INFLUENCE OF FINANCIAL TECHNOLOGY SYSTEMS ON FINANCIAL PERFORMANCE OF PUBLIC UNIVERSITIES IN KENYA

BY

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DECLARATION

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for the award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and the author duly acknowledged.

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ABSTRACT

Public universities in Kenya have faced persistent financial challenges over the years, including declining government funding, rising student enrollment, inefficient fee collection processes, poor financial management practices, and escalating operational costs. These challenges have adversely affected their financial sustainability and overall performance. With the rapid advancement of financial technology, there is growing potential for public universities to leverage digital innovations to improve their financial operations, enhance resource management, and strengthen institutional performance. The purpose of this study was to investigate the influence of financial technology systems on financial performance of public universities in Kenya. The study specifically focused on establishing the influence of digital payment systems, digital revenue collection systems, digital supply chain systems and innovative income streams influences on the financial performance of public universities in Kenya. This study was anchored on Technology Acceptance Model, Diffusion of Innovation Theory, General Systems Theory, and Schumpeter Theory of Innovation. A descriptive research design was employed in the study. The target population of the study comprised of 35 chartered public universities in Kenya. The units of observation comprised of Chief Financial Officers, IT Managers, Financial Analysts and Accountants. A census approach was employed. The study relied on both primary and secondary data. Primary data was collected through structured questionnaires, while a secondary data collection sheet was utilized in collecting secondary data. Both descriptive and inferential statistics were used to analyze the collected data. The statistics were generated through Statistical Package for Social Sciences. The results of the study were displayed inform of tables and figures. The study established that digital payment systems, digital revenue collection systems, digital supply chain systems and innovative income streams positively and significantly correlates with financial performance of universities. Additionally, digital payment systems, digital revenue collection systems, and innovative income streams positively and significantly influences financial performance of universities. The results bear the implications that enhancing aspects of digital payment systems, digital revenue collection systems, and innovative income streams leads to enhanced levels of financial performance. Digital supply chain systems however had a positive but insignificant influence on financial performance. The study concluded that digital financial systems positively influences financial performance of public universities in Kenya. The study provided recommendation to the management of the public universities to capitalize on investing on digital financial systems so as to leverage more on the benefits associated with the systems.

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ACRONYMNS AND ABRREVIATIONS

ANOVA	-	Analysis of Variance
CUE	-	Commission for University Education
DIT	-	Diffusion of Innovation Theory
EPS	-	Electronic Payment Systems
ERM	-	Enterprise Risk Management
ERP	-	Enterprise Resource Planning
fintech	-	Financial Technology
GST	-	General Systems Theory
IT	-	Information Technology
KE	-	Knowledge Exchange
NACOSTI	-	National Commission for Science, Technology, and Innovation
SPSS	-	Statistical Package for Social Scientists
TAM	-	Technology Acceptance Model
TVET	**-**	Technical and Vocational Education and Training
VIF	-	Variance Inflation Factor

OPERATIONAL DEFINITIONS OF TERMS

Digital payment systems - Electronic methods of transferring money or paying for goods and services (Hazar & Babuşcu, 2023)

Digital Revenue Collection Systems: Refers to platforms that automate the collection, recording, and reporting of university income (Arena et al., 2015)

Digital Supply Chain Systems - Refer to the integration and use of digital technologies to manage, coordinate, and optimize the flow of goods, services, finances, and information across all university operations (Lim & Tan, 2020)

Financial Performance - Refers to how efficiently and effectively public universities utilize their financial resources to fulfil their educational, research, and social responsibilities (Kithinji, 2023).

Financial Technology - The integration of digital technologies with financial services to enhance or automate financial operations and processes. It is an umbrella term for innovations and applications that improve the delivery and use of financial services through technological means (Luu *et al.,* (2021)

Innovative Income Streams - Refer to alternative and technology-driven sources of revenue beyond traditional government funding and tuition fees, which enhance financial sustainability and institutional competitiveness (Nganga & Kyalo, 2021).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial Technology according to Luu *et al.,* (2021) encompasses the integration of digital technologies with financial services to enhance or automate financial operations and processes. It is an umbrella term for innovations and applications that improve the delivery and use of financial services through technological means. FinTech has revolutionized how organizations manage their financial activities by increasing efficiency, transparency, and accessibility. In public universities, the adoption of Financial Technology is increasingly vital. FinTech offers an avenue for enhancing financial performance by streamlining payment processes, improving financial reporting and management, minimizing operational risks, and enabling better decision-making through real-time financial data.

Financial Technology (FinTech) has emerged as a transformative force across sectors, including higher education. In public universities, FinTech integration has enhanced financial efficiency, transparency, and service delivery. Globally, universities have adopted various FinTech innovations to improve financial operations. For instance, in the United States, institutions such as the Massachusetts Institute of Technology utilize advanced tools like online payment systems (PayPal, Stripe, and Apple Pay) integrated into student portals for tuition and accommodation payments. Additionally, blockchain-based credentialing systems such as Blockcerts enable secure and verifiable issuance of digital certificates, while AI-driven budgeting tools facilitate expenditure forecasting and strategic financial planning (Ajiga et al., 2025). These innovations have led to improved financial transparency, cost savings, and enhanced stakeholder trust.

In Africa, South Africa has made notable progress in adopting FinTech in higher education. Universities employ mobile money platforms like MTN MoMo and FNB eWallet for fee payments and automated financial management systems that integrate budgeting, procurement, and reporting (Chigada & Hirschfelder, 2019). These systems have promoted financial inclusion by providing accessible payment options, reducing cash handling risks, and strengthening financial accountability and compliance.

In Kenya, public universities have increasingly embraced FinTech solutions, reflecting the country's reputation as a digital finance leader. Platforms such as M-Pesa, Airtel Money, and the government's eCitizen portal facilitate convenient and transparent fee payments, government remittances, and service access (Central Bank of Kenya, 2023). Many universities have also developed integrated student management portals linked to mobile money and banking systems to enable real-time fee reconciliation and financial reporting (Wanjiru & Muturi, 2021). This integration has minimized fraud, enhanced revenue collection, and improved operational efficiency (Kariuki, 2022; Kinyua & Mwangi, 2023). Moreover, the automation of financial processes has allowed universities to redirect administrative efforts toward academic and student support functions, further improving institutional performance (Omondi, 2022).

Despite these advancements, empirical evidence on how specific FinTech systems influence the financial performance of public universities in Kenya remains limited. While existing studies highlight the adoption of digital payment and financial management tools, few have examined their direct impact on financial efficiency, revenue growth, cost reduction, and overall institutional performance. Furthermore, research has not adequately addressed how varying levels of FinTech integration affect financial sustainability across different universities. This study

therefore seeks to bridge this gap by investigating the influence of Financial Technology systems on the financial performance of public universities in Kenya.

1.1.1 Financial Technology Systems

Financial Technology systems refer to the integration of technology into financial services and processes to enhance their delivery, efficiency, and accessibility. The systems involve the use of software, mobile applications, digital platforms, and other technological innovations to automate and streamline financial activities such as payments, revenue collection, budgeting, procurement, and investment. In universities, the systems are increasingly becoming critical in supporting financial operations, improving transparency, and enabling institutions to cope with changing economic conditions and student expectations. Beyond efficiency, the systems also play a role in improving accountability and reducing manual errors that often compromise financial integrity. Additionally, their adoption reflects the growing need for higher education institutions to align with global digital transformation trends.

One key aspect of FinTech is digital payment systems, which facilitate seamless, secure, and instantaneous financial transactions. Digital payment systems refer to electronic methods of transferring money or paying for goods and services (Hazar & Babuşcu, 2023). In universities, the system includes platforms that allow students to pay tuition, accommodation, and other fees through mobile money services integrated into university portals. The systems improve the efficiency, accuracy, and convenience of payments for both students and university administration. The systems further reduce queues at banks and finance offices, lower the risks associated with handling cash, and enhance accountability through real-time transaction records. Moreover, digital payment systems foster inclusivity by allowing students from different locations and financial

backgrounds to transact with ease. They also enable universities to better forecast cash flows, which supports informed decision-making in financial planning.

Another critical aspect is digital revenue collection systems, which are platforms that automate the collection, recording, and reporting of university income. These systems integrate with academic and financial databases to monitor payments, issue digital receipts, and reconcile accounts. Examples include student finance portals, electronic invoicing systems, and integration with government platforms like eCitizen. Such systems enhance transparency, reduce revenue leakages, and support effective auditing and compliance with financial regulations. Furthermore, they allow university administrations to generate timely financial reports that support accountability to stakeholders. The systems also help reduce corruption and improve efficiency in income management through minimizing human intervention in revenue processes.

Equally important are digital supply chain systems, refer to the integration and use of digital technologies to manage, coordinate, and optimize the flow of goods, services, finances, and information across all university operations (Lim & Tan, 2020). These systems help in automating vendor management, purchase requisitions, tendering, and payment processing. By digitizing the supply chain, universities can improve efficiency, reduce corruption, track expenditures, and ensure value for money in procurement. This is especially significant in public institutions, where procurement transparency is a critical governance issue. The systems also support better collaboration with suppliers, enabling competitive bidding and timely delivery of goods and services. In addition, they help universities align their procurement strategies with sustainability and cost-effectiveness goals.

Innovative income streams represents alternative and technology-driven sources of revenue beyond traditional government funding and tuition fees, which enhance financial sustainability and institutional competitiveness (Nganga & Kyalo, 2021). These refer to technology-driven avenues that universities use to generate additional revenue beyond traditional sources like government funding and student fees. Examples include online academic programs, virtual consultancies, digital publishing platforms, e-learning content monetization, and investment in research and intellectual property commercialization. Public universities can diversify their income, enhance financial sustainability, and expand their outreach to non-traditional learners and global audiences through leveraging digital platforms. Universities can strengthen resilience against fluctuating government subsidies and enrollment levels by tapping into innovative income streams. Additionally, universities can also position themselves as entrepreneurial institutions that can compete effectively in the global education marketplace.

1.1.2 Financial Performance of Public Universities

Financial performance in public universities according to Kithinji (2023) refers to how efficiently and effectively these institutions utilize their financial resources to fulfil their educational, research, and social responsibilities. It is often evaluated using metrics like as income creation, cost efficiency, funding sustainability, financial accountability, and the ability to invest in academic infrastructure and innovation. Public universities around the world are facing increasing financial constraints as government funding shrinks, student numbers grow, and operational costs rise. To improve performance in this environment, novel solutions such as financial technology have been implemented.

Around the world, public universities in advanced economies such as Australia are gradually implementing financial technologies in an effort to enhance financial management.

Online payment platforms, integrated financial management systems, data analytics for forecasting and budgeting, and blockchain for open record-keeping are some examples of these technologies (Christensen & Eyring, 2011). The integration of financial technologies in various settings has resulted in greater revenue collection, increased transparency, lower transaction costs, and better decision-making based on real-time data. Fintech tools, for instance, have been used by Australian universities to automate financial aid disbursement, handle grants and donations, and expedite tuition payments, all of which have increased efficiency and stakeholder satisfaction.

Public universities in sub-Saharan Africa confront particular difficulties, such as inadequate public funding, outdated finance systems, and ineffective bureaucracy (Teferra & Altbach, 2020). However, university financial management is starting to change as a result incorporation of financial technologies. Universities in nations like Nigeria are using automated fee collecting platforms, mobile money solutions, and enterprise resource planning systems. These techniques have increased auditability, decreased financial leaks, and improved cash flow management. Additionally, the digitisation of financial operations facilitates adherence to donor rules and international accounting standards, both of which are critical for securing foreign money. Furthermore, regional programs like the African Union's dedication to digital transformation in education highlight how fintech may improve the performance and sustainability of institutions (Nungu, 2021).

Public universities in Kenya face significant financial strains as a result of falling government funding, postponed cash disbursements, and growing operating costs. Increased student enrolment without a matching increase in financing has made matters worse (CUE, 2020). Kenyan public universities are using financial technology more and more to address these problems. Among the tactics being used include the adoption of integrated financial management

systems, the usage of mobile money platforms for fee payments, and the deployment of digital payroll and procurement systems. Technology has made it possible to collect fees on time, reduce the hazards associated with handling cash, increase financial reporting, and strengthen budgetary management. Kenyan universities may better manage scarce resources, enhance service delivery, and support the country's digital transformation agenda by utilising fintech.

1.1.3 Public Universities

Public universities are institutions of higher learning that are primarily owned, funded, and managed by the government. In Kenya, the institutions are established through acts of parliament and are mandated to provide accessible, affordable, and quality education to the public. Unlike private universities, public universities operate under a broader mandate of national development, research, and capacity building, serving a significantly larger population of students from diverse socio-economic backgrounds (Joseph *et al.,* 2024). The mode of operation in the intitutions follows a centralized administrative structure, with the government playing a key role in policy formulation and oversight. The institutions are governed by university councils and senates, and their academic programs are regulated by the Commission for University Education.

Funding for public universities in Kenya is primarily sourced from the government through the Ministry of Education, supplemented by tuition fees paid by students, internally generated income from commercial activities, and donor support (Okuro, 2024). The government disburses funds based on student enrolment numbers, staff establishment, and other operational costs, with a significant portion of this funding going towards salaries, infrastructure, and research. In recent years, public universities have faced challenges in financing due to rising enrolment, delayed government disbursements, and constrained budgets, necessitating the adoption of innovative financial technologies to enhance efficiency and financial sustainability.

The focus on public universities in this study stems from their critical role in national development and their dependence on public funds, which makes them more susceptible to inefficiencies in financial management (Wachira, 2018). Additionally, the large scale of operations in public institutions often pose unique challenges that can be effectively addressed through the adoption of financial technology systems. Studying public universities allows for the evaluation of how digital financial tools can improve transparency, accountability, and overall financial performance in institutions that serve the majority of higher education students in the country. In contrast, private universities tend to have more flexible financial structures and operational autonomy, which makes their context less comparable and less reliant on fintech-driven public accountability mechanisms.

1.2 Statement of Problem

Public universities in Kenya play a pivotal role in advancing national development through education, research, and innovation (Odhiambo, 2018). However, these institutions have faced persistent financial distress that threatens their operational sustainability and performance. According to the Parliament of Kenya (2021), the financial challenges stem from declining government capitation, escalating operational costs especially wage bills and limited diversification of revenue sources. While student enrolment has increased, government funding has fallen sharply, from about 66% in the 2017/2018 financial year to approximately 44% in 2021/2022.

Further, the Auditor-General (2023) reported that public universities collectively owe over KSh 60 billion in pending bills, including unremitted statutory deductions, unpaid supplier invoices, and staff pension arrears. The institutions' annual wage bill of approximately KSh 6.2 billion has worsened the strain on already limited finances, resulting in stalled projects, delayed

salaries, and deteriorating service quality. These financial challenges underscore the urgent need for innovative mechanisms to enhance efficiency, transparency, and financial sustainability.

Financial technology (FinTech) offers promising solutions through systems that can streamline financial operations, improve accountability, and strengthen institutional revenue generation. Specifically, digital payment systems can improve transaction efficiency and accountability; digital revenue collection systems can enhance traceability and reduce leakages; digital supply chain systems can optimize procurement and expenditure control; and innovative income streams, such as digital investment platforms and online academic services, can diversify revenue sources. Collectively, these technologies have the potential to transform financial management and improve institutional performance (Handhika et al., 2023; Luu et al., 2021).

Despite the growing adoption of FinTech innovations within Kenya's public sector, there remains a critical gaps of empirical research examining how these specific FinTech systems influence the financial performance of public universities. Most prior studies have concentrated on banks (Zhao, 2021), private enterprises (John et al., 2024), and microfinance institutions (Muchiri Juma, 2023), with little attention to the higher education sector, which operates under unique regulatory, governance, and funding structures. Moreover, the few existing studies present mixed outcomes regarding the impact of FinTech on performance, suggesting that results may vary by institutional context and system implementation.

Therefore, this study sought to bridge this contextual and empirical gap by investigating the influence of digital payment systems, digital revenue collection systems, digital supply chain systems, and innovative income streams on the financial performance of public universities in

Kenya. This provides evidence-based insights into how FinTech can be leveraged to alleviate financial distress and enhance the sustainability of public higher education institutions.

1.3 Study Objectives

1.3.1 General Objective

To establish the influence of financial technology systems on the financial performance of public Universities in Kenya.

1.3.2 Specific Objectives

i To investigate the influence of digital payment systems on the financial performance of public universities in Kenya

ii To examine the influence of digital revenue collection systems on the financial performance of public universities in Kenya

iii To establish the influence of digital supply chain systems on the financial performance of public universities in Kenya

iv To find out how innovative income streams influences on the financial performance of public universities in Kenya

1.4 Research Hypothesis

H_{01}: Digital payment systems has no significance influence on the financial performance of public universities in Kenya

H_{02}: Digital revenue collection systems has no significance influence on the financial performance of public universities in Kenya

H_{03}: Digital supply chain systems has no significance influence on the financial performance of public universities in Kenya

H_{04}: Innovative income streams has no significance influence on the financial performance of public universities in Kenya

1.5 Justification of the Study

This study is justified by the financial sustainability challenges facing public universities in Kenya, including declining government funding, rising operational costs, heavy debt burdens, and limited revenue diversification, which have collectively undermined their performance. While FinTech has been widely recognized as a transformative tool capable of enhancing transparency, efficiency, accountability, and revenue management in various sectors, there is a notable paucity of empirical evidence on its application and effectiveness within the context of Kenyan public universities.

Given the sector's critical role in national socio-economic development, investigating how financial technology systems (digital payment solutions, digital revenue collection, digital supply chain systems, and innovative income streams) affect their financial performance is both timely and necessary. Findings from this study will not only fill existing contextual and conceptual research gaps but also provide practical insights to policymakers, university administrators, and stakeholders on leveraging FinTech to strengthen financial management, optimize resource use, and improve institutional sustainability.

1.6 Significance of the Study

The findings of the study benefits the following:

1.6.1 Management of Universities

The study offers the management of universities valuable insights into how fintech can improve decision-making processes by enhancing financial transparency, streamlining operations, and increasing the efficiency of resource allocation. The integration of digital payment systems, mobile

banking, and automated financial platforms can also improve service delivery to students and staff while supporting strategic planning aimed at institutional growth and sustainability.

1.6.2 Policy Makers

For policy makers, the findings of the study can provide a strong foundation for the formulation of policies that promote the adoption and regulation of fintech in public universities. Such policies can help create an enabling environment for innovation that ensures proper governance of financial technologies, and support the development of efficient funding models. Additionally, by encouraging the use of fintech in higher education, policy makers can align their strategies with national development goals, such as improved access to quality education and the digital transformation of public institutions.

1.6.3 Academicians

Academicians also stand to benefit from the study, as it contributes to the existing body of knowledge at the association between financial technology and educational management. The study opens up new avenues for scholarly inquiry, including research on the challenges and impacts of fintech adoption in public institutions. Furthermore, the study can be used as a reference in future studies on financial technology.

1.6.4 Community

The community may gain from better resource management and easier access to high-quality services and education, and their participation in the adoption and feedback procedures may guarantee that financial technology solutions meet their actual goals and specifications.

1.7 Scope of the Study

This study focused on investigating influence of financial technology on the financial performance of public universities in Kenya. The financial technologies under focus comprised of digital payment systems, digital revenue collection systems, digital supply chain systems and innovative income streams. The study employed a descriptive research design and targeted public chartered universities in Kenya. Chief Financial Officers, IT Managers, Financial Analysts and Accountants formed the units of observation. The study was conducted in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter reviews literature on already existing studies related to the objectives of the study with the explanation of the theoretical aspects of the study, empirical literature review, conceptual framework, variables conceptualization, and research gaps.

2.2 Theoretical Review

This section of the study provided a theoretical review of the theories that helps explain the study variables. The study was anchored on Technology Acceptance Model, Diffusion of Innovation Theory, General Systems Theory, and Schumpeter Theory of Innovation

2.2.1 Technology Acceptance Model

The Technology Acceptance Model (TAM) was first proposed by Fred Davis in 1986 and later refined in 1989 as part of his doctoral work at the Massachusetts Institute of Technology. The model was developed to explain and predict user behavior regarding the adoption of new technologies, particularly in organizational settings (Mugo et al., 2017). TAM posits that two key factors determine whether users accepts and use a new technology: Perceived Usefulness (PU)—the degree to which a person believes that using a system enhances their job performance—and Perceived Ease of Use (PEOU)—the degree to which a person believes that using the system is free of effort.

According to the theory, when individuals perceive a technology as both useful and easy to use, they are more likely to develop a positive attitude toward using it, which in turn increases their behavioral intention to use the technology, ultimately leading to actual system use. Over time,

TAM has evolved through several extensions and adaptations to address limitations and incorporate additional contextual variables. Notable among these is TAM2 (Venkatesh and Davis, 2000), which included social influence and cognitive instrumental processes, and Unified Theory of Acceptance and Use of Technology developed by Venkatesh et al. in 2003, which integrated TAM with other user acceptance models.

Although TAM is widely applied to explain technology adoption, it has been criticized for being overly simplistic and failing to account for broader organizational and social factors that influence technology acceptance. The model's heavy reliance on perceived usefulness and ease of use overlooks critical contextual elements such as culture, policies, and resource availability that significantly affect adoption in public institutions. Moreover, TAM has been critiqued for its limited predictive power in complex organizational settings like universities, where structural and bureaucratic barriers may hinder adoption regardless of individual perceptions (Chuttur, 2009).

Digital payment systems are technological innovations that require users within university ecosystems to adopt and integrate them into their financial operations. TAM helps explain how the perceptions of usefulness and ease of use of digital payment platforms can influence their acceptance and consistent usage within the institutions (Johar & Awalluddin, 2011). If university's stakeholders perceive digital payment systems as efficient, convenient, and reliable for handling tuition fees, disbursements, and procurement, they are more likely to adopt them, thereby improving institutional performance through enhanced financial management, reduced transaction times, and better record-keeping. Thus, the Technology Acceptance Model provides a strong theoretical foundation for analyzing the behavioral factors that drive the adoption of digital payment systems in public universities, directly linking technology use to organizational performance outcomes.

2.2.2 Diffusion of Innovation Theory (DIT)

The theory was first proposed by Everett M. Rogers in 1962 to explain how, why, and at what rate new ideas and technologies spread through cultures and social systems. According to the theory, innovation diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Bulck & Roskos-Ewoldsen, 2020). Rogers identified five key stages of adoption—knowledge, persuasion, decision, implementation, and confirmation—through which an individual or organization moves before fully adopting a new technology or practice. He also categorized adopters into five groups: innovators, early adopters, early majority, late majority, and laggards, each characterized by their willingness and speed in adopting innovations.

Originally rooted in rural sociology and communication studies, the theory has evolved significantly to become highly applicable in various fields such as education, health, business, and information technology. Over time, scholars have refined the theory to include contextual factors such as organizational structure, policy environment, user readiness, and technological compatibility, which influence the adoption rate of innovations. In modern contexts, DIT has also incorporated the role of digital platforms, network effects, and real-time data in shaping diffusion patterns (Dearing & Cox, 2018).

While DIT provides a useful framework for understanding the stages and categories of adoption, it has been critiqued for its linear and generalized view of innovation diffusion, which may not reflect the complex realities of technology uptake in bureaucratic organizations such as universities. The theory tends to overemphasize the role of communication channels and adopter categories, while underplaying the influence of institutional power dynamics, resource constraints, and policy environments. Critics argue that DIT sometimes assumes rational decision-making and

underestimates the resistance posed by organizational inertia and competing priorities (Lyytinen & Damsgaard, 2001).

Public universities often face resistance to change due to bureaucratic structures and resource limitations. The adoption of digital revenue collection systems such as online fee payment platforms, mobile money integration, and automated billing solutions can be understood through the lens of DIT. The theory explains how these digital systems are introduced (innovation), communicated (channels), and adopted (social system) within the universities, influencing their financial performance, efficiency, and accountability. Furthermore, the theory helps in identifying the factors that facilitate or hinder the adoption of these systems, such as perceived relative advantage, compatibility with existing systems, and simplicity. Universities that perceive digital revenue systems as more transparent, efficient, and user-friendly are more likely to adopt them, leading to improved revenue management and overall performance.

2.2.3 General Systems Theory

General Systems Theory (GST) was first introduced by biologist Ludwig von Bertalanffy in 1945 as a way to explain the interdependence and interconnectedness of elements within complex systems. Bertalanffy proposed that systems—whether biological, mechanical, or social—could not be understood solely by examining their individual components. Instead, systems must be analyzed as wholes, emphasizing the interactions and relationships among their parts (Budd & Ruben, 2020). His central idea was that systems are open and dynamic, constantly exchanging information, energy, or materials with their external environments to maintain balance and achieve objectives.

Over time, General Systems Theory has evolved beyond its biological roots to become a foundational framework across multiple disciplines including management, engineering, healthcare, and information systems. Modern interpretations emphasize integration, feedback loops, adaptability, and systemic thinking, which are particularly relevant in environments facing rapid technological and organizational change (Drack & Schwarz, 2020). The theory has inspired the development of specialized systems theories like socio-technical systems theory and cybernetics, which further explore how people and technology interact within structured systems.

Although GST offers a holistic framework for analyzing organizational systems, it has been critiqued for being too abstract and lacking specific operational guidelines for implementation in practical contexts. Its broad applicability across disciplines often results in vague prescriptions that may not adequately address the unique complexities of higher education institutions. Furthermore, critics note that GST assumes rational coordination among subsystems, yet in practice, universities often experience conflicting interests, fragmented decision-making, and power struggles that weaken systemic integration (Skyttner, 2005).

The theory provides a robust theoretical foundation for understanding the influence of digital supply chain systems on institutional performance. A university operates as a complex system composed of interrelated subsystems such as procurement, finance, academic departments, and administrative units. The digital supply chain system integrates these subsystems by enabling real-time data sharing, process automation, and improved decision-making, thereby enhancing overall efficiency, transparency, and responsiveness (Hazen et al., 2012).

The introduction of digital supply chain systems can be viewed as an effort to strengthen the systemic coherence of the university. These systems support interconnectivity between

departments, improve resource allocation, and ensure timely access to supplies and services, all of which are essential for institutional performance. Moreover, the feedback mechanisms embedded in digital systems allow universities to monitor supply chain activities continuously and make adjustments, echoing the theory's emphasis on adaptability and feedback loops (Makovhololo & Batyashe, 2017).

2.2.4 Schumpeter Theory of Innovation

Schumpeter's Theory of Innovation, proposed by Joseph Schumpeter in 1934, is one of the foundational theories explaining how innovation drives economic and organizational growth. Schumpeter emphasized that economic development is primarily driven by innovation, which he defined as new combinations of existing resources to create novel products, processes, markets, organizational methods, or sources of supply. According to Schumpeter, the entrepreneur plays a critical role in this process by introducing these innovations, which disrupt existing market structures and generate what he termed "creative destruction"—a process through which outdated systems are replaced by more efficient and productive alternatives (Kaya, 2015).

Initially, the theory focused on five key types of innovation: the introduction of new products, the development of new methods of production, the opening of new markets, the discovery of new sources of raw materials, and the implementation of new organizational structures. Over time, the theory has evolved beyond its original economic context to encompass broader applications in strategic management, organizational change, and technological development (Mehmood et al., 2019). Contemporary perspectives on the theory have integrated elements of dynamic capabilities, digital transformation, and innovation ecosystems, recognizing that innovation is not a one-time event, but a continuous, strategic process facilitated by institutional and technological support.

Schumpeter's theory provides valuable insights into the role of innovation in organizational growth, but it has been critiqued for overemphasizing the role of entrepreneurs while underestimating the institutional and environmental constraints that shape innovation adoption. The concept of "creative destruction" may not fully apply in public sector contexts like universities, where innovation is often gradual, heavily regulated, and constrained by limited resources. Moreover, critics highlight that the theory does not sufficiently address the risks and failures associated with innovation, which are particularly significant in education systems that depend on public accountability (Fagerberg, 2003).

Schumpeter's Theory of Innovation provides a strong theoretical foundation for examining how innovative income streams influence institutional performance. As traditional government funding becomes increasingly insufficient to meet growing demands, public universities are compelled to explore new revenue-generating strategies such as online programs, commercial consultancy services, research commercialization, and technology-driven partnerships. These innovative income streams represent new combinations of university resources and capabilities, consistent with Schumpeter's view of innovation. By adopting such approaches, universities are not only diversifying their revenue bases but also enhancing their competitiveness, service delivery, and long-term sustainability—thereby aligning with the central thesis of Schumpeter's theory that innovation is a key driver of institutional performance and transformation (Upadhyay & Rawal, 2018).

2.3 Empirical Literature Review

2.3.1 Digital Payment Systems and Performance

Digital payment systems have become an essential component of financial technology within higher education institutions, transforming how universities manage tuition collection, supplier

payments, and other financial transactions. Empirical studies across various contexts have generally shown that the adoption of digital payment systems enhances financial efficiency, transparency, and operational accountability. However, there are also concerns regarding implementation challenges, system alignment with institutional structures, and contextual variations in technological infrastructure. While consensus exists that digital payment systems improve financial performance, contradictions arise concerning the degree of improvement and the sustainability of such systems in resource-constrained public institutions.

Moertini et al. (2011) examined the development of electronic payment systems at Parahyangan Catholic University in Bandung, Indonesia. Using a case study approach based on stakeholder interviews and documentation, the study emphasized the need for aligning payment systems with university policies and governance structures to minimize risks associated with IT projects. Findings highlighted that successful deployment requires inclusive stakeholder engagement and system customization to institutional needs. The study was confined to a single private university and primarily focused on system design and implementation processes rather than measuring the financial performance outcomes. Hence, there remains limited empirical evidence on how digital payment systems influence the financial performance of public universities, particularly within the Kenyan context.

Okoye and Ezejiofor (2013) assessed the effect of electronic payment systems on the financial performance of Nigerian universities. Employing a survey research design, data were collected from bursary departments and analyzed using descriptive statistics and Pearson correlation. Results indicated that e-payment systems improved financial efficiency, reduced transaction processing time, and enhanced transparency. The study concluded that digital payments positively affect university financial performance and recommended widespread

adoption in higher education. Although the study established a positive relationship between e-payment adoption and financial performance, it was conducted in Nigeria's context, whose regulatory, infrastructural, and institutional environments differ from Kenya.

Nyamiaka (2015) explored the impact of electronic payment systems on operational risk management in private universities in Kenya. Using a descriptive research design, data were collected from finance directors in 30 institutions and analyzed through both descriptive and inferential statistics. Findings revealed that e-payment systems enhanced compliance with accounting laws, reduced incidences of financial fraud, and improved transaction transparency. However, implementation challenges such as security threats, infrastructural inadequacies, and weak regulatory frameworks were identified. The study focused on private universities and addressed operational risk management rather than direct financial performance metrics. Consequently, there remains a need to investigate how similar systems influence financial performance specifically within public universities in Kenya, where financial governance structures and accountability mechanisms differ significantly.

2.3.2 Digital Revenue Collection Systems and Performance

Across global higher education contexts, digital revenue collection systems have emerged as a strategic tool for enhancing institutional financial performance through improved efficiency, transparency, and accountability. Several empirical studies across different countries converge on the idea that digitalization of financial management improves liquidity, cost control, and reporting accuracy. However, the extent of these improvements and the contextual factors influencing their success vary across regions, revealing both consensus and critical gaps.

A common thread in existing studies is that digital financial tools enhance universities' ability to align their financial operations with strategic goals. For instance, Arena, Arnaboldi, and Azzone (2015), in a multiple-case qualitative study across Italian public universities, found that adoption of digital revenue tracking and automated reporting systems led to enhanced cost control and timely financial reporting. These systems facilitated better strategic alignment between revenue generation and institutional objectives. The study, however, was contextually limited to developed economies with mature digital infrastructures. Moreover, it relied on qualitative evidence without quantifying the financial performance outcomes. The current study addressed this gap by employing a quantitative design to measure the influence of digital revenue collection systems on financial performance within Kenya's public university context, where technological adoption and infrastructural challenges differ substantially from Italy.

Similarly, Wu and Qu (2024) examined digital transformation and financial performance in public universities in China using both bibliometric and case study approaches. The regression analysis revealed that digital revenue collection significantly improved revenue efficiency and liquidity ratios. The study confirmed the positive association between digitalization and financial health, supporting findings from Italy. However, the study focused more on the macro-level transformation of universities without isolating specific digital tools, such as mobile payment or online billing platforms, as distinct variables. The current study builds on this by focusing specifically on digital revenue collection systems and their measurable impact on the financial performance of Kenyan public universities, thereby offering a more granular and context-specific analysis.

In Nigeria, Madu, Onodugo, and Isichei (2022) demonstrated that electronic payment systems (EPS) have a statistically significant positive effect on the financial sustainability of

tertiary institutions. Using a survey of non-academic staff, the study found that institutions with stronger ICT infrastructure derived greater financial benefits from EPS, such as improved liquidity and solvency. This aligns with findings from Europe and Asia, reinforcing the universal value of digital revenue systems. However, the study's limitation lies in its focus on tertiary institutions generally without differentiating universities from other institutions such as colleges and polytechnics. The study did not also assess the moderating effect of institutional policies or governance frameworks on the relationship between EPS and financial outcomes.

Mwongela, Sang, and Muthoni (2025) applied an explanatory mixed-methods approach to investigate how digital financial technologies affect financial sustainability in selected public universities. The results showed that mobile money and online platforms significantly improved revenue collection efficiency and reduced transaction costs. These findings align with earlier research in Italy, China, and Nigeria, indicating a cross-context consensus that digital revenue systems enhance financial performance. Nevertheless, the study focused primarily on financial sustainability rather than overall financial performance indicators such as profitability, liquidity, and operational efficiency. The current study therefore extends this work by adopting a broader conceptualization of financial performance and using multiple indicators to assess how financial technology systems shape performance outcomes in public universities in Kenya.

2.3.3 Digital Supply Chain Systems and Performance

Digital supply chain systems have emerged as vital financial technology enablers for improving institutional financial performance. Collectively, prior studies underscore that digitization within supply chains enhances cost efficiency, transparency, and accountability, although contextual and technological disparities influence the strength of these outcomes across settings. Across multiple studies, a clear consensus emerges that digital supply chain systems contribute positively to

financial performance primarily through cost reduction, operational efficiency, and enhanced budget control. However, variations exist concerning the specific technologies adopted and the institutional contexts—with studies in other regions emphasizing advanced technologies such as blockchain and IoT, while those in East Africa focus on foundational e-procurement and automation systems.

Lim and Tan (2020) investigated digital supply chain systems, specifically inventory management and procurement automation, among Malaysian public universities. Their quantitative findings revealed that automation and real-time tracking significantly reduced inventory holding costs and improved procurement cycle efficiency, thereby positively affecting financial performance. The study's strength lies in quantifying financial outcomes of digital adoption in a higher education setting. While the study established positive effects, it was contextually limited to Malaysia, a country with more mature technological infrastructure than Kenya. It also overlooked moderating institutional factors such as policy and digital readiness, which may shape the adoption–performance relationship in Kenyan public universities.

Naidoo and Sibanda (2022) explored advanced digital supply chain technologies in South African universities using a mixed-methods approach. They found that blockchain and IoT applications significantly reduced procurement fraud and operational costs while enhancing accountability. However, qualitative evidence pointed to implementation barriers such as high costs and the need for technical expertise. Although the study incorporated advanced technologies and provided valuable qualitative insights, it primarily focused on fraud reduction and operational integrity rather than direct financial performance metrics such as revenue utilization or cost efficiency. The study also did not account for institutional size and resource variations typical of Kenyan universities.

Nkurunziza and Uwamahoro (2023) examined cloud-based procurement and inventory management platforms in Rwandese public universities. Quantitative findings demonstrated that these systems reduced procurement processing time and operational costs, establishing a strong positive correlation with financial performance. Despite confirming a positive influence, this study concentrated narrowly on cloud-based systems without exploring how integration with other financial technologies might create synergistic financial outcomes. The Rwandese context also differs in regulatory and digital maturity levels compared to Kenya.

Mwangi and Otieno (2021) analyzed e-procurement platforms in Kenyan public universities and found a significant positive relationship between e-procurement adoption and financial performance, particularly in procurement cost reduction and budget compliance. Although contextually relevant to Kenya, this study focused only on e-procurement systems, neglecting other critical components of digital supply chain systems such as inventory automation, blockchain, and integration with institutional financial systems. Moreover, it did not investigate how these systems interact as part of a broader financial technology ecosystem influencing financial performance.

2.3.4 Innovative Income Streams and Performance

Universities globally are increasingly exploring innovative income streams as a strategic response to declining government funding and rising operational costs. Scholars generally agree that diversification of revenue sources through research commercialization, consultancy services, and auxiliary business activities enhances institutional financial performance. However, the extent and effectiveness of such diversification differ across contexts, largely influenced by institutional capacity, policy frameworks, and the adoption of financial technology systems that facilitate income generation and management.

Mahmud et al. (2022) found that traditional government subventions were inadequate to cover tuition and operational costs in universities. Their case study revealed that laboratory operations, conferences, workshops, and asset rentals could generate substantial revenue if effectively managed. While this study highlighted practical avenues for income diversification, it did not explore how financial technology systems such as digital payment platforms, online booking systems, or enterprise financial management systems can optimize these income-generating ventures. Thus, a gap exists in linking technology-enabled income management to financial performance.

Similarly, Sengupta and Rossi (2023) examined universities in the UK and discovered that the nature and composition of income streams particularly from knowledge exchange (KE) activities depend on institutional specialization and funding portfolios. Universities with higher specialization achieved a greater share of KE income, whereas more diversified institutions derived more from research revenue. The study, while emphasizing strategic alignment of income sources, was conducted in a developed economy context with mature technological infrastructure. The current study addressed this contextual gap by exploring how financial technology systems can facilitate innovative income management in resource-constrained public universities in Kenya.

In Cameroon, Vukenkeng (2025) established that government subsidies significantly enhance universities' financial viability, while internally generated income had an insignificant and sometimes negative relationship with sustainability. This implies that without proper management systems, internally generated revenue may not yield the desired financial benefits. The study did not assess the systems or tools used in managing such revenues, particularly the integration of technology in revenue administration. Therefore, the present study filled this

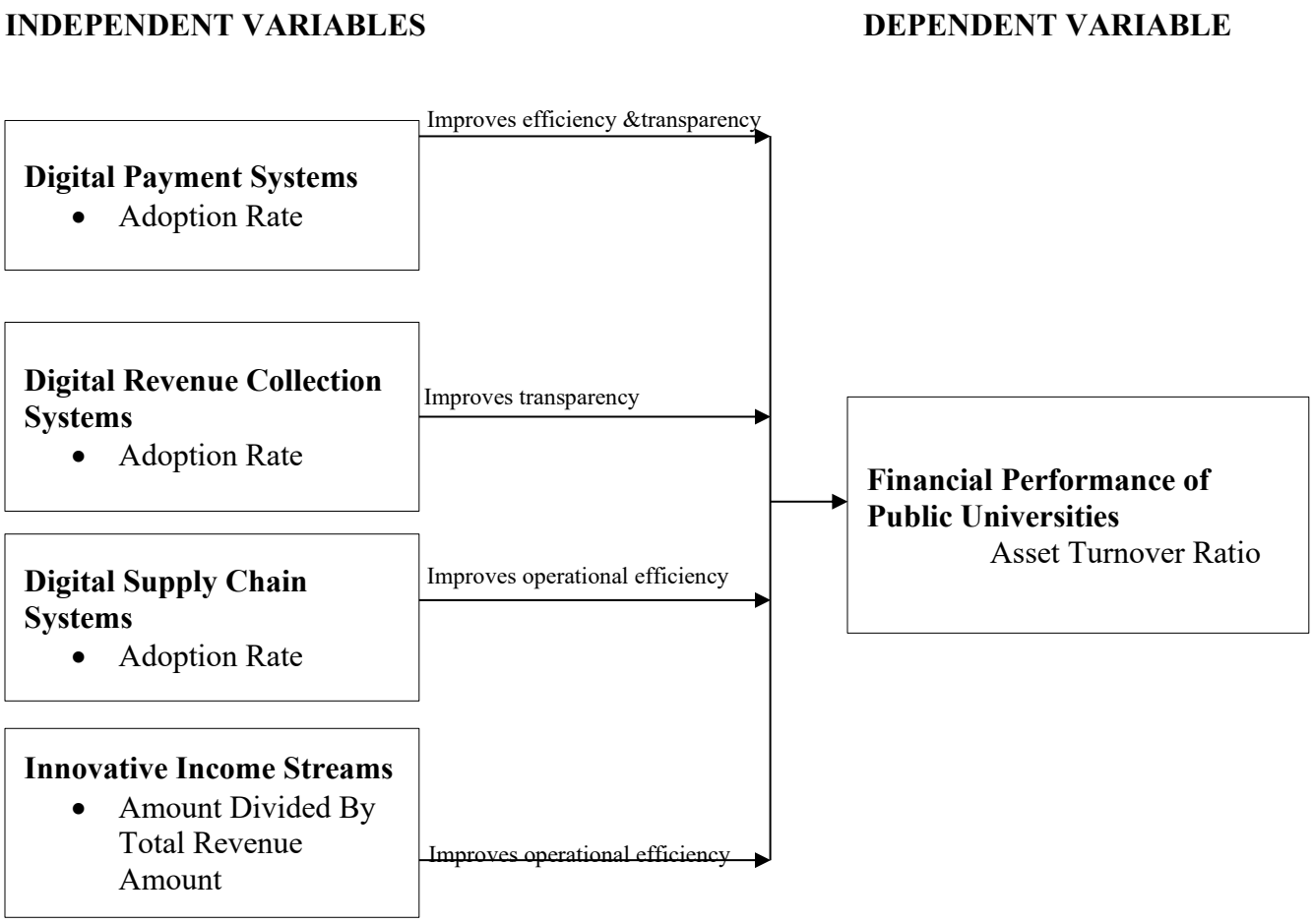
methodological and conceptual gap by examining how financial technology systems influence the effectiveness of internally generated income in public universities.

In Kenya, Kimathi and Irungu (2024) analyzed the effect of revenue diversification on the financial sustainability of public universities using panel data. They found that diversification positively affected the sustainability ratio but negatively influenced the gearing ratio, indicating that not all income-generating ventures contribute positively to financial health. The study recommended the closure of cost-ineffective income-generating units and the exploration of new, creative sources. However, it did not consider how the adoption of financial technology could improve monitoring, transparency, and efficiency in managing these ventures. This presents an empirical gap that the current study sought to address by investigating the role of financial technology systems in enhancing innovative income streams and, consequently, the financial performance of public universities in Kenya.

2.4 Conceptual Framework

A conceptual framework is a structured outline laying out the key concepts, variables and relationships within a study. It acts as a road map to guide the research process by defining how different elements are connected and how they were investigated.

FIGURE 1
Conceptual Framework



The Technology Acceptance Model explains how perceptions of usefulness and ease of use influence the adoption of digital payment systems in public universities. When stakeholders perceive these systems as efficient and convenient for financial transactions, they are more likely to use them, leading to improved financial performance through faster transactions, reduced errors, and enhanced transparency. The Diffusion of Innovation Theory explains how digital revenue collection systems are introduced and adopted across university structures. The theory highlights that when these systems are viewed as advantageous, compatible, and simple to use, adoption rates

increase. This leads to better revenue management, accountability, and financial outcomes in public universities.

General Systems Theory supports the relationship between digital supply chain systems and financial performance by emphasizing interdependence within institutional subsystems. The integration of procurement, finance, and administrative units through digital systems enhances coordination, efficiency, and decision-making. This results in improved institutional performance. Schumpeter's Theory of Innovation links innovative income streams to financial performance by emphasizing that innovation drives organizational growth and sustainability. Public universities that develop new revenue sources such as online programs and research commercialization enhance financial stability and competitiveness, aligning with the concept that innovation fosters long-term institutional performance.

2.5 Operationalization of the Study Variables

Table 1 outlines the operationalization of the study variables.

TABLE 1
Operationalization Of The Study Variables

Variable Type	Variable	Indicators	Measurement Scale	Expected Sign
Independent Variable	Digital Payment Systems	• Adoption Rate	Categorical Ordinal	Positive
Independent Variable	Digital Revenue Collection Systems	• Adoption Rate	Ordinal	Positive
Independent Variable	Digital Supply Chain System	• Adoption Rate	Ordinal	Positive
Independent Variable	Innovative Income Streams	• Innovative Income Amount Divided By Total Revenue Amount	Ordinal	Positive
Dependent Variable	Financial Performance	• Asset Turnover Ratio	Categorical Ordinal	

2.6 Research Gap

The current study aims to fill significant research gaps found in the evaluated empirical literature. For instance, while Moertini et al. (2011) and Okoye and Ezejiofor (2013) explored the adoption of digital payment systems in Indonesia and Nigeria respectively, there remains a contextual gap in the application of such findings to the Kenyan public university setting. Similarly, Nyamiaka (2015) focused on private universities in Kenya, leaving a gap regarding how electronic payment systems influence operational efficiency and financial performance in public universities. Studies such as those by Arena et al. (2015) in Italy and Wu and Qu (2024) in China examined digital revenue collection systems and their impact on financial performance. However, the applicability to the Kenyan context is limited due to differences in financial structures and technological readiness. While Madu et al. (2022) and Mwongela et al. (2025) conducted research within Africa, only the latter directly focused on Kenyan public universities, and even then, it emphasized general

digital financial technologies rather than detailed, disaggregated fintech components. This highlights a gap in comprehensive, locally contextualized research.

Furthermore, Lim and Tan (2020) in Malaysia, Naidoo and Sibanda (2022) in South Africa, and Nkurunziza and Uwamahoro (2023) in Rwanda examined the role of digital supply chain systems, yet only Mwangi and Otieno (2021) investigated these systems within Kenyan public universities. Even so, their study focused solely on e-procurement, overlooking other elements such as real-time inventory tracking or cloud-based logistics systems. This points to a thematic gap in addressing the full scope of digital supply chain technologies within the Kenyan public university context. Mahmud et al. (2022), Sengupta and Rossi (2023), and Vukenkeng (2025) on the other hand identified alternative revenue sources and financing dynamics in different countries. However, these studies varied widely in scope and institutional structure. In Kenya, only Kimathi and Irungu (2024) directly investigated revenue diversification in public universities, but they limited their analysis to financial ratios, without examining the operationalization or sustainability of specific income-generating activities. This reveals a gap in understanding how such income streams are developed, managed, and aligned with financial goals.

Additionally, there is limited integration of multiple fintech dimensions in a single study. Most research isolates one system—digital payments, supply chains, or income streams—without exploring their combined or interactive influence on financial performance. The lack of exploration into mediating factors such as ICT infrastructure, policy frameworks, and staff competencies, mentioned briefly by Madu et al. (2022) and Naidoo and Sibanda (2022), further highlights the need for a more holistic and nuanced analysis.

2.7 Summary for Literature Review

The chapter provided an outline of the literature review of the study. The chapter specifically captured the theories anchoring the study comprising of Technology Acceptance Model, Diffusion of Innovation Theory, General Systems Theory, and Schumpeter Theory of Innovation. The chapter further reviewed past studies on theme of the study aiming at establishing research gaps the study intended to fill. A conceptual framework linking the independent variables with the dependent variable was further presented. This was followed by outlining the variables' operationalization showing the various measures for the different variables. Research gaps identified in the study was also presented.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods that were used in carrying out the research, it entails description of research design, target population, sample size and sampling procedure, data collection instruments, data collection procedure and data analysis.

3.2 Research Design

According to Alston, Nakray and Whittenbury (2019), a research design is the plan or scheme of outline that a researcher applies to generate answers to formulated research problems. The current study adopted a descriptive research design. Ansari *et al.,* (2022) defines a descriptive research as a method that entails gathering data through administering questionnaires or through interviewing a sample of respondents followed by statistical analysis of the collected data to generate relations of the study variables. Additionally, the design is concerned with explaining the what, how and when of study phenomena. The choice of the research design is justified by the fact that the study relies on collection of quantitative data by use of a questionnaires.

3.3 Target Population

Hossan *et al.,* (2023) defines a population comprising of set of elements or cases from where a researcher draws a sample while the target population comprises of a subset of population and forms the actual focus of the research. The target population of the current study comprised of all public chartered universities in Kenya. According to Commission for University Education (2024), there are 35 chartered public universities in Kenya. The population is justified since the institutions share similar operational and financial issues, making them a cohesive group for analysing the

effect of financial technology on performance. This focus ensures that the findings are relevant and generalisable to Kenyan public universities, which are essential to the country's higher education system and economic development. The units of observation comprised of Chief Financial Officers, IT Managers, Financial Analysts and Accountants from each of the university. One respondent from each category was included. The respondents were included as they possess specialized knowledge and direct experience with financial systems, digital technologies, and the integration of financial technology within their respective universities. A total of 140 respondents were thus be targeted as outlined in table 2.

TABLE 2
Target Population

Target Population	Population	Percentage
Chief Financial Officers	35	25%
IT Managers	35	25%
Financial Analysts	35	25%
Accountants	35	25%
Total	**140**	**100%**

3.4 Sample Size and Sampling Procedure

The study employed a census approach. A census survey is the most appropriate sampling technique for this study because the target population is relatively small, manageable, and well-defined. The research ensures comprehensive coverage and eliminates sampling bias, thereby enhancing the accuracy and generalizability of the findings by including all public universities in the study (Nirel & Glickman, 2019).

3.5 Data Collection Instruments

The study used both primary and secondary data. A close-ended questionnaire was used to collect primary data for this study. The questionnaire was structured in a 5-point Likert scale with 1 indicating strongly disagree, 2 - disagree, 3- neutral, 4-agree, and 5 - strongly agree. These kinds

of questionnaires are better because they make it easier to review the data they provide and allow for consistency in the questions answered (Rathi & Ronald, 2022). The questionnaire was categorized into six sections where section one contained the background information of the respondents while section two to six captured the items of the variables of the study. The participants were not required to capture their names or that of the university they belong in any section of the questionnaire. The collected data was used purposely for the study only. No information collected was used in any other way other than the purpose of the study. A secondary data collection sheet was used to collected financial data on total revenues and total assets for the financial years 2019/2020 to 2023/2024.

3.6 Data Collection Procedures

Taherdoost (2021) views data collection as a defined way of gathering important data whose analysis plays a key role in answering the questions formulated in the study. The researcher started the data collection process after the proposal is approved by the university and issued with an approval letter. The researcher sought data collection authority from the university prior delivering the questionnaires to the respondents. Remarkably, permission was sought from the management of the universities where the data was collected. A research permit from NACOSTI was also sought prior data collection.

3.7 Pilot Study

Prior data collection process, the researcher carried out a pilot study to assess the levels of reliability and validity of the data collection instrument. Teijlingen and Hundley(2022) points that a pilot study refines data collection instruments by removing possible challenges bound to be faced by respondents while responding to the instrument. The pilot study was carried out on 10% of the targeted population which comprised of 14 questionnaires. This is in line with propositions

from Malmqvist *et al.,* (2019) who noted that a sample of between 5% and 10% is appropriate for piloting. The pilot was carried out in 4 randomly selected chartered private universities.

3.7.1 Reliability of the Research Instrument

Reliability is used to show how the respondents have understood the questions being asked and that is why it is recommended that they give consistent results in repeated trials (Sürücü and Maslakçi, 2020). The most commonly used method to establish reliability is the use of internal consistency method suggested by Cronbach. This study used this method to find out the reliability and the threshold to be used was 0.7 whereby any values below this cut off indicated that the data collection instrument were reliable thus called re-editing.

3.7.2 Validity of the Research Instrument

Vargas *et al.,* (2024) defines validity as the degree to which the substance of the instrument appears to completely analyze the extension it is proposed to quantify. The study assessed construct validity. Component Factor Analysis was employed in assessing construct validity. Factor loading values were used in determining whether to delete or retain an item in the questionnaire where a factor loading value of 0.4 was adopted as a threshold and items with a factor loading value of below 0.4 was deleted.

3.8 Data Analysis and Presentation

Both descriptive and inferential statistics were used in the quantitative analysis of data acquired from the questionnaires. Descriptive statistics comprised of percentages, means and standard deviation while the inferential statistics comprised of both Pearson correlation and Multiple Linear Regression Analysis. The statistics were generated through Statistical Package for Social Sciences (SPSS) version 25 and Microsoft Excel. The study employed the following multivariate regression

model to establish the implications of influence of financial technology on financial performance. The adoption of the multiple regression model is supported by the fact that the study seeks to examine the influence of multiple independent variables on a single dependent variable, which is the financial performance of public universities.

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

Where;

Y= Public Universities Financial Performance

β_0= Constant (coefficient of intercept)

X_1= Digital Payment Systems

X_2= Digital Revenue Collection Systems

X_3= Digital Supply Chain System

X_4 = Innovative Income Streams

β_1, β_2, β_3 and β_4 = Unknown coefficients of the independent variables

ε = error term.

Financial performance of public universities was the dependent variable in this study. It was measured using perceptual indicators obtained through the research questionnaire. Respondents rated these items on a five-point Likert scale. Although perceptual measures were adopted due to the limited availability of consistent audited secondary data across all universities, the use of perception-based data introduces the potential for subjective bias, which is

acknowledged as a study limitation. To mitigate this, multiple indicators were used and reliability was assessed using Cronbach's alpha.

3.9 Ethical Considerations

The researcher is dedicated to maintaining the highest ethical standards throughout the research process. All prospective respondents were fully informed of their freedom to decline participation or withdraw at any time without incurring any penalties or negative consequences, as participation in this study was completely voluntary. All responders were made fully aware by the researcher that their participation is entirely for academic purposes and that they did not receive any cash, reward, or recompense in exchange.

All information gathered was safely maintained to maintain confidentiality, and only the researcher and approved academic supervisors were able to access it. The responses were not associated with any personal identifiers, including names, institutional positions, or contact details. This ensures that the identities of participants remained anonymous during the entire research procedure and in all findings reporting. To prevent unwanted access, misuse, or disclosure of the information gathered, stringent data protection procedures shall be adhered to. Digital data was password-protected and encrypted, and any physical documents were kept in secured cabinets.

The study also followed the guidelines for informed consent. All participants received a thorough explanation of the study's goals, methods, and participant rights prior to data collection. Depending on the method of data collection, either verbal or written consent was sought. It is additionally confirmed that the data gathered would only be utilised for scholarly and research endeavours. Without the participants' and the linked academic institution's prior express written consent, no portion of the data or conclusions were used for profit.

3.10 Diagnostic Tests

3.10.1 Normality Test

The study adopted the One-sample Kolmogorov-Smirnov test, Skewness and Kurtosis test, and Durbin-Watson test to check the distribution of the variables as recommended by Rani (2019). The researcher used the rule of thumb that a variable is reasonably close to normal if its skewness and kurtosis have values between -1.0 and +.0. Normality was applied to determine the level of significance of the differences from a normal distribution.

3.10.2 Multicollinearity

Multicollineariy normally exists when there is a strong correlation between two or more independent variables in a regression (Shrestha, 2020). When the collinearity is high, then it becomes very difficult to find distinctive effect of individual independent variables on the dependent variables since it increases the standard error which influences the size of regression coefficients and limits the results of multiple correlations. This study's multicollineariy was tested by the use of Variance Inflation Factor (VIF). A VIF of more than10 (VIF> 10) indicates a problem of multicollineariy.

3.10.3 Homoscedasticity Test

A scenario known as homoscedasticity occurs when the error term is the same for all values of the independent variables. According to homoscedasticity, each value of the independent variables has a similar amount of variability for the dependent variable. To check for variance in the residuals in the regression model in use, a homoscedasticity test is made. A normal distribution exists if there is an equal variance for the error term. Heteroskedasticity is a statistical concept that refers to the absence of an equal level of variability for each value of the independent variables. In order to determine if a linear regression model was homogeneous, Breusch and Pagan (1979)

devised the Breusch-Pagan test. Homoscedasticity assumptions is arrived at when the probability value in the Breusch-Pagan test is greater than 0.05.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

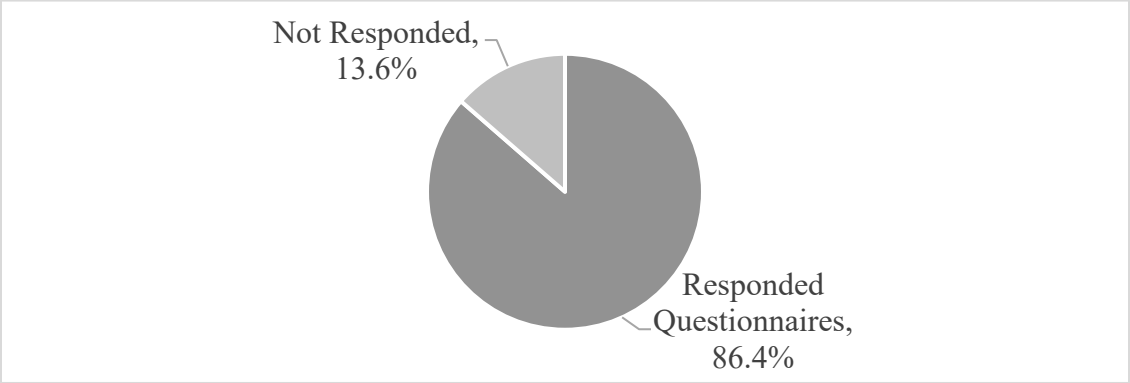
The chapter provides an outline of the findings of the study. The chapter specifically outlines the response rate of the study, demographic information of the respondents (highest education level, position and years worked) as well as results on both descriptive and inferential statistics.

4.2 Response Rate

The study issued 140 questionnaires to the targeted respondents comprising of Chief Financial Officers, IT Managers, Financial Analysts and Accountants from the respective universities. 121 questionnaires were fully filled and returned for analysis. This accounted for a response rate of 86.4%. The response rate was considered adequate for the study as supported by Hossan *et al.,* (2023) assertions that a response rate of above 70% is adequate for analysis and in making inferences. The realization of the high response rate was attributed to the utilization of a drop and pick method that gave respondents sufficient time to respond to the questionnaires.

FIGURE 2

Response Rate



4.3 Pilot Test Results

The researcher carried out a pilot study to assess the levels of reliability and validity of the data collection instrument. The pilot study was carried out on 10% of the targeted population which comprised of 14 questionnaires. The following subsections presents the reliability and validity results derived from the pilot study.

4.3.1 Reliability Test Results

The study employed Cronbach Alpha coefficient to assess the reliability of the questionnaire. A threshold of 0.7 was employed whereby any values below this cut off indicated that the data collection instrument were reliable thus called re-editing. According to the results presented in table 3, the Cronbach Alpha value for all items assessing digital payment systems, digital revenue collection systems, digital supply chain systems, innovative income streams and financial performance were above the threshold of 0.7. This implied the items were reliable and could be used in the main study.

TABLE 3
Reliability Test Results

Variable	No of Items	Cronbach Alpha	Comments
Digital Payment Systems	4	0.916	Reliable
Digital Revenue Collection Systems	8	0.885	Reliable
Digital Supply Chain Systems	6	0.834	Reliable
Innovative Income Streams	6	0.876	Reliable
Financial Performance	6	0.841	Reliable

4.3.2 Validity Test Results

The study assessed construct validity where factor loading values were used in determining whether to delete or retain an item in the questionnaire. A threshold of 0.4 was adopted and items with a factor loading value of below 0.4 was deleted. Component Factor Analysis was employed

in assessing construct validity. According to the results presented in table 4, all items had a factor loading value of above 0.4 implying that the items were valid in assessing the respective measures. No item was therefore removed from the questionnaire.

TABLE 4
Factor Loading Values

Digital Payment Systems	**Factor Loading Values**
Use of digital payment systems is preferred over cash when making university-related payments	0.562
Digital payment systems are frequently used for university-related payments	0.661
The use of manual payment methods has significantly decreased	0.593
There has been a noticeable increase in the number of transactions conducted through digital payment platforms	0.719
Digital Revenue Collection System	**Factor Loading Values**
Help and support for digital revenue collection system users are readily available	0.631
All major revenue streams are enabled on the digital revenue collection system	0.632
Our university has integrated most of its revenue streams into the digital revenue collection system	0.673
The majority of transactions are now processed digitally rather than manually	0.601
The system is used frequently in daily financial operations	0.771
A large proportion of staff members have adopted and actively use the system	0.782
The adoption of the digital revenue system has been progressively increasing over the years	0.661
The system is easy to use and staff quickly adapted to it	0.598
Digital Supply Chain System	**Factor Loading Values**
The various components of our digital supply chain system are highly integrated with each other and with the university's main financial management system	0.599
The university's procurement transactions are predominantly processed through the digital supply chain system	0.584
A high percentage of the university's main suppliers use the digital supply chain system for their transactions	0.606
The university's digital supply chain system is easy to use and navigate	0.594

The digital supply chain system has significantly improved the efficiency of your daily work	0.631
The digital supply chain system has enhanced the transparency and accountability of the university's procurement process	0.623
Innovative Income Streams	**Factor Loading Values**
Adoption of financial technology has increased revenue collection from online academic programs	0.654
Our university generates significant income through digital payment platforms	0.602
Financial technology has enhanced revenue generation from research commercialization and consultancy services	0.798
The proportion of fintech-related income to the total revenue of the university has significantly grown	0.773
Financial technology has reduced revenue leakages, leading to higher reported innovative income	0.663
Our university relies increasingly on technology-driven income streams compared to traditional sources	0.718
Financial Performance	**Factor Loading Values**
Digital payment systems have improved the efficiency, speed, and accuracy of fee collection in the university	0.789
Automated revenue collection systems have enhanced transparency in the university's financial management	0.718
Digital supply chain systems have reduced procurement costs and enhanced supplier relationship management	0.719
The university has successfully developed innovative digital income streams that contribute to financial stability	0.697
The university has experienced improved financial performance as a result of adopting financial technology systems	0.743
Financial technology systems have improved the management, utilization, and acquisition of the university's assets and infrastructure	0.722

4.4 Demographic Information

The background information considered in the study comprised of highest level of education, position and the number of years worked in the university.

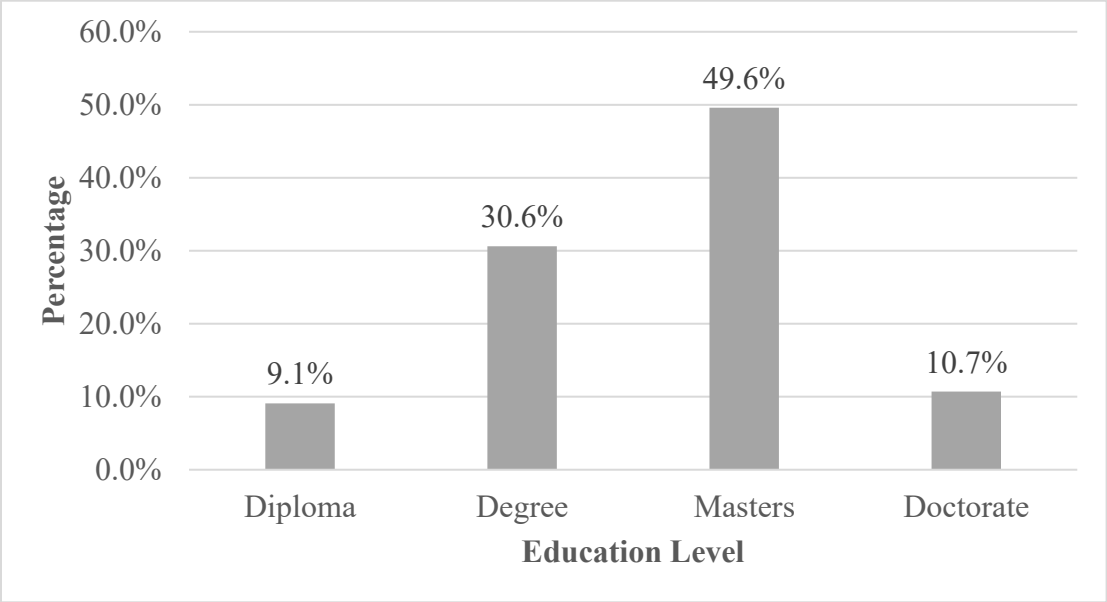
4.4.1 Highest Education Level

The results of the highest education level attained by the respondents outlined in figure 3 shows that 9.1% were diploma holders, 30.6% were degree holders, 49.6% were masters holders while

10.7% held doctorate education level. The results implies that all the respondents involved in the study were well educated. This was significant in the study as the respondents were perceived to understand fully the items in the questionnaire and respond to them appropriately.

FIGURE 3

Highest Education Level

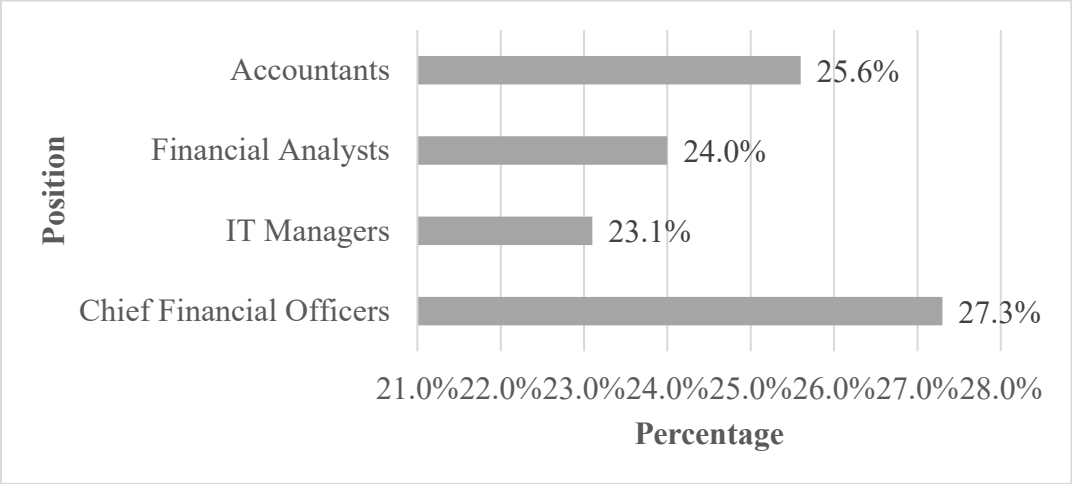


4.4.2 Respondents Position

The results on the position of the respondents in the university outlined in figure 4 shows that accountants accounted for 25.6%, financial analysts were 24%, IT managers were 23.1% while chief financial officers were 27.3%. The results of the study shows that all the respondents targeted in the study were well represented.

FIGURE 4

Position of Respondents

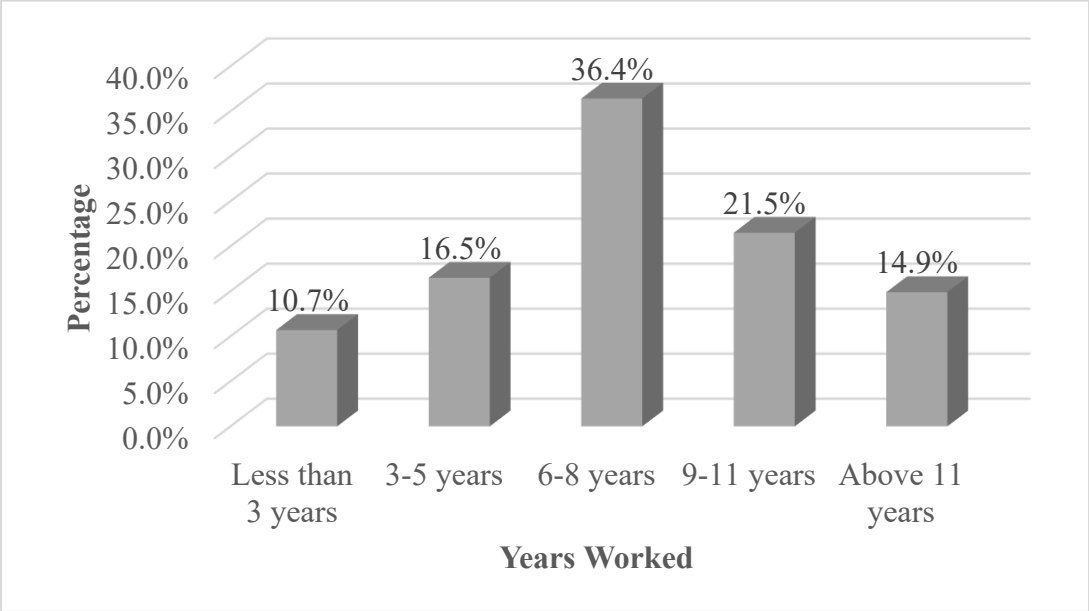


4.4.3 Years Worked in the University

The results on the number of years the respondents had worked in the respective universities is outlined in figure 5. The results shows that 10.7% of the respondents had worked for less than three years while 16.5% had worked between three and five years. Those who had worked between six and eight years were 36.4%, between 9 and 11years were 21.5% and above 11 years were 14.9%. The results shows that majority of the respondents had worked for more than five years in the universities. This was crucial for the study as the respondents were perceived to have stayed long in the university to witness the various financial technology systems adopted and their respective effects on financial performance.

FIGURE 5

Years Worked

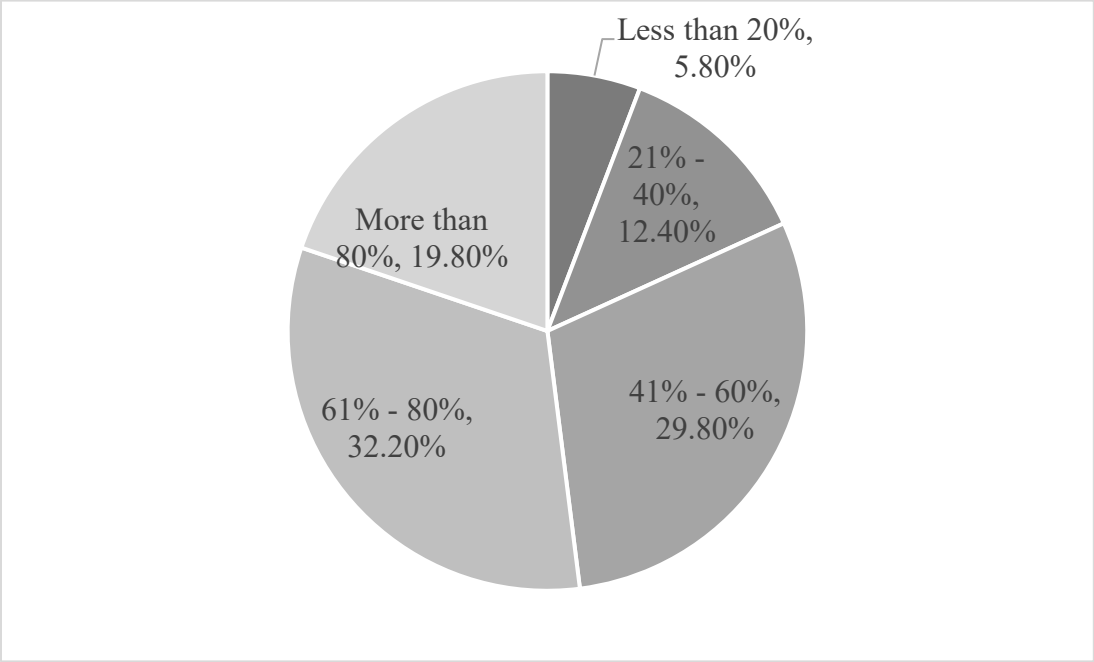


4.5 Digital Payment Systems

The study sought to assess the effects of digital payment systems on financial performance of public universities in Kenya. The first section required the respondents to indicate the approximate percentage of the total fee and payment transactions in the university which were conducted through digital payment systems. The results in figure 6 shows that 5.8% of the respondents indicated that less than 20% of the transactions were carried out through the digital payment systems, 12.4% indicated between 21% and 40% of the transactions, 29.8% of the respondents indicated between 41% and 60% of transactions while 32.2% of the respondents indicated between 61% and 80%. More than 80% of fees and payments transactions were also noted to have been conducted through the digital payment systems as indicated by 19.8% of the respondents. The results shows that digital payment systems have been implemented in the universities under the study and been used in fees and payments transactions.

FIGURE 6

Extent of Use of Digital Payment System



The second section required the respondents to indicate their level of agreement with the various statements under digital payments systems through a scale of 1-5 where 1 denoted strongly disagree, 2 denoted disagree, 3-denoted neutral, 4 denoted agree and 5 denoted strongly agree. According to the results outlined in table 5, respondents neither agreed nor disagreed with the statements that the use of digital payment systems was preferred over cash when making university-related payments (mean=3.008, std.dev=1.281), and that digital payment systems were frequently used for university-related payments (mean=2.777, std.dev=1.320). Similarly, respondents were neutral on the fact that the use of manual payment methods had significantly decreased (mean=2.934, std.dev=1.276) and that there had been a noticeable increase in the number of transactions conducted through digital payment platforms (mean=3.041, std.dev=1.091). On overall, all respondents were neutral with the statements on digital payments systems in the universities as shown by an overall mean of 2.940 and standard deviation of 1.242.

According to Hazar and Babuşcu (2023), digital payment systems bear the capability of improving the efficiency, accuracy, and convenience of payments for both students and university administration.

TABLE 5
Descriptive Statistics on Digital Payments Systems

Digital Payment Systems	N	Mean	Std.Dev
Use of digital payment systems is preferred over cash when making university-related payments	121	3.008	1.281
Digital payment systems are frequently used for university-related payments	121	2.777	1.320
The use of manual payment methods has significantly decreased	121	2.934	1.276
There has been a noticeable increase in the number of transactions conducted through digital payment platforms	121	3.041	1.091
Overall	**121**	2.940	1.242

4.6 Digital Revenue Collection Systems

The study sought to establish the level of agreement with statements on digital revenue collection systems from the respondents. Respondents were to indicate their level of agreement using a scale of 1-5 where 1 denoted strongly disagree, 2 denoted disagree, 3-denoted neutral, 4 denoted agree and 5 denoted strongly agree. According to the results presented in table 6, respondents neither agreed or disagreed with the statements that help and support for digital revenue collection system users was readily available (mean=3.256 and std.dev=1.045), that all major revenue streams were enabled on the digital revenue collection system (mean=3.207 and std.dev=1.161), that the university had integrated most of its revenue streams into the digital revenue collection system (mean=3.198 and std.dev=1.195) and that the majority of transactions were being processed digitally rather than manually (mean=3.182 and std.dev=1.183).

Respondents further showed neutrality response with the statements that the digital system was used frequently in daily financial operations(mean=3.132 and std.dev=1.176), that a large proportion of staff members had adopted and actively used the system (mean=3.132 and std.dev=1.218), that the adoption of the digital revenue system had been progressively increasing over the years (mena=3.182 and std.dev=1.169) and that the system was easy to use and staff quickly adapted to it (mean=3.025 and std.dev=1.268). An overall response mean of 3.164and standard deviation of 1.177 confirmed that all respondents neither agreed nor disagreed with the statements on digital revenue collection systems amongst the universities. The results concurs with Arnaboldi, and Azzone (2015) who established that universities with digital revenue tracking and automated financial reporting systems experiences enhanced cost control, more timely internal reporting, and improved alignment of revenue streams with strategic objectives.

TABLE 6
Descriptive Statistics on Digital Revenue Collection System

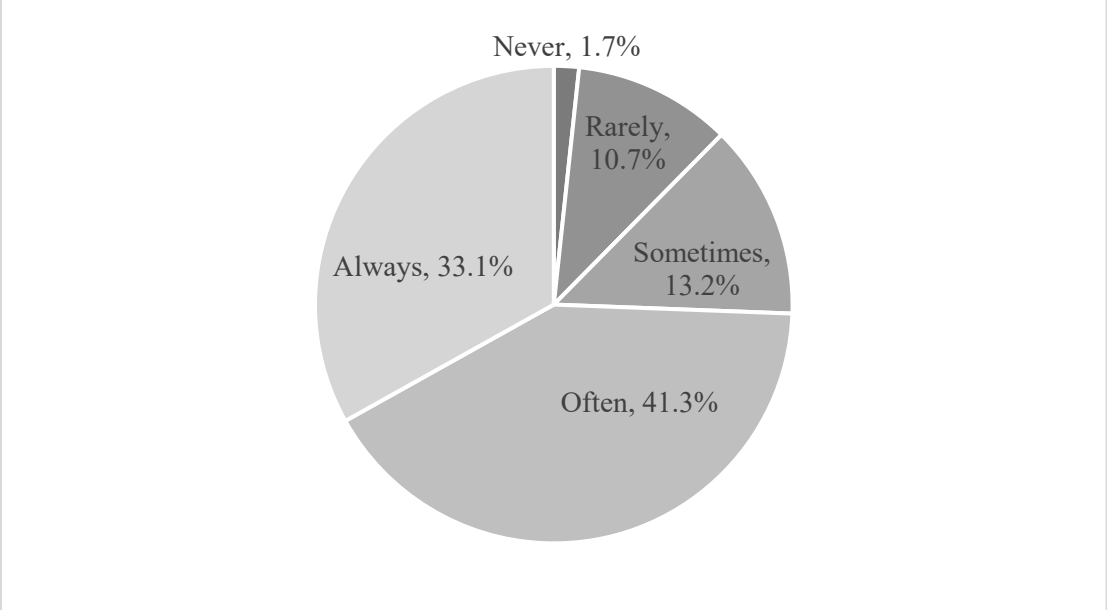
Digital Revenue Collection System	**N**	**Mean**	**Std.Dev**
Help and support for digital revenue collection system users are readily available	121	3.256	1.045
All major revenue streams are enabled on the digital revenue collection system	121	3.207	1.161
Our university has integrated most of its revenue streams into the digital revenue collection system	121	3.198	1.195
The majority of transactions are now processed digitally rather than manually	121	3.182	1.183
The system is used frequently in daily financial operations	121	3.132	1.176
A large proportion of staff members have adopted and actively use the system	121	3.132	1.218
The adoption of the digital revenue system has been progressively increasing over the years	121	3.182	1.169
The system is easy to use and staff quickly adapted to it	121	3.025	1.268
Overall	**121**	**3.164**	**1.177**

4.7 Digital Supply Chain Systems

The study sought to assess the effects of digital supply chain systems on financial performance. The first section required the respondents to indicate how frequently they used the digital supply chain system for their work-related tasks. According to the results outlined in figure 7, 1.7% of the respondents indicated that they never use the digital supply chain systems, 10.7% rarely used the system, 13.2% sometimes used the system while 41.3% often used the system with 33.1% indicating they always used the system. The results showed that majority of respondents accounting for over 74% frequently use digital supply chain systems. This bears the implications that the technology was well-integrated into the university's operations and likely play a significant role in influencing financial performance.

FIGURE 7

Extent of Use of Digital Supply Chain System



The second section required the respondents to indicate their level of agreement with the various statements under digital supply chain system through a scale of 1-5 where 1 denoted

strongly disagree, 2 denoted disagree, 3-denoted neutral, 4 denoted agree and 5 denoted strongly agree. According to the results outlined in table 7, respondents agreed with the statements that the university's procurement transactions were predominantly processed through the digital supply chain system (mean=3.570 and standard deviation=1.290) and that the digital supply chain system had significantly improved the efficiency of daily work (mean=3.521, std.dev=1.163). On the other hand, respondents neither agreed or disagreed with the statements that the various components of our digital supply chain system are highly integrated with each other and with the university's main financial management system (mean=3.455 and std.dev=1.190) and that a high percentage of the university's main suppliers used the digital supply chain system for their transactions (mean=3.496 and std.dev=1.239).

Respondents further showed neutral response with the statements that the university's digital supply chain system was easy to use and navigate (mean=3.339 and std.dev=1.288) and that the digital supply chain system had enhanced the transparency and accountability of the university's procurement process (mean=3.496 and std.dev=1.096). All respondents on overall had a neither agreed nor disagreed with the statements on digital supply chain systems as depicted by an overall mean of 3.479 and standard deviation of 1.211. According to Lim and Tan (2020), digital supply chain systems has the capability of reducing inventory holding costs and improving procurement cycle efficiency.

TABLE 7
Descriptive Statistics on Digital Supply Chain System

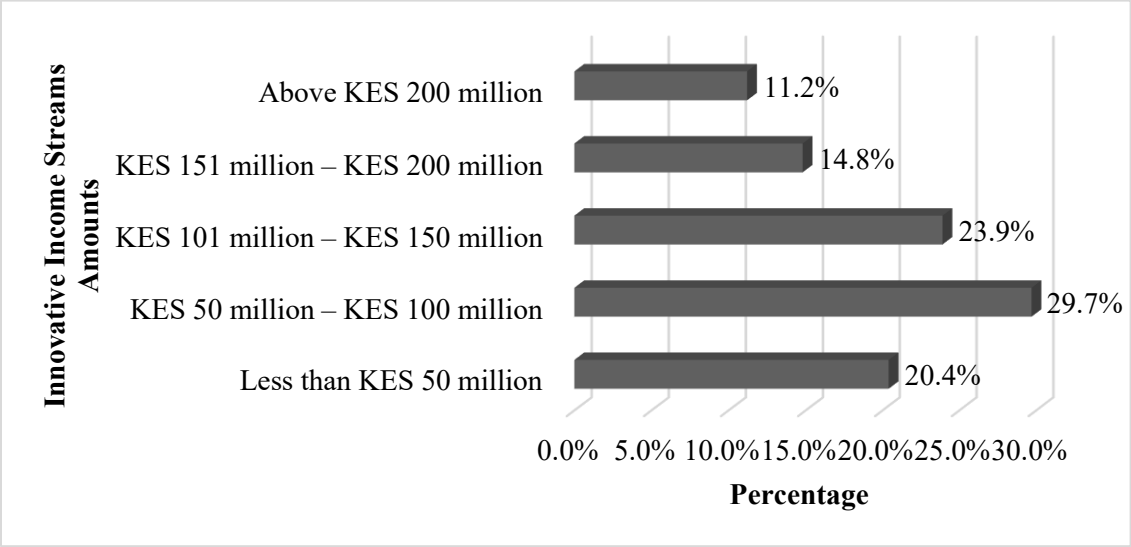
Digital Supply Chain System	N	Mean	Std.Dev
The various components of our digital supply chain system are highly integrated with each other and with the university's main financial management system	121	3.455	1.190
The university's procurement transactions are predominantly processed through the digital supply chain system	121	3.570	1.290
A high percentage of the university's main suppliers use the digital supply chain system for their transactions	121	3.496	1.239
The university's digital supply chain system is easy to use and navigate	121	3.339	1.288
The digital supply chain system has significantly improved the efficiency of daily work	121	3.521	1.163
The digital supply chain system has enhanced the transparency and accountability of the university's procurement process	121	3.496	1.096
Overall	**121**	**3.479**	**1.211**

4.8 Innovative Income Streams

The study sought to assess the influence of innovative income streams on financial performance. The first section required the respondents to indicate the range amount (in Kenya Shillings) generated from innovative income streams in the last financial year. According to the results outlined in figure 8, universities that had generated less than ksh 50 million through innovative income streams were 20.4%, those that had generated between ksh 50m and ksh 100m were 29.7% while those that generated between ksh 101m and ksh 150m were 23.9%. On the other hand, 14.8% of the respondents indicated that their university had generated between ksh 151m and ksh 200m while 11.2% indicated their university had generated above ksh. 200m through innovative income streams. The results implies that while a notable proportion of universities were generating significant revenues of over Ksh. 100 million from innovative income streams, majority still fall below this threshold.

FIGURE 8

Innovative Income Streams Amounts



The second section required the respondents to indicate their level of agreement with the various statements under innovative income streams through a scale of 1-5 where 1 denoted strongly disagree, 2 denoted disagree, 3-denoted neutral, 4 denoted agree and 5 denoted strongly agree. According to the results outlined in table 8, respondents were had a neutral level of agreement with the statements that adoption of financial technology has increased revenue collection from online academic programs (mean=3.314 and std.dev=1.140), that the university generated significant income through digital payment platforms (mean =3.000 and std.dev=1.258) and that financial technology had enhanced revenue generation from research commercialization and consultancy services (mean=2.992, std.dev=1.221).

Additionally, respondents neither agreed or disagreed with the statements that the proportion of fintech-related income to the total revenue of the university had significantly grown (mean=3.165 and std.dev=1.261), that financial technology had reduced revenue leakages, leading to higher reported innovative income (mean=3.041 and std.dev=1.287) and that the university

relied increasingly on technology-driven income streams compared to traditional sources (mean=3.033 and std.dev=1.147). All respondents on overall had a neutral stance with the statements on innovative income streams as depicted by an overall response mean of 3.091 and standard deviation of 1.219. According to Kimathi and Irungu (2024), financial technology has become a significant driver of innovative income streams in public universities which enhances revenue diversification and reduces reliance on traditional funding sources.

TABLE 8
Descriptive Statistics on Innovative Income Streams

Innovative Income Streams	N	Mean	Std.Dev
Adoption of financial technology has increased revenue collection from online academic programs	121	3.314	1.140
Our university generates significant income through digital payment platforms	121	3.000	1.258
Financial technology has enhanced revenue generation from research commercialization and consultancy services	121	2.992	1.221
The proportion of fintech-related income to the total revenue of the university has significantly grown	121	3.165	1.261
Financial technology has reduced revenue leakages, leading to higher reported innovative income	121	3.041	1.287
Our university relies increasingly on technology-driven income streams compared to traditional sources	121	3.033	1.147
Overall	**121**	3.091	1.219

4.9 Financial Performance of Universities

To assess the financial performance aspect, the study first formulated various questions for respondents to respond and secondly collected secondary data from the audited financial report for universities on total revenues and total assets for the period between 2020 and 2024. On the first aspect, the study required the respondents to indicate their level of agreement with the various statements under financial performance of universities through a scale of 1-5 where 1 denoted strongly disagree, 2 denoted disagree, 3-denoted neutral, 4 denoted agree and 5 denoted strongly agree. According to the results outlined in table 9, respondents agreed with the statements that

digital payment systems had improved the efficiency, speed, and accuracy of fee collection in the university (mean=4.091 and std.dev=0.940), and that automated revenue collection systems had enhanced transparency in the university's financial management (mean=4.066 and std.dev=0.998).

Additionally, respondents agreed with the statements that digital supply chain systems had reduced procurement costs and enhanced supplier relationship management (mean=4.091 and std.dev=1.008), and that the university had successfully developed innovative digital income streams that contribute to financial stability (mean=4.025 and std.dev=1.186). Consequently, respondents were in agreements with the statements that the university had experienced improved financial performance as a result of adopting financial technology systems (mean=3.992 and std.dev=1.092) and that financial technology systems had improved the management, utilization, and acquisition of the university's assets and infrastructure (mean=3.835 and std.dev=1.019). On overall, all respondents were in agreement with the statements on financial performance of universities as shown by a mean of 4.017and std.dev of 1.041. The results tallies with Chigada and Hirschfelder (2019) who noted that FinTech enhances security through reduced cash handling, improved financial tracking for audit compliance, and higher student satisfaction driven by convenient and accessible financial services.

TABLE 9

Descriptive Statistics on Financial Performance of Universities

Financial Performance of Universities	N	Mean	Std.Dev
Digital payment systems have improved the efficiency, speed, and accuracy of fee collection in the university	121	4.091	0.940
Automated revenue collection systems have enhanced transparency in the university's financial management	121	4.066	0.998
Digital supply chain systems have reduced procurement costs and enhanced supplier relationship management	121	4.091	1.008
The university has successfully developed innovative digital income streams that contribute to financial stability	121	4.025	1.186
The university has experienced improved financial performance as a result of adopting financial technology systems	121	3.992	1.092
Financial technology systems have improved the management, utilization, and acquisition of the university's assets and infrastructure	121	3.835	1.019
Overall	**121**	4.017	1.041

The second section under financial performance assessed the levels of total revenues and total assets for all the universities involved in the study. The secondary data was collected from audited financial reports as from the Office of the Auditor General and published in the Digital Library in the Parliament of Kenya between financial years 2019/2020 and 2023/2024 (Bunge Library, 2025). In analyzing the data, the study applied Mean, Standard Deviation, Kurtosis, Skewness, Minimum and Maximum. Table 10 presents the results of the study. Secondary financial data presented were used to provide contextual background on the financial performance trends of public universities in Kenya. However, these data were not included in the regression model due to inconsistencies and incomplete reporting across institutions. The inferential analysis was therefore based on standardized perceptual measures collected from respondents.

TABLE 10
Financial Performance

		Mean	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum
19/20	Total Revenue (Ksh)	2,350,705,829.09	2,969,516,717.46	10.13528726	2.954956547	208,435,688.00	15,217,271,451.00
	Total Assets (Ksh)	4,421,894,477.63	4,312,891,116.07	4.520641801	2.143588091	302,054,695.00	18,950,132,006.00
20/21	Total Revenue (Ksh)	1,890,622,643.66	1,995,207,888.04	6.547957265	2.39525516	85,267,850.00	9,738,587,000.00
	Total Assets (Ksh)	10,866,707,090.74	35,603,265,056.54	33.21127625	5.705359121	579,068,621.00	213,041,829,000.00
21/22	Total Revenue (Ksh)	2,173,454,872.26	2,172,561,176.06	4.944308361	2.171032013	226,949,698.00	10,155,553,067.00
	Total Assets (Ksh)	10,903,376,955.66	35,569,176,648.46	33.25557282	5.710585735	831,665,594.00	212,946,421,492.00
22/23	Total Revenue (Ksh)	2,199,588,664.37	2,324,742,982.30	7.613957214	2.576148751	252,644,289.00	11,640,852,579.00
	Total Assets (Ksh)	10,993,283,739.11	35,484,564,636.77	33.20501048	5.704233871	858,099,275.00	212,486,022,848.00
23/24	Total Revenue (Ksh)	2,422,345,979.71	2,431,560,067.17	7.012913346	2.483275576	374,414,973.00	12,126,152,091.00
	Total Assets (Ksh)	11,207,069,858.86	35,496,628,056.03	33.18563083	5.701903211	981,380,076.00	212,741,452,148.00
Overall	Total Revenue (Ksh)	2,213,329,548.79	2,386,398,481.14	8.066195173	2.615323301	85,267,850.00	15,217,271,451.00
	Total Assets (Ksh)	9,718,645,491.84	31,673,917,401.68	37.4085581	6.162019902	302,054,695.00	213,041,829,000.00

In FY 2019/2020, universities reported an average total revenue of approximately Ksh 2.35 billion, with a wide variation (SD = Ksh 2.97 billion). The period coincided with the COVID-19 pandemic, which disrupted in-person operations and reduced traditional income sources such as tuition and auxiliary services. The high kurtosis (10.14) and strong right-skew (2.95) indicated that while most universities earned below the mean, a few outliers generated significantly higher revenues. Similarly, the average total assets stood at Ksh 4.42 billion, but with large disparities (SD = Ksh 4.31 billion), suggesting uneven capital accumulation. This reflects the limited digital

readiness of many universities at the onset of the pandemic, when reliance on manual systems restricted financial flexibility and adaptability.

In FY 2020/2021, average revenues declined to Ksh 1.89 billion, reflecting the lingering economic impact of the pandemic and the slow adaptation to technology-driven operations. However, the year also marked the beginning of accelerated adoption of financial technology systems, including digital payment platforms and integrated financial management systems, as universities sought to streamline operations and ensure continuity. Despite a reduced mean revenue, the substantial standard deviation (Ksh 1.99 billion) and high skewness (2.39) suggested that universities which had started integrating FinTech tools were better positioned to maintain stronger revenue bases. Total assets, averaging Ksh 10.87 billion, exhibited extreme disparities (SD = Ksh 35.6 billion; kurtosis = 33.21), with wealth heavily concentrated among a few digitally advanced institutions, particularly those with established enterprise financial systems.

By FY 2021/2022, signs of recovery became evident, as mean revenues rose to Ksh 2.17 billion, accompanied by a moderate decline in kurtosis (4.94). This improvement corresponded with the enhanced utilization of digital payment and financial management systems introduced in previous years. Universities increasingly adopted online fee payment systems, automated billing, and e-receipting modules, which improved efficiency in cash flow management. Although income disparities persisted (SD = Ksh 2.17 billion; skewness = 2.17), the upward trend in revenues suggests that FinTech systems began yielding tangible benefits. Asset accumulation also increased modestly to Ksh 10.90 billion, with continued dominance by a few large institutions that had integrated digital asset management and reporting tools.

In FY 2022/2023, mean revenue rose further to Ksh 2.20 billion, and total assets to Ksh 10.99 billion, indicating gradual stabilization of financial performance. This growth aligns with expanding FinTech adoption across universities, particularly in digital banking integration and real-time financial reporting. The observed increase in kurtosis (7.61) and skewness (2.58), however, shows that while digital transformation improved performance, not all universities benefited equally, institutions with limited FinTech capacity lagged behind. The persistence of high asset disparity (kurtosis = 33.21; skewness = 5.70) implies that digital maturity remained uneven across the sector.

By FY 2023/2024, universities recorded their highest average revenues during the study period (Ksh 2.42 billion), signaling strengthened financial performance. This period coincided with the institutionalization of financial technology systems such as e-payment gateways, online student billing portals, and integrated financial management information systems. These innovations enhanced revenue tracking, reduced transaction leakages, and improved liquidity management. The decline in asset kurtosis (from 33.21 to 23.19) suggests a gradual narrowing of extreme disparities, though the persistent right-skew (5.70) highlights ongoing concentration of resources among a few universities with advanced FinTech infrastructure. The rise in both mean revenue and mean assets (Ksh 11.21 billion) thus reflects the cumulative benefits of sustained digital transformation efforts.

Overall, between FY 2020 and 2024, public universities exhibited a steady upward trajectory in revenues, with the aggregated mean reaching Ksh 2.21 billion, compared to Ksh 1.89 billion in 2021. This improvement coincided with progressive adoption of FinTech systems, reinforcing the perception-based findings that financial technologies enhance financial efficiency, accountability, and transparency. Despite persistent inequalities which is evident in high standard

deviations and skewness, the general trend suggests that institutions leveraging FinTech platforms achieved superior financial outcomes. Similarly, the growth in average total assets to Ksh 9.72 billion underscores improved resource management capabilities facilitated by digital systems for budgeting, reporting, and investment tracking.

4.10 Diagnostics Tests

The study carried out diagnostic tests to assess whether there was violation of the regression model. The tests carried out comprised of normality test, multicollinearity and homoscedasticity test.

4.10.1 Normality Test

The study adopted the One-sample Kolmogorov-Smirnov test, Skewness and Kurtosis test, and Durbin-Watson test to check the distribution of the variables as recommended by Rani (2019). The researcher used the rule of thumb that a variable is reasonably close to normal if its skewness and kurtosis have values between -1.0 and +.0. Normality was applied to determine the level of significance of the differences from a normal distribution. The results presented in table 11 shows that Kolmogorov-Sminorv and Shapiro-Wilk had insignificant values implying that the dependent variable followed a normal distribution.

TABLE 11
Normality Test Results

	Kolmogorov-Sminorv			Shapiro-Wilk		
	Statistic	**Df**	**Sig.**	**Statistic**	**df**	**Sig.**
Financial Performance	.256	121	.106*	.309	121	.126

*. This is a lower bound of the true significance.
. Lilliefors Significance Correction

4.10.2 Multicollinearity

The study assessed multicollineariy through Variance Inflation Factor (VIF). A VIF of more than 10 (VIF> 10) indicates a problem of multicollineariy. According to the results presented in table

12, all independent variables had VIF values of less than 10 implying that there was no multicollinearity problem.

TABLE 12
Multicollinearity Test

	Collinearity Statistics	
	Tolerance	**VIF**
Digital Payment Systems	0.248	4.631
Digital Revenue Collection System	0.116	3.946
Digital Supply Chain System	0.209	5.312
Innovative Income Streams	0.308	2.711

4.10.3 Homoscedasticity Test

In order to determine if a linear regression model was homogeneous, Breusch and Pagan (1979) devised the Breusch-Pagan test was employed. Homoscedasticity assumptions is arrived at when the probability value in the Breusch-Pagan test is greater than 0.05. The results presented in table 13 shows that the probability value was above 0.05 implying that the model was homogeneous.

TABLE 13
Breusch-Pagan Test of Homoscedasticity

Breusch-Pagan / Cook-Weisberg test for Homoscedasticity
Ho: Constant variance
chi2(3) = 0.316
Prob > chi2 = 0.408

4.11 Inferential Statistics

The study applied inferential statistics with the objective of establishing existence of relationships between the study variables. The inferential statistics incorporated in the study comprised on both correlation and regression analysis

4.11.1 Correlation Analysis

Table 14 provides a display of the correlation results of the study. According to the results, there exists a positive and significant correlation between digital payments systems and financial performance of public universities in Kenya. This is depicted by a correlation value of 0.628 and a significant value of 0.000<0.05. The results bear implications that enhancing aspects of digital payment systems in the operations of universities contributes to enhanced financial performance. The results tallies with Okoye and Ezejiofor (2013) who found that digital payment systems such as the e-payment increases financial efficiency, decreases processing time, and improves transparency in university financial operations.

The results also revealed existence of a positive and significant correlation between digital revenue collection systems and financial performance of public universities in Kenya. This is depicted by a correlation value of 0.552 and a significant value of 0.000<0.05. The results bear implications that enhancing aspects of digital revenue collection systems in the operations of universities contributes to enhanced financial performance. The results were in tandem with Arena et al (2015) findings that revealed that universities which adopts digital revenue tracking and automated financial reporting systems experiences enhanced cost control, more timely internal reporting, and improved alignment of revenue streams with strategic objectives.

The results further established that digital supply chain systems and financial performance of public universities in Kenya bear a positive insignificant correlation. This is depicted by a correlation value of 0.492 and a significant value of 0.000<0.05. The results bear implications that enhancing aspects of digital supply chain systems in the operations of universities contributes to enhanced financial performance to insignificant levels. The results were in tandem with Thuku and Nteere (2025) who established that while digital supply chain systems can improve operational

efficiency and transparency, their direct impact on financial performance in higher education institutions is often limited.

The results also established that innovative income streams and financial performance of public universities in Kenya bear a positive and significant correlation. This is shown by a correlation value of 0.669 and a significant value of 0.000<0.05. The results bear implications that enhancing aspects of innovative income streams in the operations of universities contributes to enhanced financial performance. The finding is consistent with Riechi (2024), who observes that public universities in Kenya should enhance revenue diversification initiatives in order to strengthen institutional sustainability and operational efficiency.

TABLE 14
Correlation Results

		Digital Payment Systems	Digital Revenue Collection Systems	Digital Supply Chain Systems	Innovative Income Streams	Financial Performance
Digital Payment Systems	Pearson Correlation	1				
	Sig. (2-tailed)					
Digital Revenue Collection Systems	Pearson Correlation	.493	1			
	Sig. (2-tailed)	.000				
Digital Supply Chain Systems	Pearson Correlation	.427	.619	1		
	Sig. (2-tailed)	.000	.000			
Innovative Income Streams	Pearson Correlation	.435	.350	.299	1	
	Sig. (2-tailed)	.000	.000	0.001		
Financial Performance	Pearson Correlation	.628	.552	.492	.669	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	121	121	121	121	121

4.11.2 Regression Analysis

The study incorporated regression analysis aiming at establishing the relationship between the independent and the dependent variables. The output of the regression analysis results to three outcomes comprising of the Model Summary, ANOVA and model coefficient. The model summary shows the degree of relationship between the combined independent variables (digital payment systems, digital revenue collection systems, digital supply chain systems and innovative income streams) and the dependent variable (Financial performance). The output further shows the percentage accounted by the independent variables on the dependent variable. The Model summary results outlined in table 15 shows that the R-value was 0.800 implying existence of a high relationship between the independent variables and the dependent variable. The R-Squared value of 0.640 implied that the financial systems included in the study accounted for 64% of variations in the financial performance of the public universities in Kenya.

TABLE 15
Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.800[a]	.640	.627	.453

a. Predictors: (Constant), Digital Payment Systems, Digital Revenue Collection Systems, Digital Supply Chain Systems and Innovative Income Streams

The Analysis of variance output was included in the study aiming at establishing the statistical significance of the model linking the dependent variable with the independent variables. According to the results outlined in table 16, the significant was 0.000<0.05 implying that the model was statistically significant in establishing the relationship between the dependent and independent variables. It was therefore considered fit for the study.

TABLE 16
ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	42.204	4	10.551	51.506	.000[b]
	Residual	23.763	116	.205		
	Total	65.967	120			

a. Financial Performance
b. Predictors: (Constant), Digital Payment Systems, Digital Revenue Collection Systems, Digital Supply Chain Systems And Innovative Income Streams

The model coefficient results was utilized in the study to show the extent to which the dependent variable changes with a change on the independent variable. According to the results presented in table 17, digital payment systems bears a positive and significant influence on financial performance of public universities in Kenya. This is shown by a beta value of 0.282 and significant value of 0.000<0.05. The results bear the implications that increasing aspects of digital payment systems with one units leads to 0.282 units increase in the financial performance levels of public universities. According to Ngugi and Komo (2017), digital platforms enhance revenue mobilization, reduce leakages, and improve accountability in financial management.

The results further revealed that digital revenue collection system bears a positive and significant influence on financial performance of public universities in Kenya. This is shown by a beta value of 0.154 and significant value of 0.024<0.05. The results bear the implications that increasing aspects of digital revenue collection system with one units leads to 0.154 units increase in the financial performance levels of public universities. The results are consistent with Okiro (2024) who established that digital revenue collection systems such as e-payment platforms and electronic funds transfer significantly enhance revenue mobilization through streamlining processes and improving financial accountability.

The results revealed that the digital supply chain system positively but insignificantly influences the financial performance of public universities in Kenya ($\beta = 0.129$, $p = 0.081 > 0.05$). This suggests that a one-unit increase in digital supply chain practices leads to a modest 0.129-unit rise in financial performance. From the General Systems Theory perspective, this insignificant effect may stem from the system's indirect influence on financial outcomes. Digital supply chain systems primarily enhance operational efficiency, transparency, and coordination—subsystems that support the broader institutional system but may not immediately translate into measurable financial gains. Additionally, implementation challenges, integration costs, and the time required for benefits to materialize could explain the delayed financial impact. Similar findings by Thuku and Nteere (2025) indicate that while digital supply chains improve processes, their direct financial benefits in universities remain limited in the short term.

From the results, it was established that innovative income streams bears a positive and significant influence on financial performance of public universities in Kenya. This is shown by a beta value of 0.435 and significant value of 0.000<0.05. The results bear the implications that increasing aspects of innovative income streams with one units leads to 0.435 units increase in the financial performance levels of public universities. The findings concurs with Areri et al (2020) who emphasized that diversification of revenue sources through digital and entrepreneurial innovations strengthens the financial sustainability of higher education institutions.

TABLE 17
Model Coefficient

	Unstandardized Coefficients		Standardized Coefficients		
Predictors	**B**	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	.906	.236		3.842	.000
Digital Payment Systems	.282	.065	0.297	4.335	.000
Digital Revenue Collection System	.154	.068	0.172	2.282	.024
Digital Supply Chain System	.129	.073	0.127	1.762	.081
Innovative Income Streams	.435	.062	0.442	7.020	.000

a. Dependent Variable: Financial Performance

From the initial model i.e $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$, the optimal model after fitting in the values becomes:

Financial Performance = 0.906 + 0.435 (Innovative Income Streams) + 0.282 (Digital Payment Systems) + 0.154 (Digital Revenue Collection System) + 0.129 (Digital Supply Chain System)

The results shows that while holding all factors constant, the financial performance of public universities stands at 0.906. Innovative income streams bears the highest influence on financial performance followed by digital payment systems, and then digital revenue collection systems. Digital supply chain system bears the least influence on financial performance.

4.12 Hypothesis Testing

Table18 shows the hypothesis testing results derived from the regression analysis results.

TABLE 18
Hypothesis Testing

Hypothesis	Method and Criteria	Remark
H_{01}: Digital payment systems has no significance influence on the financial performance of public universities in Kenya	• Multivariate regression analysis ($p< 0.05$)	Reject **H_{01}**
H_{02}: Digital revenue collection systems has no significance influence on the financial performance of public universities in Kenya	• Multivariate regression analysis ($p< 0.05$)	Reject **H_{02}**
H_{03}: Digital supply chain systems has no significance influence on the financial performance of public universities in Kenya	• Multivariate regression analysis ($p> 0.05$)	Accept **H_{03}**
H_{04}: Innovative income streams has no significance influence on the financial performance of public universities in Kenya	• Multivariate regression analysis ($p< 0.05$)	Reject **H_{04}**

H_{01}: Digital payment systems have no significant influence on the financial performance of public universities in Kenya

The hypothesis was rejected, indicating that digital payment systems significantly influence financial performance. This finding supports the Technology Acceptance Model (TAM), which posits that perceived usefulness and ease of use drive the adoption of technological innovations. The positive influence of digital payment systems such as mobile payments, online fee platforms, and e-wallets reflects the universities' acceptance and utilization of technology to improve operational efficiency, reduce transaction costs, and enhance revenue collection accuracy. The study therefore confirms that the adoption of user-friendly and effective digital payment systems leads to better financial performance outcomes in public universities, in line with TAM's propositions.

H_{02}: Digital revenue collection systems have no significant influence on the financial performance of public universities in Kenya

This hypothesis was rejected, demonstrating that digital revenue collection systems significantly affect financial performance. The result aligns with the Innovation Diffusion Theory (IDT), which emphasizes how new technologies are adopted based on their relative advantage, compatibility, and efficiency. The implementation of integrated digital revenue management systems has streamlined revenue tracking and minimized leakages. This supports the notion that when technological innovations offer clear advantages and fit institutional needs, they enhance financial control and performance.

H_{03}: Digital supply chain systems have no significant influence on the financial performance of public universities in Kenya

This hypothesis was accepted, indicating that digital supply chain systems do not significantly influence financial performance. While digital procurement and inventory systems are designed to improve transparency and cost management, their limited impact may be attributed to low adoption levels, inadequate integration, or lack of technical capacity. From a theoretical standpoint, this weak relationship suggests partial support for Resource-Based View (RBV) theory. According to RBV, technological systems only contribute to performance if they are valuable, rare, and effectively utilized as organizational capabilities. In this case, the absence of a significant effect implies that digital supply chain systems have not yet evolved into strategic resources capable of delivering financial benefits in public universities.

H_{04}: Innovative income streams have no significant influence on the financial performance of public universities in Kenya

The hypothesis was rejected, showing that innovative income streams significantly influence financial performance. This finding resonates with Schumpeter's Theory of Innovation, which emphasizes innovation as a key driver of economic and institutional performance. Public

universities that diversify their revenue sources through digital platforms demonstrate entrepreneurial adaptation to funding constraints. The innovative practices enhance financial sustainability and competitive advantage, thus affirming Schumpeter's view that innovation is central to improved institutional performance and long-term growth.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The summaries of the findings of the study have been outlined in this chapter. The chapter specifically discusses the summary per research variable, conclusion, and recommendations. The chapter concluded by outlining areas of further studies.

5.2 Summary

The main objective of the study was to establish the effect of financial technology systems on the financial performance of public Universities in Kenya. The specific financial technology systems focused in the study comprised of digital payment systems, digital revenue collection systems, digital supply chain systems and innovative income streams. The study employed a descriptive research design and targeted all 35 public chartered universities in Kenya. The units of observation comprised of Chief Financial Officers, IT Managers, Financial Analysts and Accountants from each of the university. One respondent from each category was included. Both primary and secondary data were utilized in the study. The collected data was analyzed quantitatively through both descriptive and inferential statistics and results displayed in form of tables and figures. The following section provides an outline of summarized results per research objective.

5.2.1 Digital Payment Systems and Financial Performance

The findings revealed that digital payment systems have been widely adopted by public universities in Kenya, with a significant proportion of fee and payment transactions being conducted through these platforms. Respondents generally expressed neutrality regarding the extent to which digital payments had replaced manual systems or become the preferred mode of

payment, suggesting that while adoption is evident, perceptions about their dominance are still evolving. The study also established that the adoption of digital payments contributes positively to financial performance by improving operational efficiency, enhancing transparency, and strengthening accountability in revenue management.

This implies that universities leveraging digital platforms are better positioned to mobilize revenue effectively and streamline administrative processes thus boosting financial outcomes. These results reinforce existing literature such as Ngugi and Komo (2017), who argue that digital platforms are critical in enhancing revenue collection, reducing inefficiencies, and promoting accountability in institutional financial management.

5.2.2 Digital Revenue Collection Systems and Financial Performance

The findings revealed that the adoption of digital revenue collection systems in public universities has a meaningful influence on their financial performance. Although respondents generally showed neutrality regarding the extent of integration, ease of use, frequency of use, and adoption by staff, the results indicated that digital systems are gradually shaping financial management processes in universities. The evidence showed that when universities enhance their digital revenue collection systems, they achieve improved efficiency in managing revenue streams, reduce reliance on manual processes, and strengthen accountability in financial operations.

Furthermore, these systems were found to contribute positively to aligning revenues with institutional goals, streamlining reporting processes, and supporting cost control measures, which are essential in promoting sustainable financial performance. The results also highlighted that even though staff adaptation and full integration of all revenue streams remain gradual, the progressive adoption of these technologies enhances transparency and ensures that universities can mobilize

and utilize resources more effectively. The study emphasized that the adoption of digital revenue collection systems is not only beneficial in improving operational efficiency but also acts as a catalyst for long-term financial sustainability in public universities. This is in consistent with findings by Arnaboldi and Azzone (2015), who observed that institutions adopting digital financial technologies are better positioned to align resources with strategic objectives and strengthen financial accountability.

5.2.3 Digital Supply Chain Systems and Financial Performance

The findings revealed that digital supply chain systems are widely used across public universities in Kenya, with a large proportion of staff frequently relying on them for work-related tasks. This indicates that the systems are well-integrated into university operations and play a significant role in supporting procurement and financial processes. Respondents generally acknowledged the benefits of these systems, particularly in enhancing efficiency in daily operations and facilitating the processing of procurement transactions. However, they remained neutral on whether the systems were fully integrated with financial management platforms, whether suppliers consistently adopted them, and whether they significantly improved transparency and ease of use.

This suggests that while the systems are functional and beneficial, gaps remain in terms of integration, supplier adoption, and user-friendliness. Further analysis established that although digital supply chain systems contribute positively to financial performance, their effect is not substantial. This highlights the possibility that the systems' value is more indirect and related to improving operational efficiency and accountability rather than directly driving financial outcomes. These findings aligns with the observation by Lim and Tan (2020) that such technologies primarily improve efficiency and cost management rather than having an immediate, direct financial impact.

5.2.4 Innovative Income Streams and Financial Performance

The findings revealed that innovative income streams play a critical role in shaping the financial performance of public universities in Kenya. While some universities are able to generate substantial revenues from such initiatives, the majority still rely heavily on traditional income sources, with limited uptake of financial technology to expand revenue channels. Respondents generally expressed neutral views on the extent to which financial technology has enhanced revenue diversification, particularly in areas such as online academic programs, digital payment platforms, and research commercialization.

Nonetheless, the overall results showed that innovative income streams positively contribute to the financial performance of universities, implying that greater integration of financial technology into revenue generation models could strengthen financial sustainability. These findings align with the observation by Areri et al. (2020) that diversification of income sources through digital and entrepreneurial innovations enhances the financial resilience and sustainability of higher education institutions.

5.3 Conclusion

This section outlines the conclusion derived from the study.

5.3.1 Digital Payment Systems and Financial Performance

From the findings, it can be concluded that digital payment systems play an important role in enhancing the financial performance of public universities in Kenya by promoting efficiency, transparency, and accountability in revenue management. Their adoption has streamlined payment processes, reduced reliance on manual systems, and improved revenue mobilization, thereby supporting better financial outcomes. However, perceptions regarding their complete dominance

over traditional payment methods are still developing, indicating that while progress has been made, full integration and acceptance of digital payment systems may require further awareness, trust-building, and infrastructural support.

5.3.2 Digital Revenue Collection Systems and Financial Performance

From the findings, it can be concluded that digital revenue collection systems play a crucial role in enhancing the financial performance of public universities. This is through improving efficiency, strengthening accountability, and supporting better alignment of revenues with institutional objectives. While their integration and full adoption across all revenue streams are still gradual, the systems reduce reliance on manual processes, streamline reporting, and promote transparency in financial operations. The results suggest that progressive adoption of digital revenue collection systems not only improves day-to-day financial management but also serves as a foundation for long-term financial sustainability. This enables universities to mobilize and utilize resources more effectively in support of their strategic goals.

5.3.3 Digital Supply Chain Systems and Financial Performance

From the findings, it can be concluded that digital supply chain systems have become integral to the operational processes of public universities in Kenya, with frequent use among staff signifying their importance in promoting efficiency, transparency, and accountability. These systems have streamlined procurement and inventory processes, thereby enhancing operational performance and institutional governance. However, the statistical results indicate that the influence of digital supply chain systems on financial performance is not significant. This suggests that while these systems improve workflow efficiency and control mechanisms, their effect on financial outcomes is largely indirect. The benefits are realized more through enhanced accountability, reduced process inefficiencies, and improved resource management rather than through direct financial

gains. Consequently, digital supply chain systems should be viewed as supportive tools that contribute to the operational foundations upon which sound financial performance is built, rather than as primary drivers of financial growth in public universities.

5.3.4 Innovative Income Streams and Financial Performance

From the findings, it can be concluded that innovative income streams hold significant potential in enhancing the financial performance of public universities in Kenya. While universities have successfully embraced strategies such as online academic programs, digital payment platforms, and commercialization of research outputs to supplement traditional revenue channels, many continue to rely heavily on government funding and tuition fees. However, the positive contribution observed where innovative income streams are applied indicates that expanding the use of financial technology in designing new revenue models could improve financial resilience, reduce overdependence on traditional sources, and promote long-term sustainability. Therefore, fostering a culture of innovation and greater investment in digital initiatives could enable universities to strengthen their financial base and remain competitive in a dynamic educational environment.

5.4 Recommendations

The study established a significant positive influence of digital payment systems on the financial performance of public universities, as evidenced by improved efficiency, transparency, and accountability in financial transactions. In line with the Technology Acceptance Model (TAM), user perception of ease of use and perceived usefulness were found to drive adoption levels. Therefore, the study recommends that public universities continue to strengthen the adoption and integration of digital payment systems as a core component of their financial operations. This can be achieved by investing in modern, secure, and reliable platforms capable of processing large

transaction volumes efficiently. Additionally, universities should provide continuous staff and student training to improve system usability and minimize resistance to technological change. Collaborating with fintech providers will further enhance functionality, cybersecurity, and system reliability thereby sustaining financial performance improvements as predicted by TAM.

Findings from the study revealed that efficient digital revenue collection systems significantly enhance revenue assurance and reduce financial leakages, thus improving overall institutional financial performance. Anchored in the Resource-Based View (RBV) Theory, digital revenue collection systems constitute valuable, rare, and inimitable resources that can offer a sustained competitive advantage to universities. Consequently, the study recommends that universities strengthen and continuously upgrade their digital revenue collection systems by investing in secure, user-friendly, and integrated platforms covering all income streams. Regular training should be provided to enhance staff competencies and compliance with financial policies. Moreover, periodic system audits and performance reviews should be institutionalized to ensure accountability and safeguard against revenue loss. By optimizing these internal capabilities, universities can enhance their financial performance in alignment with RBV principles.

The study found that while digital supply chain systems improve transparency and procurement efficiency, their direct impact on financial performance was moderate, suggesting the need for complementary financial management practices. Guided by the Systems Theory, which emphasizes interdependence of organizational subsystems, the study recommends integrating digital supply chain systems with robust financial management frameworks. Universities should align procurement digitization with budgeting and cost-control processes, ensure regular capacity-building for procurement and finance staff, and conduct system audits to monitor performance. By

doing so, the synergy among financial and operational subsystems will enhance overall institutional performance and accountability, consistent with the Systems Theory perspective.

The study findings indicated that diversification of income sources through financial technology positively contributes to financial sustainability, particularly when universities leverage innovation and partnerships. Drawing from the Innovation Diffusion Theory, institutions that adopt and adapt new financial technologies early gain a strategic edge in resource mobilization. Accordingly, the study recommends that public universities establish digital innovation hubs to promote research commercialization and develop online programs such as micro-credentials targeting diverse learners. Integrating secure digital payment systems will enhance revenue collection from these initiatives. Furthermore, strategic partnerships with industry and technology firms can stimulate innovative, technology-driven revenue models, fostering financial resilience and long-term sustainability in line with the Innovation Diffusion Theory.

5.5 Research Areas for Further Studies

The central focus of this study was establishing how financial technology systems affect financial performance in the context of public Universities in Kenya. The study proposes another study on other areas such as the private universities, and TVET institutions for a comparative and conclusive outcome. Consequently, the study established that financial technology systems incorporated in the study and comprising of digital payment systems, digital revenue collection systems, digital supply chain systems and innovative income streams accounts only for 64% of variations in the financial performance of the public universities in Kenya. There is therefore a need for another study on other financial technology systems indicators that have not been included in the study and accounting for the remaining 36%.

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APPENDICES

Appendix 1 Introduction Letter

Dear Respondents,

RE: DATA COLLECTION

I am a student at KCA University pursuing a master degree of Science in Commerce Finance and Accounting. As part of the requirement of my course, am obligated to carry out a research project. The project is on the ***"Influence of Financial Technology on Financial Performance of Public Universities in Kenya".*** You have been selected to participate due to your expertise and experience relevant to the study's objectives. Your input will be highly valuable in helping us better understand the role of financial technology in enhancing institutional performance. Kindly note that your participation is voluntary, and all information provided will be treated with strict confidentiality and used solely for academic purposes. No personal identifiers will be disclosed in the final report. I humbly request your cooperation in completing the attached questionnaire.

Thank you for your time and valuable support.

Yours Sincerely,

Wahura Grace

Student

Appendix 2 Questionnaire

Section 1: Background Information

1. Kindly indicate your highest level of education
   - i Certificate [ ]
   - ii Diploma [ ]
   - iii Degree [ ]
   - iv Masters [ ]
   - v Doctorate [ ]
2. Kindly indicate your position
   - i Chief Financial Officers [ ]
   - ii IT Managers [ ]
   - iii Financial Analysts [ ]
   - iv Accountants [ ]
3. Indicate the number of years you have worked in the university
   - i Less than 3 years [ ]
   - ii 3-5 years [ ]
   - iii 6-8 years [ ]
   - iv 9-11 years [ ]
   - v Above 11 years [ ]

Section 2: Digital Payment Systems

i Approximately what percentage of the total fee and payment transactions at your university are conducted through digital payment systems?
   - a Less than 20% [ ]
   - b 21% - 40% [ ]
   - c 41% - 60% [ ]
   - d 61% - 80% [ ]
   - e More than 80% [ ]

ii On a scale of 1-5, where 1=strongly disagree, 2 - disagree, 3- neutral, 4-agree, and 5 - strongly agree, indicate how agree with the following statements

Digital Payment Systems	**1**	**2**	**3**	**4**	**5**
Use of digital payment systems is preferred over cash when making university-related payments					

Digital payment systems are frequently used for university-related payments					
The use of manual payment methods has significantly decreased					
There has been a noticeable increase in the number of transactions conducted through digital payment platforms					

Section 3: Digital Revenue Collection System

On a scale of 1-5, where 1=strongly disagree, 2 - disagree, 3- neutral, 4-agree, and 5 - strongly agree, indicate how agree with the following statements

Digital Revenue Collection System	**1**	**2**	**3**	**4**	**5**
Help and support for digital revenue collection system users are readily available					
All major revenue streams are enabled on the digital revenue collection system					
Our university has integrated most of its revenue streams into the digital revenue collection system					
The majority of transactions are now processed digitally rather than manually					
The system is used frequently in daily financial operations					
A large proportion of staff members have adopted and actively use the system					
The adoption of the digital revenue system has been progressively increasing over the years					
The system is easy to use and staff quickly adapted to it					

Section 4: Digital Supply Chain System

i On a scale of 1 to 5, how frequently do you use the digital supply chain system for your work-related tasks?

Never [ ] Rarely [ ] Sometimes [ ] Often [ ] Always [ ]

ii On a scale of 1-5, where 1=strongly disagree, 2 - disagree, 3- neutral, 4-agree, and 5 - strongly agree, indicate how agree with the following statements

Digital Supply Chain System	**1**	**2**	**3**	**4**	**5**
The various components of our digital supply chain system are highly integrated with each other and with the					

university's main financial management system					
The university's procurement transactions are predominantly processed through the digital supply chain system					
A high percentage of the university's main suppliers use the digital supply chain system for their transactions					
The university's digital supply chain system is easy to use and navigate					
The digital supply chain system has significantly improved the efficiency of your daily work					
The digital supply chain system has enhanced the transparency and accountability of the university's procurement process					

Section 5: Innovative Income Streams

i What was the range amount (in Kenya Shillings) generated from innovative income streams in the last financial year?

a. Less than KES 50 million [ ]
b. KES 50 million – KES 100 million [ ]
c. KES 101 million – KES 150 million [ ]
d. KES 151 million – KES 200 million [ ]
e. Above KES 200 million [ ]

On a scale of 1-5, where 1=strongly disagree, 2 - disagree, 3- neutral, 4-agree, and 5 - strongly agree, indicate how agree with the following statements

Innovative Income Streams	**1**	**2**	**3**	**4**	**5**
Adoption of financial technology has increased revenue collection from online academic programs					
Our university generates significant income through digital payment platforms					
Financial technology has enhanced revenue generation from research commercialization and consultancy services					
The proportion of fintech-related income to the total revenue of the university has significantly grown					

Financial technology has reduced revenue leakages, leading to higher reported innovative income					
Our university relies increasingly on technology-driven income streams compared to traditional sources					

Section 6: Financial Performance of Universities

i On a scale of 1-5, where 1=strongly disagree, 2 - disagree, 3- neutral, 4-agree, and 5 - strongly agree, indicate how agree with the following statements

Financial Performance	**1**	**2**	**3**	**4**	**5**
Digital payment systems have improved the efficiency, speed, and accuracy of fee collection in the university					
Automated revenue collection systems have enhanced transparency in the university's financial management					
Digital supply chain systems have reduced procurement costs and enhanced supplier relationship management					
The university has successfully developed innovative digital income streams that contribute to financial stability					
The university has experienced improved financial performance as a result of adopting financial technology systems					
Financial technology systems have improved the management, utilization, and acquisition of the university's assets and infrastructure					

Appendix 3 Secondary Data Collection Sheet

University Name	Financial Year	Total Revenue (Ksh)	Total Assets (Ksh)
University A	2019/2020		
	2020/2021		
	2021/2022		
	2022/2023		
	2023/2024		
University B	2019/2020		
	2020/2021		
	2021/2022		
	2022/2023		
	2023/2024		

Appendix 4 List of Chartered Public Universities in Kenya

1. University of Nairobi
2. Moi University
3. Kenyatta University
4. Egerton University
5. Jomo Kenyatta University of Agriculture and Technology
6. Maseno University
7. Masinde Muliro University of Science and Technology
8. Dedan Kimathi University of Technology
9. Chuka University
10. Technical University of Kenya
11. Technical University of Mombasa
12. Pwani University
13. Kisii University
14. University of Eldoret
15. Maasai Mara University
16. Jaramogi Oginga Odinga University of Science and Technology
17. Laikipia University
18. South Eastern Kenya University
19. Meru University of Science and Technology
20. Multimedia University of Kenya
21. University of Kabianga
22. Karatina University
23. Kibabii University
24. Rongo University
25. The Co-operative University of Kenya
26. Taita Taveta University
27. Murang'a University of Technology
28. University of Embu
29. Machakos University
30. Kirinyaga University
31. Garissa University
32. Alupe University
33. Kaimosi Friends University
34. Tom Mboya University
35. Tharaka University