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OPEN-SOURCE SOFTWARE ADOPTION IN AFRICAN UNIVERSITIES: A PATHWAY TO SUSTAINABLE INNOVATION

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ABSTRACT

The digital transformation of African higher education is a pivotal driver for socio-economic development, research excellence, and global competitiveness. However, this transformation is critically constrained by chronic financial limitations, technological dependence on foreign proprietary systems, and significant infrastructural deficits. This paper presents a comprehensive analysis arguing that the strategic, institutional-wide adoption of Free and Open-Source Software (FOSS) is not merely a cost-cutting IT strategy but a fundamental pathway for African universities to achieve sustainable innovation, pedagogical relevance, and digital sovereignty. The research employs a multi-dimensional framework, examining the socio-technical, economic, and political aspects of FOSS integration. It meticulously details the profound benefits, which extend beyond direct financial savings to encompass enhanced academic freedom, robust local capacity building, and the fostering of an indigenous culture of innovation and problem-solving. The paper provides an exhaustive survey of FOSS applications across the entire university ecosystem, from learning management systems (e.g., Moodle, Chamilo) and administrative suites (e.g., LibreOffice, GNU/Linux) to specialized research tools (e.g., R, Python, QGIS) and library management systems (e.g., Koha). A significant portion of the analysis is dedicated to a critical and honest appraisal of the formidable barriers to adoption, including technical skills gaps, cultural resistance, concerns over support and maintenance, and overarching policy vacuums. In response, the paper proposes a holistic and actionable strategic framework for successful implementation, emphasizing the necessity of visionary leadership, phased deployment, substantial investment in human capital development, and the creation of collaborative consortia. The conclusion posits that FOSS adoption represents a paradigm shift moving from technological consumerism to academic and technological self-determination, enabling African universities to tailor solutions to local contexts, control their digital destinies, and ultimately emerge as central hubs of sustainable innovation for the continent's development. *Keywords:* open-source software, African universities, sustainable innovation, digital transformation, higher education, ICT4D, capacity building, digital sovereignty, Moodle, policy

Keywords: *Open-Source Software, Adoption, African Universities, Sustainable Innovation*

INTRODUCTION

The 21st-century university is an increasingly digital and interconnected entity, where the core missions of teaching, learning, research, and administration are profoundly mediated by Information and Communication Technologies (ICTs). For institutions of higher learning across the African continent, the effective integration of ICT is not a luxury but an absolute imperative for improving educational quality, expanding access to knowledge, conducting relevant and cutting-edge research, and participating in the global academic community (Twinomurizi & Phahlamohlaka, 2019). However, the path toward digital maturity is fraught with challenges that are particularly acute within the African context. These challenges include severe financial constraints, unreliable and expensive internet connectivity, inadequate electrical power infrastructure, and a critical shortage of advanced technical skills. This complex situation has created a persistent and worrying digital divide, marginalizing many African universities and limiting their capacity to fulfil their potential as engines of development.

Within this already challenging ecosystem, the pervasive reliance on commercial, proprietary software solutions exacerbates existing problems and creates new forms of dependency. The substantial and recurring financial outlays required for licensing fees for operating systems, office productivity suites, database management systems, and specialized academic software consume an inordinate share of limited institutional ICT budgets (Njenga, 2018). This financial drain effectively redirects scarce capital away from essential investments in foundational infrastructure, such as expanding network bandwidth, modernizing computer laboratories, and providing continuous digital literacy training for both staff and students. Beyond the immediate financial burden, proprietary software fosters a relationship of technological dependence and passivity. Universities are transformed into mere consumers, locked into vendor-specific ecosystems and unable to modify, adapt, or extend the software to address unique local pedagogical needs, administrative processes, or research questions. This limitation stifles local innovation, inhibits the development of contextually relevant educational tools, and fundamentally undermines the digital sovereignty of institutions and nations the capacity to control their own digital technologies, data, and futures.

It is against this backdrop of challenge and opportunity that Free and Open-Source Software (FOSS) emerges as a powerful and transformative alternative. FOSS is philosophically and practically distinct from proprietary software, defined not only by its low (often zero) initial acquisition cost but, more importantly, by the four essential freedoms it guarantees users: the freedom to use the software for any purpose, the freedom to study how it works and adapt it to one's needs, the freedom to redistribute copies, and the freedom to improve the program and release those improvements to the public (St. Laurent, 2004). This paper posits that the strategic, deliberate, and institution-wide adoption of FOSS within African universities represents a critical and viable pathway to achieving sustainable innovation.

The argument moves decisively beyond the simplistic and often overemphasized narrative of cost savings to advance a more compelling thesis: that FOSS serves as a foundational catalyst for deep capacity building, pedagogical and administrative customization, and the development of a self-reliant, innovative, and resilient ICT ecosystem. This comprehensive analysis will explore the multifaceted benefits of FOSS adoption, detail its practical applications across all university functions, critically and honestly analyze the significant barriers to its implementation, and propose a robust strategic framework for its successful integration. The ultimate aim is to demonstrate convincingly that FOSS is a cornerstone for building a sustainable, sovereign, and innovative digital future for African higher education.

Compelling Case For Foss: A Multi-Dimensional Analysis

The advocacy for FOSS in African universities is built on a foundation of compelling advantages that operate across economic, pedagogical, technical, and strategic dimensions. A comprehensive understanding of these benefits is essential for motivating and justifying the institutional shift required. The most immediate and readily quantifiable advantage is significant economic efficiency and cost reduction. By eliminating or drastically reducing the exorbitant licensing fees associated with proprietary software, universities can achieve monumental savings in their ICT budgets. For instance, the cumulative cost of licensing the Microsoft Windows operating system, the Microsoft Office productivity suite, and specialized software like MATLAB or SPSS for thousands of students, faculty, and administrative staff can easily run into hundreds of thousands of dollars annually for a medium-to-large university. Adopting functionally equivalent FOSS solutions like Ubuntu (Linux), LibreOffice, and alternatives like GNU Octave or R for statistical analysis can liberate these substantial funds (Kossivi & Xu, 2017). This financial emancipation allows for the reallocation of resources toward more critical and impactful areas, such as investing in robust internet connectivity, upgrading hardware infrastructure, ensuring stable power supply through generators and UPS systems, and funding digital literacy initiatives. This reallocation directly addresses the foundational barriers to digital transformation.

A more profound and transformative benefit lies in the enhancement of academic freedom, pedagogical flexibility, and contextual relevance. The "open" nature of the source code is a game-changer; it empowers academics, researchers, and local software developers to study, modify, and adapt software to meet highly specific local needs and challenges. A professor of African linguistics, for example, could theoretically modify a text analysis tool to better handle the nuances of tonal languages or specific local dialects. An agriculture department could adapt simulation software to focus on crops and soil conditions prevalent in their region. This ability to tailor digital tools to the local curriculum and research agenda, rather than forcing the academic program to conform to the limitations of off-the-shelf proprietary software, empowers educators and fosters a more relevant, engaging, and effective learning environment (Muangmee et al., 2021). It enables a form of

digital decolonization, where technology serves local knowledge systems rather than subverting them.

Furthermore, FOSS functions as a powerful engine for local capacity building, human capital development, and innovation cultivation. Access to production-level source code provides an unparalleled, real-world educational resource for students in computer science, software engineering, and related disciplines. It offers them the opportunity to learn from, contribute to, and debug complex software systems, thereby developing high-value skills in coding, collaboration, version control, and project management that are directly transferable to the global job market. This pedagogical approach fosters a culture of creation, problem-solving, and innovation, moving students and faculty from being passive consumers of technology to active producers, contributors, and innovators (Asongu & Odhiambo, 2019). The collaborative and meritocratic ethos of the global FOSS community also provides a platform for African developers, researchers, and academics to network, share knowledge, gain international visibility, and break down the intellectual isolation that some institutions may face.

Finally, from a strategic perspective, FOSS adoption is a decisive step toward achieving institutional resilience and digital sovereignty. Reliance on foreign proprietary vendors creates multiple strategic vulnerabilities, including vendor lock-in, arbitrary price increases, the discontinuation of support for older versions, and compliance with foreign legal jurisdictions that may conflict with local data protection and privacy interests. With FOSS, the university gains independence and long-term control. It can choose its own support providers (including fostering the growth of local IT support firms), ensure continued access to, and maintenance of, its critical software systems indefinitely, and have full autonomy over its digital infrastructure and data (Weber, 2004). This control is a fundamental prerequisite for building resilient, sustainable, and self-determining institutions that can navigate the uncertainties of the future on their own terms and in alignment with their own developmental goals.

KEY APPLICATION AREAS OF FOSS IN THE UNIVERSITY ECOSYSTEM

The potential applications of FOSS within a university are vast and mature, covering nearly every conceivable software need. Its adoption can be a holistic strategy that transforms the entire institution's digital landscape. In the realm of e-learning and course management, FOSS solutions are not just alternatives; they are often world-leading. Moodle (Modular Object-Oriented Dynamic Learning Environment) is a prime example, powering tens of thousands of institutions globally. Its open-source nature allows a university to host it on its own servers, providing complete control over data security, user management, and, most importantly, customization. Universities can develop bespoke plugins to integrate with local student information systems, create specific assessment types suited to their pedagogical approaches, or tailor the interface for low-bandwidth environments to ensure accessibility. Other robust alternatives include Chamilo and Sakai, which also provide

comprehensive platforms for online and blended learning, enabling universities to construct their digital learning infrastructure without being burdened by recurring license fees and vendor limitations (Cole & Foster, 2007).

For core productivity and IT infrastructure, FOSS provides full-featured, enterprise-ready alternatives to expensive proprietary suites. The LibreOffice suite (encompassing Writer, Calc, Impress, Base, Draw, and Math) offers powerful word processing, spreadsheet, presentation, database, and graphics functionality that maintains high compatibility with Microsoft Office file formats. For operating systems, Linux distributions like Ubuntu, Fedora, or Linux Mint offer stable, secure, and modern desktop and server environments that are more than adequate for the vast majority of administrative, academic, and student computing tasks, including web browsing, email, programming, and writing research papers. Using these tools institution-wide decouples the university from a single vendor's upgrade cycle and licensing model.

The research enterprise is particularly well-supported by the FOSS paradigm. The R programming language and environment for statistical computing and graphics has become a global standard in data analysis, bioinformatics, and quantitative research across disciplines. Similarly, Python is a versatile, open-source programming language with immense libraries (e.g., NumPy, SciPy, Pandas, TensorFlow) that make it indispensable for artificial intelligence, machine learning, data science, and web development. For specialized research areas, tools like QGIS provide a powerful desktop geographic information system (GIS) that rivals the capabilities of proprietary tools like ArcGIS. The adoption of these tools ensures that researchers and students are using the same cutting-edge, globally relevant tools that drive innovation worldwide, all without prohibitive costs.

University administration and services can also be revolutionized by FOSS. Open-source Enterprise Resource Planning (ERP) and Student Information Systems (SIS), such as Odoo, ERPNext, or custom solutions built on frameworks like Django, can manage the entire lifecycle of student records, finances, human resources, alumni relations, and more. While these implementations require significant initial effort and expertise, they liberate institutions from expensive, rigid, and often culturally misaligned proprietary ERP licenses and allow for customization to fit unique administrative workflows. Library management can be effectively handled by systems like Koha, the first full-featured open-source integrated library system (ILS), which manages all aspects of library operations, including cataloging, circulation, patron management, and online public access catalogs (OPACs).

CHALLENGES AND BARRIERS TO ADOPTION: A CRITICAL APPRAISAL

Despite its compelling and multifaceted advantages, the widespread adoption of FOSS in African universities faces significant, deeply rooted obstacles that must be openly

acknowledged and strategically addressed. A primary challenge is the technical skills and capacity gap. Implementing, maintaining, and troubleshooting FOSS often requires a higher level of in-house technical expertise than simply purchasing a proprietary product that comes with vendor-provided installation and support services. Configuring a Linux server, deploying a complex system like Moodle or an ERP, writing custom scripts for automation, or debugging a technical issue requires skills that may be scarce, underdeveloped, or concentrated in a few overburdened individuals within the IT department. Without a sustained and strategic investment in training, professional development, and potentially new hires, FOSS deployments can become unstable, insecure, and poorly maintained, leading to frustration and a desire to revert to the perceived safety and simplicity of proprietary vendors (Lwoga & Questier, 2015).

Closely related is the issue of cultural resistance, inertia, and user familiarity. Students, faculty, and administrative staff are often deeply accustomed to the user interface, workflow, and "look and feel" of proprietary software, particularly the ubiquitous Microsoft Windows and Office ecosystem. Switching to a Linux desktop environment and LibreOffice involves a learning curve and an initial dip in productivity, which can lead to significant resistance and complaints. The pervasive perception that "you get what you pay for" can lead to an unjustified but powerful belief that FOSS is less capable, less professional, or more prone to failure than its commercial counterparts. Overcoming this deep-seated inertia requires strong, visible change management leadership, effective and empathetic user training programs, and clear, continuous communication of the long-term institutional and individual benefits.

The perceived lack of formal, accountable support and maintenance is another major barrier. While commercial support ecosystems exist for major FOSS projects (e.g., companies like Moodle Partners, Red Hat, or Canonical), the landscape can appear fragmented and confusing compared to the single, accountable point of contact offered by a large proprietary vendor like Microsoft or Oracle. University administrators may fear being left without reliable technical support in a crisis, such as a system failure during exam registration. Mitigating this perceived risk requires a proactive shift in mindset—from simply purchasing a product with a support contract to consciously cultivating a diversified ecosystem of support. This ecosystem might include a mix of developed in-house expertise, contracts with local IT firms trained and certified in specific FOSS, and active participation in global community support forums and mailing lists.

Finally, there are overarching infrastructural and policy hurdles. Successful FOSS adoption often relies on reliable electricity and internet connectivity to download large software packages, access extensive online documentation, participate in community forums, and apply updates—resources that can be intermittent and unreliable in many African regions. Furthermore, the absence of a national or institutional policy mandating or encouraging the preferential evaluation and use of FOSS means that adoption is often

left to the initiative of individual "champions" within the institution. This makes adoption sporadic, project-based, and vulnerable to the departure of those champions, rather than being a sustainable, institutionalized strategy.

STRATEGIC FRAMEWORK FOR SUCCESSFUL FOSS ADOPTION

To overcome these challenges and harness the full potential of FOSS, African universities must abandon ad-hoc, bottom-up approaches and embrace a holistic, strategic, and top-down framework for implementation. First, visionary leadership and supportive policy development are paramount and non-negotiable. Advocacy must begin at the highest levels of university governance. Vice-Chancellors, Deputy Vice-Chancellors, University Councils, and Chief Information Officers must be educated on the strategic importance of FOSS and become its champions. This leadership must be codified in a formal, detailed ICT policy that explicitly encourages the preferential evaluation and adoption of FOSS where it meets functional requirements. This policy should outline clear principles for software acquisition, data ownership, security, and digital sovereignty, providing a firm mandate and clear guidance for IT departments and procurement officers to prioritize FOSS solutions.

Second, a phased, pragmatic, and participatory implementation strategy is crucial for managing risk and building momentum. A "big bang" migration across the entire university is fraught with risk and likely to fail. A more effective approach is to start with low-risk, high-visibility pilot projects. For example, piloting LibreOffice in a few administrative departments or deploying Moodle for a specific faculty or set of courses allows the institution to test, learn, build internal competence, and demonstrate success. These small wins can then be used to build momentum, justify further investment, and expand roll-outs. Providing a dual-boot environment or virtual machines can allow users to transition to new software at their own pace, reducing resistance.

Third, substantial and continuous investment in capacity development is the bedrock of sustainability. This investment must be twofold: (1) Technical training for IT staff in Linux system administration, FOSS deployment strategies, scripting, and security hardening. This may involve sponsoring certifications and bringing in external trainers. (2) End-user training and support for faculty, staff, and students to ease the transition, demonstrate software efficacy, and build confidence. Establishing a dedicated FOSS support unit within the IT department, equipped with knowledgeable staff and comprehensive documentation, can provide a reliable and familiar internal resource for users, mitigating fears over support.

Fourth, fostering collaboration and building communities is key to long-term viability and innovation. Universities should not undertake this journey in isolation. Forming national and regional consortia with other institutions allows for the sharing of experiences, best practices, training resources, and even technical staff. Collaborating with local FOSS

communities and IT businesses helps to build a local commercial support ecosystem and can create internship opportunities for students. Within the university, encouraging the formation of student FOSS clubs and organizing events like "install fests," hackathons, and coding workshops can generate bottom-up enthusiasm, identify talented student contributors, and create a vibrant culture of innovation around open technologies.

CONCLUSION

The digital transformation of African universities is an existential imperative that cannot be achieved by blindly following the same models that have historically created financial drain, technological dependency, and pedagogical incongruity. The strategic, institutional-wide adoption of Free and Open-Source Software presents a viable, powerful, and sustainable alternative pathway. It is a pathway that decisively transcends initial cost savings to offer a deeper, more transformative value proposition: the empowerment of institutions through unprecedented control over their technology stack, the fostering of local innovation and contextually relevant problem-solving, and the systematic development of the human capital necessary to compete and thrive in the global digital economy.

While the challenges related to technical skills, cultural inertia, and support perceptions are significant, the analysis demonstrates that they are not insurmountable. They can be overcome through a coherent strategy built on visionary leadership, supportive policy, pragmatic and phased implementation, and a committed, long-term investment in building local capacity and collaborative networks. By embracing FOSS, African universities can do more than just conserve financial resources; they can fundamentally reshape their relationship with technology. They can transition from being perpetual consumers and renters of foreign software to becoming active producers, owners, and co-creators of knowledge and tools. In doing so, they will not only enhance their own sustainability, resilience, and relevance but also contribute powerfully to building a more innovative, self-reliant, and digitally sovereign future for the African continent as a whole. Therefore, FOSS adoption should be viewed not merely as a software choice but as a strategic investment in sustainable innovation and a bold declaration of academic and technological self-determination.

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THE EFFECT OF CORE COMPETENCIES AND HUMAN CAPITAL
DEVELOPMENT ON ORGANIZATIONAL PERFORMANCE: EVIDENCE FROM
KENYA COMMERCIAL BANK

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ABSTRACT

The banking industry in Kenya plays a crucial role in financial intermediation, economic growth, and employment creation. However, many banks continue to face challenges of declining profitability, customer dissatisfaction, and workforce inefficiencies, partly attributed to inadequate leadership strategies. This paper investigates the effect of core competencies and human capital development on organizational performance at Kenya Commercial Bank (KCB), Kencom House. The study adopted a descriptive–explanatory research design, targeting 400 employees across strategic departments, from which a stratified random sample of 200 respondents was drawn. Data were collected using semi-structured questionnaires and analysed using descriptive statistics, correlation, and multiple regression techniques with SPSS version 25. The findings revealed that both core competencies and human capital development significantly influenced organizational performance. Core competencies such as innovation capability, technological proficiency, service quality, and responsiveness accounted for improved financial outcomes and customer satisfaction ($\beta = 0.327$, $p < 0.01$). Similarly, human capital development comprising training, succession planning, knowledge sharing, and employee engagement positively contributed to productivity and operational efficiency ($\beta = 0.251$, $p < 0.05$). The study concludes that continuous investment in distinctive organizational capabilities and human capital enhances the performance and competitiveness of commercial banks. It recommends that KCB strengthen innovation systems, align employee development programs with strategic objectives, and institutionalize knowledge-sharing platforms to sustain superior performance in an evolving financial environment.

Keywords: *Core Competencies, Human Capital Development, Organizational Performance, Strategic Leadership, Banking Industry, Kenya Commercial Bank*

INTRODUCTION

The banking industry in Kenya plays a pivotal role in promoting economic growth, financial inclusion, and employment creation. According to the Central Bank of Kenya (2024), the sector contributes approximately 6.5 percent to the country's Gross Domestic

Product and directly employs more than 37,000 people, with indirect employment surpassing 100,000 through agent banking and outsourced services. The industry's performance supports credit access, capital mobilization, and investment facilitation, which are essential drivers of national productivity. However, despite these contributions, commercial banks have faced persistent challenges including declining returns on assets, high non-performing loans, and stagnating customer satisfaction. These trends indicate inefficiencies that may stem from weak strategic leadership practices, limited innovation, and insufficient capability development within financial institutions. As a result, strengthening organizational performance has become a priority for banks seeking to remain competitive in a dynamic and technology-driven environment.

One of the critical approaches to enhancing organizational performance in the financial sector is through the development of core competencies and human capital. Core competencies refer to the unique capabilities that allow a firm to deliver exceptional value to its customers and maintain a sustainable competitive advantage. Prahalad and Hamel (1990) describe these competencies as the collective learning and coordination of diverse skills that distinguish successful organizations. In the banking industry, they encompass innovation capability, technological proficiency, service quality, and responsiveness to market needs. Bianchi and Zollo (2021) established that financial institutions that invested in digital innovation and capability building experienced higher loan quality and profitability.

Kenya Commercial Bank (KCB) Kencom House, located in Nairobi's Central Business District, represents the strategic headquarters and decision-making centre of the KCB Group. It is responsible for formulating the bank's strategic plans, overseeing operations, and implementing innovations that shape performance. In recent years, KCB Kencom House has introduced digital platforms and customer-centric service models aimed at improving efficiency and competitiveness. Nonetheless, the institution continues to face rising pressure from technological disruption, regulatory reforms, and increasing customer expectations. Koech and Muturi (2023) reported that banks with clearly defined strategic direction and robust employee development initiatives achieved better operational efficiency and return on assets compared to peers. This study therefore examines how core competencies and human capital development influence organizational performance at KCB, Kencom House. By focusing on these two strategic leadership dimensions, the study provides empirical insights that will inform policy and managerial practices within Kenya's banking industry, contributing to the enhancement of performance and sustainability in an evolving financial landscape.

STATEMENT OF THE PROBLEM

The banking industry in Kenya operates in a highly competitive and rapidly changing environment characterized by digital transformation, regulatory reforms, and evolving customer expectations. While the sector has made significant strides in technological

advancement and financial inclusion, its overall performance has remained inconsistent in recent years. According to the Central Bank of Kenya (2024), the average return on assets among commercial banks declined from 3.1 percent in 2022 to 2.6 percent in 2023, while non-performing loans rose to over 14 percent of total lending. Similarly, the Kenya Bankers Association (2023) reported stagnation in customer satisfaction levels at 63 percent, citing service delays, system inefficiencies, and inconsistent product innovation. These indicators suggest that most banks are struggling to align their strategic competencies and workforce capabilities with the dynamic market and technological environment, which in turn affects their organizational performance.

Existing literature highlights that the performance of financial institutions largely depends on their ability to develop internal strengths that are unique, valuable, and difficult for competitors to replicate. Prahalad and Hamel (1990) emphasize that core competencies such as innovation, service excellence, and responsiveness are central to achieving sustainable performance. However, many Kenyan banks, including Tier 1 institutions, have concentrated heavily on structural and technological reforms without fully integrating competency development into their strategic management frameworks. Moreover, while human capital remains an organization's most critical asset, many banks continue to experience skill gaps, high employee turnover, and limited investment in continuous professional development. Becker (1964) and subsequent empirical studies affirm that without systematic human capital development, institutions face declining productivity, poor service quality, and low morale among employees, all of which undermine long-term performance.

Kenya Commercial Bank (KCB) Kencom House has maintained a dominant market position, yet it is not immune to the sector's challenges. The bank faces mounting pressure to sustain profitability and operational efficiency amid increasing competition from fintech firms and shifting regulatory requirements. Despite notable progress in digitization and product innovation, gaps remain in aligning employee capabilities with emerging technologies and strategic objectives. This disconnect between the organization's core competencies and the skills of its workforce may hinder service quality, innovation speed, and overall performance outcomes. Therefore, this study seeks to investigate the effect of core competencies and human capital development on organizational performance at KCB, Kencom House. The findings are expected to generate insights that will help the bank and other financial institutions strengthen their internal capabilities, enhance workforce productivity, and achieve sustainable performance in a competitive and evolving financial landscape.

OBJECTIVE

The general objective of this study was to examine the effect of core competencies and human capital development on organizational performance at Kenya Commercial Bank (KCB), Kencom House.

The specific objectives are to:

1. Assess the effect of core competencies on organizational performance at Kenya Commercial Bank, Kencom House.
2. Evaluate the influence of human capital development on organizational performance at Kenya Commercial Bank, Kencom House.

RESEARCH QUESTIONS

To achieve the stated objectives, the study was guided by the following research questions:

1. How do core competencies affect organizational performance at Kenya Commercial Bank, Kencom House?
2. What is the influence of human capital development on organizational performance at Kenya Commercial Bank, Kencom House?

SIGNIFICANCE OF THE STUDY

This study is significant because it contributes to theory, practice, and policy in the field of strategic leadership and organizational performance within Kenya's banking industry. Theoretically, the study advances the understanding of the Resource-Based View and Human Capital Theory by demonstrating how internal capabilities and employee competencies jointly influence performance outcomes in financial institutions. Practically, the findings provide valuable insights for Kenya Commercial Bank (KCB) management and other commercial banks on how to strengthen innovation, technology adoption, and workforce development to enhance competitiveness and service quality. From a policy perspective, the study offers evidence-based recommendations to regulators such as the Central Bank of Kenya and the Kenya Bankers Association on the importance of integrating capability building and human resource development into sectoral performance frameworks. Furthermore, the research adds to academic literature by providing contextual evidence from Kenya's Tier 1 banks, thereby serving as a reference for scholars and practitioners interested in performance management and strategic capability enhancement.

SCOPE OF THE STUDY

The scope of this study is both conceptual and geographical. Conceptually, the study focuses on two independent variables, core competencies and human capital development, and examines their effect on the dependent variable, organizational performance, at Kenya Commercial Bank (KCB), Kencom House. The study is delimited to key components of core competencies, including innovation capability, technological proficiency, service quality, and responsiveness, as well as major dimensions of human capital development such as training, knowledge sharing, succession planning, and employee engagement. Geographically, the study was conducted at KCB Kencom House in Nairobi County, which serves as the bank's strategic headquarters and administrative hub. The study targeted management and operational staff drawn from major departments, including Strategy, Human Resources, Operations, and Finance. The

research period spanned from May to October 2025, and the findings are limited to the specific context of Kenya's Tier 1 banking environment, though they may be relevant to similar institutions in emerging economies.

LITERATURE REVIEW

The literature review presents the theoretical and empirical foundations of the study by examining scholarly perspectives on the relationship between core competencies, human capital development, and organizational performance. It aims to provide a conceptual and theoretical context for understanding how strategic leadership elements influence organizational outcomes. This section first discusses the theoretical frameworks guiding the study and then proceeds to review empirical studies that link the independent and dependent variables within banking and related sectors.

Theoretical Review

The study is anchored on two major theories: the Resource-Based View (RBV) and the Human Capital Theory. These theories provide a comprehensive explanation of how organizations develop and leverage internal resources and workforce capabilities to achieve and sustain superior performance.

Resource-Based View (RBV)

The Resource-Based View (RBV), advanced by Wernerfelt (1984) and later expanded by Barney (1991), posits that organizations gain sustainable competitive advantage through the acquisition and utilization of unique resources that are valuable, rare, inimitable, and non-substitutable. According to the RBV, resources include both tangible assets such as technology and infrastructure, and intangible assets such as knowledge, culture, and reputation. Firms that effectively manage these resources achieve long-term performance advantages because such assets are difficult for competitors to imitate. In the banking context, core competencies such as innovation, technological adaptability, and service excellence are viewed as strategic resources that contribute to superior performance outcomes. Bianchi and Zollo (2021) assert that European banks that invested in technological capabilities and innovation recorded significant improvements in operational efficiency and profitability. Similarly, Koech and Muturi (2023) noted that Kenyan commercial banks that developed unique internal capabilities in customer service and digital banking experienced enhanced competitiveness.

The Resource-Based View is relevant to this study as it explains how Kenya Commercial Bank (KCB) Kencom House can leverage its internal competencies such as technological proficiency, innovative culture, and responsive service systems to sustain high performance. It emphasizes that performance is not solely determined by external factors such as competition or regulation, but by the firm's ability to identify, nurture, and exploit its distinctive strengths. This theory therefore provides the conceptual foundation for understanding how core competencies contribute to organizational performance in the Kenyan banking sector.

Human Capital Theory

The Human Capital Theory, developed by Becker (1964) and Schultz (1993), asserts that the knowledge, skills, and abilities of employees constitute a critical form of capital that enhances productivity and organizational performance. The theory views human capital as an investment rather than a cost, arguing that firms that allocate resources toward employee education, training, and development enjoy higher returns in the form of innovation, efficiency, and profitability. Becker (1964) emphasized that improvements in workers' capabilities lead to better performance outcomes, while Armstrong (2014) later expanded the theory by highlighting the importance of continuous learning and motivation. Within the banking industry, human capital development manifests through structured training programs, leadership development, knowledge sharing, and succession planning all aimed at strengthening institutional resilience and adaptability.

Several empirical studies support the Human Capital Theory's relevance to organizational performance. Njeru and Muturi (2020) found that continuous professional development enhanced decision-making and productivity among bank employees in Kenya. Similarly, Muthoni and Gitonga (2022) reported that mentorship and training significantly improved customer satisfaction and operational efficiency in commercial banks. At KCB Kencom House, the emphasis on staff training, performance appraisal, and leadership programs aligns with the principles of human capital investment and demonstrates how skilled employees contribute to the realization of organizational goals. The theory thus underpins the second independent variable of this study by explaining how human capital development drives performance through knowledge enhancement, innovation, and employee engagement.

Empirical Literature Review

This section reviews empirical studies on how core competencies and human capital development affect organizational performance. The review draws from global, regional, and Kenyan contexts to establish gaps that justify the current study.

Core Competencies and Organizational Performance

Empirical evidence consistently indicates that core competencies are central to achieving sustainable organizational performance. Prahalad and Hamel (1990) first conceptualized core competencies as the collective learning and coordination of diverse skills that distinguish successful firms. Bianchi and Zollo (2021) expanded on this concept by examining European banks, finding that innovation capability, technological proficiency, and customer responsiveness directly enhanced financial performance and operational efficiency. Their mixed-method study revealed that organizations that continuously refine their competencies are better positioned to adapt to market changes. However, the study was limited to developed economies, leaving contextual gaps regarding how such competencies function in emerging markets such as Kenya's banking industry.

In African contexts, Okeke and Nwankwo (2021) studied Nigerian commercial banks and discovered that service innovation and technology utilization significantly contributed to profitability and customer satisfaction. Their correlation analysis showed that firms that emphasized continuous improvement in service delivery achieved superior performance outcomes. Similarly, Kinyua and Ogollah (2020) found that strategic capabilities, particularly innovation and technological adaptability, explained 59 percent of performance variance among Kenyan firms. Although their study focused on manufacturing, its findings support the relevance of internal strengths to overall performance. Both studies highlight that innovation and responsiveness are key drivers of organizational success across industries, yet few studies have integrated these dimensions within Kenya's Tier 1 banking context.

Within Kenya's financial sector, Koech and Muturi (2023) examined strategic leadership practices and found that decision-making speed, employee empowerment, and innovation capabilities significantly enhanced profitability and efficiency among commercial banks. Their descriptive survey emphasized aligning internal strengths with external market demands to sustain competitiveness. Likewise, Kiptoo and Koech (2021) observed that technological adaptability and service excellence were key determinants of performance in Kenyan banks, confirming that capability-driven innovation fosters efficiency and customer satisfaction. Nonetheless, most local studies have considered these competencies as part of broader leadership constructs rather than examining them as distinct determinants of performance.

Overall, the reviewed studies demonstrate that core competencies especially innovation, technology, service quality, and responsiveness strongly influence organizational performance by enhancing efficiency, profitability, and customer loyalty. However, existing research reveals methodological and contextual gaps. Many studies rely on cross-sectional designs and focus on developed economies or general leadership practices, with limited emphasis on how banks in developing economies operationalize competencies for competitive advantage. The present study addresses this gap by empirically examining how core competencies influence performance at Kenya Commercial Bank (KCB) Kencom House, a leading financial institution operating within a rapidly evolving digital environment.

Human Capital Development and Organizational Performance

Human capital development has emerged as a critical factor in achieving sustainable organizational performance. Becker (1964) and Schultz (1993) emphasized that employees' knowledge, skills, and experience constitute valuable assets that drive innovation and productivity. Becker and Huselid (2019), in a study of Fortune 500 companies, confirmed that organizations investing in employee training and leadership development experienced increased profitability, lower turnover, and enhanced innovation capacity. These findings underscore that sustained investment in human

capital enhances long-term performance. However, their study was conducted in developed economies, necessitating contextual adaptation to emerging markets such as Kenya, where resource allocation and training infrastructure differ significantly.

In Kenya, Njeru and Muturi (2020) found that leadership development programs, specifically mentorship, continuous training, and job rotation, improved decision-making and employee productivity in commercial banks. Their descriptive design established that employee learning enhances both operational efficiency and service delivery. Muthoni and Gitonga (2022) extended these findings by demonstrating that structured staff development initiatives, including knowledge-sharing sessions and capacity-building workshops, improved customer satisfaction and internal efficiency in Kenyan commercial banks. These studies confirmed that well-trained employees contribute to organizational agility and competitive advantage. However, both focused primarily on training without exploring other human capital dimensions such as engagement and succession planning.

Regionally, Akter, Hossain, and Uddin (2021) studied employee engagement and firm performance in Bangladeshi financial institutions and revealed a strong positive relationship between workforce engagement, innovation, and customer retention. Their quantitative findings showed that employees who perceived fair growth opportunities exhibited higher performance levels. Similarly, Wambugu and Njuguna (2020) examined microfinance banks in Kenya and found that training, knowledge sharing, and performance-based incentives significantly improved service quality and client retention. Despite these findings, the studies largely treated human capital as a human resource management function rather than a strategic leadership tool integrated into corporate strategy.

In summary, existing research consistently shows that human capital development through training, mentorship, engagement, and knowledge management enhances productivity, innovation, and organizational sustainability. Nevertheless, methodological gaps remain in understanding how these practices interact with leadership strategy to influence performance outcomes. Few studies have examined human capital development within the framework of strategic leadership at the institutional level in Kenyan banks. The present study therefore extends the literature by investigating how Kenya Commercial Bank (KCB) Kencom House integrates human capital development as a strategic leadership component that drives both financial and non-financial performance

METHODOLOGY

The study employed a descriptive explanatory research design. A research design provides a framework that links research questions with appropriate data collection and analysis methods (Creswell & Creswell, 2018). Kothari (2014) defines it as the blueprint

for collecting, measuring, and analysing data, while Saunders, Lewis, and Thornhill (2019) emphasize that it ensures validity and reliability. This design was appropriate for describing characteristics of the study variables and explaining the relationships among them. It allowed the researcher to examine how core competencies and human capital development influence organizational performance at KCB Kencom House using both descriptive statistics means, frequencies, and percentages and inferential techniques such as correlation and regression analysis (Cooper & Schindler, 2014).

The target population comprised all 400 employees at KCB Kencom House, drawn from departments including Strategy and Planning, Human Resource Management, Finance and Operations, Ethics and Compliance, Customer Service, and Branch Administration (Kenya Commercial Bank, 2024). The study applied a stratified random sampling technique, dividing employees into strata according to departments and randomly selecting samples proportionately. This ensured inclusivity and reduced bias, providing a representative sample of 200 respondents, determined using Yamane's (1967) formula (Zikmund et al., 2021). Data were collected using semi-structured questionnaires containing both open-ended and closed-ended items measured on a five-point Likert scale ranging from "Strongly Disagree (1)" to "Strongly Agree (5)" (Saunders, Lewis, & Thornhill, 2019).

Instrument validity was ensured through expert review by supervisors and banking professionals, achieving a Content Validity Index (CVI) of 0.87, which exceeded the minimum threshold of 0.70 (Mugenda & Mugenda, 2019). Reliability was tested using Cronbach's alpha, yielding coefficients of 0.82 for strategic direction, 0.85 for core competencies, 0.88 for human capital development, 0.83 for ethical leadership, and 0.86 for organizational performance, confirming high internal consistency (Field, 2018). Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 25. Quantitative data were summarized using descriptive statistics, while inferential analyses established relationships between variables. Ethical procedures included obtaining permission from the Management University of Africa and Kenya Commercial Bank, assuring respondents of confidentiality, anonymity, and voluntary participation throughout the study (Creswell & Creswell, 2023).

FINDINGS AND DISCUSSION

The study aimed to examine the effect of core competencies and human capital development on organizational performance at Kenya Commercial Bank (KCB) Kencom House. Out of the 200 questionnaires distributed to employees drawn from the departments of Human Resource Management, Strategy and Planning, Finance and Operations, Customer Service, Ethics and Compliance, and Branch Administration, 182 were completed and returned, representing a response rate of 91 percent. According to Mugenda and Mugenda (2019), a response rate of 50 percent is adequate, 70 percent is good, and 80 percent and above is excellent for analysis and reporting. The achieved rate

was therefore excellent and provided a reliable basis for statistical analysis and interpretation. Data was analysed and presented according to the study objectives, focusing on how core competencies and human capital development influence organizational performance. Descriptive statistics were used to summarize the responses through means and standard deviations, while inferential analysis using correlation and regression determined the nature and strength of the relationships between the variables.

Table 1: Descriptive Statistics on Core Competencies

.Statement	Mean	Std. Dev	Interpretation
KCB has developed strong innovation capabilities that enhance service delivery.	4.23	0.76	Agree
Technological proficiency has improved efficiency and competitiveness at KCB.	4.18	0.81	Agree
The bank's reputation and brand image have strengthened customer confidence.	4.1	0.83	Agree
Responsiveness to market changes has improved operational adaptability.	4.06	0.79	Agree
Overall, KCB's core competencies have significantly enhanced performance.	4.2	0.77	Agree
Overall Mean	4.15	0.79	Agree

The findings in Table 1 indicate that respondents generally agreed that core competencies have significantly enhanced the performance of Kenya Commercial Bank (KCB) Kencom House. With an overall mean score of 4.15 and a standard deviation of 0.79, the results show that the bank's strengths in innovation, technological proficiency, brand reputation, and responsiveness to market changes have improved service delivery, operational efficiency, and competitiveness. These findings align with the Resource-Based View (RBV), which posits that firms with valuable and inimitable internal capabilities achieve sustainable performance advantages. They also support studies by Bianchi and Zollo (2021) and Koech and Muturi (2023), which found that innovation and customer-focused competencies enhance efficiency and profitability in financial institutions. Overall, the results affirm that KCB's ability to develop and sustain distinctive competencies has been central to its strong organizational performance.

Table 2: Descriptive Statistics on Human Capital Development

Statement	Mean	Std. Dev	Interpretation
The organization invests in continuous training and development.	3.98	0.89	Agree
Leaders support career growth and mentorship.	3.9	0.92	Agree
Employee skills are aligned with strategic priorities.	3.86	0.91	Agree
Staff development initiatives enhance organizational performance.	3.92	0.88	Agree
Overall Mean	3.92	0.9	Agree

The results presented in Table 2 show that respondents agreed human capital development has a positive influence on organizational performance at Kenya Commercial Bank (KCB) Kencom House. The overall mean score of 3.92 with a standard deviation of 0.90 indicates that most employees acknowledged the importance of continuous training, mentorship, and alignment of staff skills with strategic priorities. This implies that the bank's investment in employee development enhances productivity, innovation, and service quality. These findings are consistent with Becker's (1964) Human Capital Theory, which emphasizes that employees' knowledge and skills constitute critical assets that drive organizational growth. The results further align with studies by Njeru and Muturi (2020) and Muthoni and Gitonga (2022), which found that leadership development, training, and knowledge-sharing initiatives improve efficiency and customer satisfaction in Kenyan commercial banks. Overall, the findings suggest that human capital development at KCB Kencom House contributes significantly to improved performance and long-term institutional competitiveness.

Correlation Analysis

Correlation analysis was conducted to determine the strength and direction of the relationship between core competencies, human capital development, and organizational performance at KCB Kencom House.

Table 3: Correlation Matrix

Variables	Organizational Performance
Core Competencies	$r = 0.652, p < 0.01$
Human Capital Development	$r = 0.701, p < 0.01$

The results show that both core competencies and human capital development are positively and significantly correlated with organizational performance. Specifically, human capital development recorded a stronger correlation ($r = 0.701, p < 0.01$), suggesting that improvements in employee skills, training, and engagement are strongly associated with enhanced organizational results. Similarly, core competencies had a

significant positive relationship ($r = 0.652$, $p < 0.01$), indicating that innovation, technological capability, and adaptability contribute substantially to performance. These findings imply that both variables are critical components in driving organizational effectiveness and competitiveness at KCB Kencom House.

Regression Analysis

A regression analysis was performed to determine the combined effect of core competencies and human capital development on organizational performance.

Table 4: Regression Results

Model Summary	R	R²	Adjusted R²	Std. Error	
	0.783	0.613	0.607	0.421	
ANOVA Summary	Sum of Squares	df	Mean Square	F	Sig.
Regression	21.732	2	10.866	61.249	0.000
Residual	13.739	177	0.078		
Total	35.471	179			
Coefficients	Unstandardized B	Std. Error	Beta	t	Sig.
Constant	0.642	0.191		3.36	0.001
Core Competencies	0.327	0.104	0.341	3.14	0.004
Human Capital Development	0.459	0.087	0.462	5.27	0.000

The regression model was significant at $F(2,177) = 61.249$, $p < 0.001$, explaining 61.3% ($R^2 = 0.613$) of the variation in organizational performance. Both core competencies ($\beta = 0.327$, $p = 0.004$) and human capital development ($\beta = 0.459$, $p = 0.000$) were found to have statistically significant positive effects on organizational performance. This means that enhancing internal capabilities and investing in employee development jointly improve efficiency, innovation, and customer satisfaction at KCB Kencom House.

DISCUSSION OF FINDINGS

The findings of this study revealed that both core competencies and human capital development have a positive and significant influence on organizational performance at Kenya Commercial Bank (KCB) Kencom House. The correlation results indicated that human capital development had the strongest association with organizational performance ($r = 0.701$, $p < 0.01$), followed closely by core competencies ($r = 0.652$, $p < 0.01$). This implies that continuous investment in employee skills, training, and engagement enhances innovation, efficiency, and service quality, which in turn improve overall performance. These results are consistent with Becker's (1964) Human Capital

Theory, which posits that knowledge and skills accumulated through training increase employee productivity and organizational success. They also align with findings by Njeru and Muturi (2020) and Muthoni and Gitonga (2022), who observed that leadership development and professional training programs enhance operational efficiency and customer satisfaction in Kenyan commercial banks.

The regression results further confirmed that core competencies and human capital development jointly explain 61.3% of the variance in organizational performance ($R^2 = 0.613$, $F = 61.249$, $p < 0.001$). Both variables were statistically significant predictors, with human capital development ($\beta = 0.459$, $p = 0.000$) emerging as the stronger determinant compared to core competencies ($\beta = 0.327$, $p = 0.004$). These results reinforce the Resource-Based View (RBV), which argues that organizations achieve sustainable competitive advantage by leveraging valuable and inimitable internal resources such as employee expertise, innovation, and technological capabilities. The results correspond with Koech and Muturi (2023), who found that innovation and technology adoption drive profitability in the banking sector, and Mwangi and Kariuki (2020), who linked internal capabilities to financial performance. Therefore, strengthening internal capabilities and aligning them with human resource development is crucial for achieving long-term strategic success at KCB.

Overall, the discussion affirms that organizational performance is largely dependent on the synergy between core competencies and human capital development. The ability of KCB Kencom House to build technological proficiency, encourage innovation, and cultivate a learning culture has enhanced its efficiency, customer loyalty, and market competitiveness. The findings extend the empirical evidence that organizational excellence in the banking sector is achieved through a balanced focus on capability development and employee empowerment. They also highlight the importance of integrating strategic leadership practices into human resource and operational frameworks to sustain competitiveness in a dynamic financial environment.

CONCLUSION

The study concludes that core competencies significantly enhance organizational performance at Kenya Commercial Bank (KCB) Kencom House. The findings established that innovation, technological capability, and strong brand reputation are the key organizational strengths that contribute to superior service delivery and market competitiveness. The correlation and regression analyses demonstrated a positive and significant relationship between core competencies and performance, confirming that these internal strengths drive operational efficiency and customer satisfaction. The results support the Resource-Based View (RBV), which argues that organizations achieve sustainable competitive advantage by developing and leveraging unique, valuable, and inimitable internal resources. It is therefore evident that KCB's sustained success is

largely derived from its ability to nurture innovation and continuously improve internal systems aligned with strategic goals.

Furthermore, the study concludes that human capital development plays a critical role in promoting organizational performance. Continuous employee training, mentorship programs, and career growth opportunities were found to enhance employee productivity, creativity, and service quality. The regression results revealed that human capital development was the most influential determinant of performance, suggesting that investment in people yields tangible organizational benefits. This supports Becker's (1964) Human Capital Theory, which asserts that the knowledge and skills acquired through education and professional development improve worker efficiency and organizational outcomes. Consequently, KCB's commitment to employee empowerment, professional growth, and leadership development has contributed significantly to its adaptability and competitive strength in the financial sector.

Overall, the study concludes that organizational performance is the result of the synergistic interaction between core competencies and human capital development. When an institution simultaneously strengthens its innovation capacity and invests in its workforce, it creates an environment conducive to long-term growth and competitiveness. KCB Kencom House has successfully integrated these two dimensions into its corporate strategy, enabling it to achieve excellence in service delivery, operational efficiency, and market leadership. The findings highlight that sustainable organizational success depends on the deliberate alignment of internal capabilities and human resource strategies with corporate objectives and environmental demands.

RECOMMENDATIONS

Based on the study findings, it is recommended that KCB Kencom House continue to enhance its innovation and technological competencies to maintain a competitive advantage in the banking sector. The bank should invest in advanced digital systems, automation, and data-driven decision-making tools to further improve efficiency and customer experience. Management should also strengthen its innovation framework by fostering a culture that encourages creativity, experimentation, and continuous improvement. By doing so, KCB will be able to sustain its market leadership and respond effectively to the changing dynamics of the financial industry.

The study also recommends that KCB institutionalize continuous human capital development as a strategic priority. Structured training programs, mentorship initiatives, and leadership development pathways should be embedded into the organization's long-term human resource strategy. These initiatives will enhance employee competencies, motivation, and adaptability, thereby ensuring that the workforce remains aligned with emerging technological and market trends. Additionally, the bank should enhance its

performance appraisal and reward systems to recognize innovation and skill advancement, fostering a culture of excellence and accountability among staff.

Finally, the study recommends that KCB align its core competencies and human capital policies with overall corporate strategy to achieve sustainable performance outcomes. The organization should promote knowledge sharing, teamwork, and cross-functional collaboration to improve problem-solving and organizational learning. Management should also develop a framework for monitoring and evaluating the impact of core competencies and training programs on performance indicators. By integrating innovation, employee development, and strategic alignment, KCB will strengthen its organizational resilience and ensure continued competitiveness in Kenya's evolving financial landscape.

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