1.20	2.17
University of Embu	0	0	0	0	0	0.00	0.00
Dedan Kimathi	2	2	5	2	1	2.40	1.52
JKUAT	8	9	2	3	2	4.80	3.42
University of Nairobi	8	22	21	28	33	22.40	9.40

Appendix IV: Statistics for Citations by Top Ten Most Cited Researchers

	Number of Citations						
University	**2018**	**2019**	**2020**	**2021**	**2022**	**Mean**	**SD**
Chuka University	952	1009	1427	1738	1743	1373.80	381.70
Cooperative University	313	343	389	485	484	402.80	79.34
Dedan Kimathi	714	869	952	1110	1129	954.80	173.05
Garissa University	152	187	174	212	223	189.60	28.64
JKUAT	2732	3077	3739	4699	5145	3878.40	1031.21
JOOUST	2413	2932	2914	3839	4189	3257.40	731.94
Kabianga University	297	297	420	649	703	473.20	192.77
Kibabii University	352	389	400	483	501	425.00	64.01
Kirinyaga University	225	266	379	433	512	363.00	118.12
Kisii University	699	732	797	950	1347	905.00	265.24
Laikipia University	391	357	463	535	606	470.40	102.20
Maasai Mara University	698	770	881	1235	1201	957.00	247.31
Machakos University	638	638	700	903	1049	785.60	183.07
Masinde Muliro University	1059	1066	1257	1332	1286	1200.00	128.36
Moi University	3134	3169	3591	3860	3939	3538.60	376.39
Multimedia University	122	121	210	267	283	200.60	77.14
Murang'a University of Technology	291	360	388	455	530	404.80	91.43
Pwani University	1042	1088	1076	1183	1175	1112.80	62.81
Rongo University	697	662	719	906	830	762.80	101.77
South Eastern Kenya University	1413	1451	1567	1581	1532	1508.80	73.58
Taita Taveta University	335	405	468	642	785	527.00	183.72
Technical University of Kenya	1647	1940	2186	3048	3947	2553.60	938.02
Technical University of Mombasa	629	746	1125	1267	1526	1058.60	370.33
University of Eldoret	1046	1110	1351	2061	1785	1470.60	439.33
University of Embu	4244	7458	12062	16634	18667	11813.00	6052.63
University of Nairobi	11935	16335	22388	28382	30516	21911.20	7854.29

Appendix V: List of Chartered Public Universities

No.	NAME OF UNIVERSITY	YEAR OF ACCREDITATION
1.	University of Nairobi	Established - 1970 / Chartered - 2013
2.	Moi University	Established - 1984 / Chartered - 2013
3.	Kenyatta University	Established – 1985/ Chartered - 2013
4.	Egerton University	Established – 1987/ Chartered – 2013
5.	Jomo Kenyatta University of Agri. and Tech.	Established – 1994/ Chartered - 2013
6.	Maseno University	Established – 2001/ Chartered – 2013
7.	Masinde Muliro University of Sc. and Tech.	Established – 2007/ Chartered – 2013
8.	Dedan Kimathi University of Technology	2012
9.	Chuka University	2013
10.	Technical University of Kenya	2013
11.	Technical University of Mombasa	2013
12.	Pwani University	2013
13.	Kisii University	2013
14.	University of Eldoret	2013
15.	Maasai Mara University	2013
16.	Jaramogi Oginga Odinga Univ.of Sc. and Tech.	2013
17.	Laikipia University	2013
18.	South Eastern Kenya University	2013
19.	Meru University of Science and Technology	2013
20.	Multimedia University of Kenya	2013
21.	University of Kabianga	2013
22.	Karatina University	2013
23.	Kibabii University	2015
24.	Rongo University	2016
25.	The Co-operative University of Kenya	2016
26.	Taita Taveta University	2016
27.	Murang'a University of Technology	2016
28.	University of Embu	2016
29.	Machakos University	2016
30.	Kirinyaga University	2016
31.	Garissa University	2017

Source: CUE 2020

Appendix VI: Research Permit

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