THE NEXUS BETWEEN DIGITAL COMPETITIVENESS AND FOREIGN DIRECT INVESTMENT INFLOWS IN EAST AFRICA COMMUNITY COUNTRIES

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Declaration

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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ABSTRACT

Empirical studies consistently indicate a positive correlation between Foreign Direct Investment and economic growth, particularly within developing nations. Nonetheless, the extent of FDI inflows is significantly shaped by a range of country-specific determinants, including the prevailing digital environment. Recent data reveal that although FDI inflows have risen in parts of Asia as well as Northern and Southern Africa, Eastern Africa has experienced a decline in such investments in recent years. In light of these declining FDI trends in Eastern Africa, and the critical importance of enhancing the region's attractiveness to foreign investors to foster sustainable development, this study investigates the nexus between digital competitiveness and FDI inflows. Specifically, the research focuses on the dimensions of digital competitiveness: technology, knowledge, and future readiness. The study is theoretically underpinned by the Eclectic Paradigm and the New Growth Theory. Adopting a positivist research philosophy, the study employed a quantitative methodology to analyse the relationships among the selected variables. Using panel data from eight East African countries Kenya, Tanzania, Rwanda, Burundi, South Sudan, DRC, Uganda, and Somalia over the period 1990 to 2022, the study utilizes panel regression techniques to examine the relationship between digital competitiveness and FDI inflows. The study finds that strong digital knowledge, driven by education and research, significantly boosts FDI inflows in EAC countries, while digital technology use has a smaller impact. Additionally, improving regulatory quality can enhance investment attractiveness. Future digital readiness, supported by human capital and innovation, emerges as a key factor in increasing FDI in the region. Based on these findings, the study recommends that EAC member states strengthen their research and innovation ecosystems through a regional framework and a dedicated EAC Research and Innovation Fund. It also advocates for harmonized intellectual property protection laws and greater mobility for researchers. Furthermore, investment in regional digital infrastructure such as cross-border broadband connectivity and harmonized digital standards will be critical to reducing access gaps. Enhancing digital skills through targeted technical and vocational training, integrating digital literacy into education systems, and standardizing digital certifications are also essential. Reducing the cost and complexity of doing business, particularly through digital platforms and regionally aligned policies, will further attract FDI. Regional incentive schemes for digital startups can stimulate innovation and entrepreneurship. While EAC member states vary in their digital readiness levels, coordinated regional action offers a pathway to shared growth. By investing in research and human capital, improving infrastructure, aligning policies, and fostering a conducive business environment, the EAC can become a digitally integrated, future-ready bloc that is more attractive to foreign investors and poised for sustainable development

Keywords: Digital Competitiveness, Foreign Direct Investment

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ABBREVIATIONS AND ACRONYMS

AI: Artificial Intelligent

DECA: Digital Economy Country Assessment

DESI: Digital Economy and Society Index

EAC: East African Community

EA-RDIP: East Africa Regional Digital Integration Project

EGDI: E-Government Development Index

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

IDI: ICT Development Index

IMD: International Institute of Management Development

ITU: International Telecommunication Union

NRI: Networked Readiness Index

OECD: Organisation for Economic Cooperation and Development

SOP: Series of Projects

UNCTAD: United Nations Conference on Trade and Development

WDI: World Development Index

WGI: World Governance Indicators

DEFINITION OF TERMS

Term	Operational Definition as used in this study
Foreign direct investment	Cross-border investment in which an investor from a foreign economy establishes a significant degree of control and lasting interest in an enterprise in another host economy (OECD, 2023)
Digital competitiveness	An economy's ability to embrace and utilize digital technologies drives the transformation of government operations, business strategies, and society as a whole (IMD 2017).
Technology	Focuses on infrastructure, regulations, and capital investments required for technology adoption (IMD 2017).
Knowledge	The capability to generate and understand new technologies through talent development, training, education, and scientific concentration (IMD 2017).
Future Readiness	Assesses how adaptive economies are regarding business agility, IT integration, and societal attitudes towards technology.

DEDICATION

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Foreign Direct Investment (FDI) is a key driver of global economic growth and development, as it fosters capital inflows, job creation, and technology transfer. According to Agyapong and Bedjabeng(2019), FDI is defined as an investment made by an entity from one country into another to establish a long-term interest in the recipient country's economy. The Organisation for Economic Cooperation and Development (OECD) further defines FDI as an investment in which a foreign investor gains considerable control and a long-term stake in a business within the host economy. Despite the recognized benefits of FDI, global FDI flows have been volatile in recent years. Azémar & Giroud (2023) report a 2% decline in global FDI from $1.35 trillion in 2022 to $1.33 trillion in 2023, driven by investor uncertainty and reduced financial flows, particularly in developed economies. In contrast, Europe saw a notable rebound, with FDI inflows rising from -$106 billion in 2022 to $16 billion in 2023, while inflows to North America and most developed economies declined. Meanwhile, FDI inflows to developing economies fell by 7%, reflecting challenges such as geopolitical tensions and financial sector instability (UNCTAD, 2024).

In Africa,(Table 1) FDI trends have been mixed, with the region experiencing a 44% drop in FDI to $45 billion in 2022, primarily due to a one-time transaction in South Africa. Excluding this anomaly, FDI would have risen by 7%. North Africa saw a 58% increase, while Eastern Africa's FDI inflows slightly decreased by 15.4%. Despite the decline, greenfield project announcements in Africa almost quadrupled to $195 billion, driven mainly by the energy, gas, construction, and extractive industries (UNCTAD, 2024). These statistics highlight the persistent challenges and regional disparities affecting FDI flows into Africa, including East Africa.

Previous studies on FDI inflows in East Africa have predominantly focused on institutional quality as a determinant. For instance, Musili(2023.) examined how factors such as political stability, government effectiveness, regulatory quality, control of corruption, rule of law, and voice and accountability affect FDI inflows, concluding that strong institutional quality positively influences investment. However, while Musili's study highlights the significance of good governance, it

overlooks the impact of digital competitiveness on attracting FDI. Similarly, Götz (2020) explored the relationship between digital competitiveness and FDI in Poland, finding that FDI fosters innovation and strengthens digital infrastructure. However, the study leaves a gap in understanding the causality between digital competitiveness and FDI, particularly in developing regions like East Africa. Additionally, Satyanand (2021) investigated the relationship between digital economy development and FDI in the Asia-Pacific region, demonstrating that robust digital infrastructure attracts more FDI. Nonetheless, the study primarily focuses on developed economies, leaving disparities in digital readiness between developed and developing economies underexplored. Similarly, Joubert et al., (2023) highlighted disparities in digital infrastructure affecting economic potential in African nations, yet more studies are needed specifically on East Africa's big data readiness. These gaps underscore the need for a nuanced investigation into the relationship between digital competitiveness and FDI inflows in East African Community (EAC) countries.

In this context, digital knowledge**,** technology utilization, and future readiness for digital transformation have emerged as critical variables in shaping investment patterns. Digital knowledge refers to a country's intellectual capacity, innovation systems, and human capital often captured through indicators like research output, education expenditure, and R&D activity. Digital technology utilization relates to how well a country deploys and integrates digital tools such as mobile communications, internet services, and ICT infrastructure to support both public and private sector activities. Future readiness, meanwhile, speaks to a country's preparedness to adapt to ongoing digital disruption. This includes factors such as internet penetration, business environment efficiency, and digital literacy.

This study seeks to fill these gaps by examining the nexus between digital competitiveness and FDI inflows in EAC countries. Unlike previous studies that have concentrated on governance, institutional quality, or developed economies, this study will assess how digital transformation influences FDI inflows in the context of East Africa. By focusing on digital competitiveness, the study aims to offer contemporary insights that can guide policymakers in formulating strategies to enhance the region's attractiveness to foreign investors.

Table 1. 1 FDI Trend in Africa

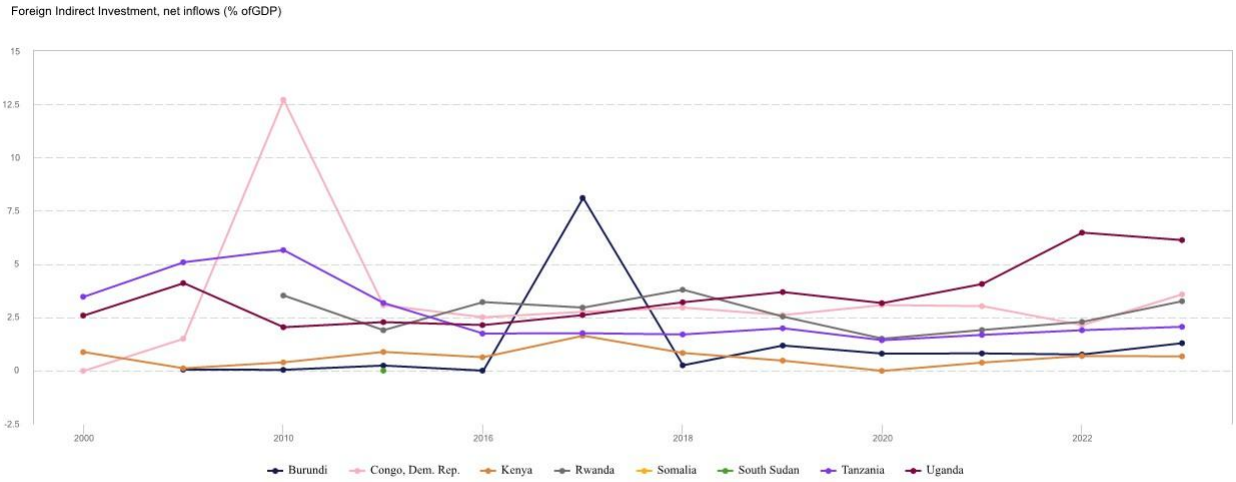
REGION	2017	2018	2019	2020	2021	2022	Growth rate%
Africa	40,358	44,171	45,962	39,195	79,583	44,929	-43.5
Northern Africa	13,273	15,346	13,782	9,783	9441	14917	58
Eastern Africa	12,977	12,244	11,182	10,355	14039	11880	-15.4
Central Africa	1,192	2,515	4,404	7,189	17,24	-548	-131.8
Southern Africa	2,535	6,021	5,205	3,011	41432	10225	-75.3
Western Africa	10,381	8,044	11,389	8,857	12947	8454	-34.7

1.1.1 FDI and the East African Community

FDI has substantially driven economic development in the East African Community (EAC), an intergovernmental organisation comprising eight-member states, including Burundi, Kenya, Rwanda, South Sudan, Tanzania, Uganda, the Democratic Republic of Congo and Somalia. To attract FDI, the EAC has implemented several policies and measures to enhance the region's investment climate. These initiatives include harmonising investment policies and regulations across member states, establishing a centralised, one-stop investment centre, and creating special economic zones offering incentives to potential investors (Agyapong & Bedjabeng, 2020). Moreover, the region has made significant strides in digital transformation, investing in digital infrastructure and initiatives geared towards leveraging technology for economic growth. The East African Community (EAC) has advanced trade facilitation through the Single Customs Territory (SCT) by implementing a centralised Customs and Trade data exchange platform (EAC Council,2022).

Additionally, the EAC is advancing technology-driven initiatives to facilitate cargo movement, including drive-through scanners, the expansion of Electronic Cargo Tracking Systems (ECTS) to Burundi and South Sudan, the sharing of cargo scanner images, and the implementation of Smart Gates at borders and ports. Digitisation efforts include an e-tariff toolkit, electronic Duty Remission administration, and digital Rules of Origin certificates to boost trade facilitation and transparency. The region has undertaken key measures to promote digital integration. First, the One Network Area (ONA) introduced capped rates on cross-border voice traffic and eliminated mobile roaming charges among member states. Second, the July 2022 e-Commerce Strategy aims to enhance growth capacities, improve legal and regulatory frameworks, and increase trust in digital trade. Lastly, the East Africa Regional Digital Integration Project (EA-RDIP), structured as a Series of Projects (SOPs), begins with Phase I focusing on regional connectivity to address significant infrastructure gaps while laying the groundwork for subsequent SOPs. Despite growing interest in digitalization and its impact on economic growth, research on how digital competitiveness shapes FDI inflows in EAC countries remains limited. In the EAC context, investigating the effects of digital competitiveness on FDI inflows is particularly insightful due to the significant variations in digital development among member states (EAC Council,2022).

Figure 1. 1Foreign Direct Investment inflows in EAC



Series : Foreign direct investment, net inflows (% of GDP)
Source: World Development Indicators
Created on: 03/18/2025

Despite these efforts, the EAC has encountered challenges in attracting substantial FDI compared to other regional blocs. Musili, (2023) highlighted that despite sustained economic growth and policy reforms, FDI inflows in East Africa have decreased in recent years prompting the countries to prioritize the importance of increasing the attractiveness to ensure sustainable development in the region. He highlighted that institutional factors have a positive and significant effect on the FDI inflows. Understanding the concept of digital competitiveness is crucial in assessing its potential impact on FDI inflows. Bacca-Acosta et al. (2023) define digital competitiveness as a country's ability to utilize digital technologies, policies and infrastructure to enhance its economic performance and competitiveness globally. Despite sustained economic growth and policy reforms, FDI inflows in East Africa have decreased in recent years. Countries need to prioritize the importance of increasing the attractiveness to ensure sustainable development in the region.

1.1.2 Digital Competitiveness and FDI

Digital competitiveness refers to the ability of an economy to embrace and experiment with digital technologies that can transform corporate models, government procedures, and society at large (Laitsou et al., 2020). It is a broad and multifaceted concept within the context of overall competitiveness, emphasizing the factors that drive digital transformation. Digital readiness, a key aspect of digital competitiveness, measures how well an economy and its people are prepared for

digital change, including the adoption and implementation of new technologies (Stankovic et al., 2021). The East African Community (EAC) is becoming increasingly integrated into the Fourth Industrial Revolution, reshaping the global economic landscape through digital advancement.

Various approaches have been developed to measure digital competitiveness, which is crucial for evaluating the progress of countries in their digital transformation journey. The European Commission's Digital Economy and Society Index (DESI) tracks digital performance within EU member states, while the World Economic Forum launched the Networked Readiness Index (NRI) in 2019 to assess how well nations use information and communication technologies (ICT) to boost competitiveness, innovation, and societal well-being (NRI, 2019). Additionally, the Digital Economy Country Assessment (DECA), initiated in 2017, examines the digital impact, readiness, and usage of a country (Ashmarina et al., 2020) Other indices include the E-Government Development Index (EGDI) and the United Nations' ICT Development Index (IDI), which assess various facets of digital readiness and economic transformation.

The World Digital Competitiveness Center utilizes the digital competitiveness ranking to evaluate the ability and preparedness of countries to embrace digital technologies for economic and social transformation (World Competitive Center, 2024). Key digital competitiveness factors include technology, knowledge, and future readiness. Among 67 global economies, Singapore, Switzerland, and Denmark were ranked as the most digitally competitive countries in the 2024 IMD World Digital Competitiveness ranking, while the United States experienced a significant decline. Economies demonstrating strong digital competitiveness exhibit robust enforcement of intellectual property (IP) rights, a high number of high-tech patent grants, and the effective utilization of e-governance.

In the context of the EAC (table 1.2), digital competitiveness and FDI inflows vary significantly. Kenya stands out as a regional leader, with a strong ICT infrastructure, widespread adoption of mobile money solutions (e.g., M-Pesa), and supportive government policies that attract considerable FDI in technology and digital services. For instance, Kenya's FDI inflows increased from $1.1 billion in 2021 to $1.3 billion in 2022, driven by investments in digital financial services and ICT (UNCTAD, 2024). Rwanda has also made substantial progress through government-led innovation initiatives and expanding digital infrastructure, attracting rising levels of digital FDI,

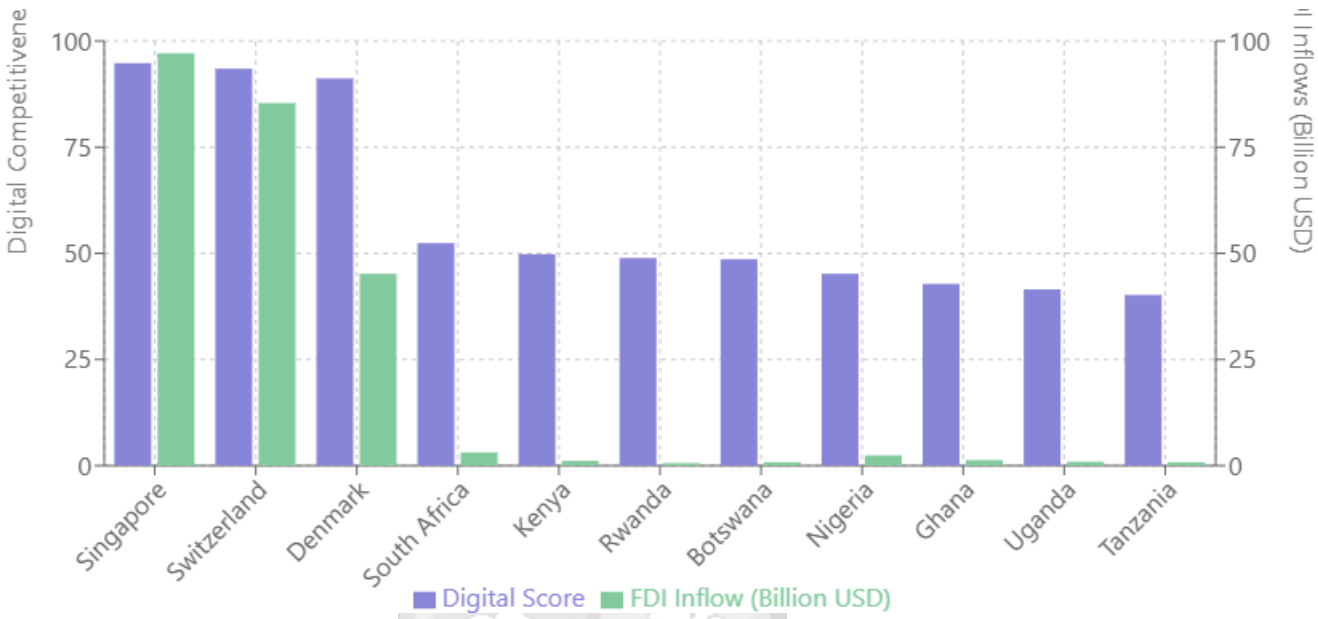
particularly in fintech and IT-enabled services, with FDI inflows reaching $470 million in 2022 (UNCTAD, 2024).

However, Tanzania and Uganda display moderate progress, gradually improving broadband connectivity and promoting private-sector engagement. Tanzania recorded FDI inflows of $922 million in 2022, while Uganda attracted around $1 billion, primarily in the extractive and telecom sectors (UNCTAD, 2024). Conversely, countries like Burundi, Somalia, and South Sudan face challenges including inadequate digital infrastructure, low internet penetration rates, and political instability, limiting both digital competitiveness and FDI appeal. Burundi's FDI inflows remained minimal at approximately $7 million in 2022, while South Sudan recorded negligible investment.

Despite these variations, the growing prevalence of mobile usage and e-commerce throughout the region signals the potential for digital transformation and future FDI growth. Nevertheless, the relationship between digital competitiveness and FDI inflows in East Africa remains underexplored. While existing data indicates disparities in digital readiness and varying FDI trends, empirical evidence on the direct impact of digital competitiveness on FDI within the EAC context is limited. Furthermore, there is insufficient research to determine which digital competitiveness factors—such as knowledge, technology, or future readiness—most significantly influence FDI inflows in the region.

There is a clear need for region-specific analysis to understand how digital readiness, ICT adoption, and future preparedness influence FDI patterns in East Africa. Identifying the specific digital factors that most significantly affect investment decisions and understanding the role of regional disparities in digital competitiveness can guide strategic policy-making and investment planning. By addressing these research gaps, this study aims to offer insights into how digital competitiveness influences FDI attraction in East Africa, thereby informing policymakers and stakeholders on enhancing digital transformation and investment prospects.

Figure 1. 2Digital competitiveness vs FDI inflows



1.2 Statement of the Problem

FDI inflows play a pivotal role in stimulating economic growth, enhancing technology transfer, and creating employment opportunities. According to UNCTAD (2024), global FDI reached approximately USD 1.4 trillion—an 11% decline due to global economic uncertainties. Over 60% of these inflows remain concentrated in developed economies with high levels of digital advancement, while many emerging and developing regions, including the EAC, continue to experience modest FDI inflows. Simultaneously, global digital competitiveness rankings such as the IMD World Digital Competitiveness Ranking and the World Economic Forum's Network Readiness Index highlight persistent gaps in internet connectivity, digital infrastructure quality, and technological readiness. These digital divides are especially pronounced in regional blocs like the EAC, where digital transformation is underway but uneven across member states.

While it is increasingly recognized that a nation's digital ecosystem including its technological capacity, knowledge base, and readiness for future innovation can influence investor decisions, existing empirical research has largely focused on macroeconomic determinants such as market

size, openness, and institutional quality. The role of digital competitiveness in attracting FDI remains underexplored, especially in regional contexts like the EAC, where digital disparities coexist with strong policy ambitions for regional integration and economic modernization.

EAC member states have implemented various strategies to improve their digital infrastructure and investment climate. Yet, their success in attracting sustained and transformative FDI has been uneven. While Kenya and Rwanda have made significant advancements in digital public services and innovation ecosystems, countries like Burundi and South Sudan continue to face infrastructure and governance challenges. This variation presents a compelling case for a regionally grounded analysis of how digital competitiveness affects FDI flows within the EAC.

For example, Laitsou et al., (2020) found that low digitization levels hindered economic development in Greece, with barriers on both the supply and demand sides. Comparable dynamics may exist in EAC countries, where digital demand by businesses and the capacity of institutions to support digital growth differ substantially. Moreover, while Apostu et al., (2023) identified a causal relationship between competitiveness and FDI in Romania, such findings may not be directly transferable to African regional blocs due to differing institutional, infrastructural, and economic contexts.

Therefore, there remains a critical knowledge gap on how digital competitiveness specifically affects FDI inflows in the EAC region. The region's unique composition characterized by heterogeneity in digital maturity, regulatory frameworks, and development priorities necessitates a focused empirical investigation. This study sought to examine the influence of digital competitiveness factors including technology, knowledge, and future-readiness on FDI inflows across EAC countries, while controlling for key macroeconomic variables such as exchange rate, GDP growth and population. The findings aim to provide region-specific insights for policymakers and business leaders seeking to attract and retain FDI in an increasingly digital global economy

1.3 Research Objectives

1.3.1 General Objective

The main aim of the research was to evaluate the effect of digital competitiveness factors on foreign direct investment inflows in the East African Community member states.

1.3.2 Specific Objectives

1. To assess the effect of digital knowledge levels on FDI inflows in select EAC member countries
2. To investigate the effect of digital technology utilization on FDI inflows in EAC member countries
3. To analyze the effect of a country's future readiness for digital transformation on its ability to attract FDI inflows within the EAC countries

1.4 Research Questions

The study answered the following questions:

1. Does digital knowledge level affect FDI inflows into the East African community member countries?
2. Does digital technology utilization influence the FDI inflow in the East African Community members countries?
3. Does a country's future readiness for digital transformation affect its ability to attract FDI inflow in the EAC member countries?

1.5 Scope of the Study

The study utilized panel data from 1990 to 2022, covering countries in the EAC: Kenya, Uganda, Tanzania, Rwanda, the Democratic Republic of Congo, South Sudan, Somalia, and Burundi. It examined digital competitiveness measured through technology, knowledge, and future readiness as the independent variables, and FDI inflows as the dependent variable. The study was guided by the eclectic paradigm and new growth theory to explain investor behavior in the global market.

1.6 Significance of the Study

The findings of this study provide valuable insights for policymakers in East Africa by identifying key areas for enhancing digital competitiveness. These include targeted investments in digital infrastructure, the development of education and training programs to improve digital skills, and

the creation of supportive policies and regulatory frameworks. Such measures are essential as digital technologies increasingly shape economic development and global competitiveness.

The study contributes to a deeper understanding of digital competitiveness within the East African context, highlighting how technological readiness, knowledge, and future preparedness influence FDI inflows. Improved digital competitiveness has the potential to attract higher levels of FDI, which can, in turn, stimulate economic growth, generate employment, and foster innovation across the region.

Furthermore, the study reveals variations in digital competitiveness and FDI inflows among EAC member states. This comparative perspective helps identify best practices and potential areas for regional collaboration, promoting more balanced and inclusive development. Countries that successfully adopt and integrate digital technologies can gain a competitive edge in attracting global investment compared to those with less developed digital ecosystems.

Finally, this research adds to the academic literature on the intersection of digitalization and FDI. It provides a foundation for future empirical studies and comparative analyses across different regions, supporting ongoing efforts to understand the economic impacts of digital transformation in developing economies

1.7 Organization of the study

This study explored the relationship between digital competitiveness and FDI in the EAC. It began by introducing the key concepts, outlining the context of FDI inflows in the region, and highlighting the emerging role of digital competitiveness alongside traditional factors like institutional quality. The problem statement, research objectives, and hypotheses were then presented, followed by the study's scope and significance. A review of relevant literature covered theoretical foundations, empirical findings, research gaps, and the conceptual framework linking the variables. The methodology chapter detailed the research design, data sources, and analytical approach, using panel data from 1990 to 2022 across EAC countries. The findings revealed key insights into how digital technology, digital knowledge, and future readiness influence FDI inflows. The final chapter discussed these results in relation to the literature, presented

conclusions, and offered policy recommendations to enhance digital competitiveness as a means of attracting FDI to the region.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter critically reviews existing literature on FDI and digital competitiveness within the EAC. It examines both theoretical perspectives and empirical findings on how digital capabilities influence FDI inflows, while also identifying gaps in current research. The chapter further outlines the conceptual framework and the operational definitions of key variables guiding the study.

2.2 Theoretical Review

The theoretical framework for this study is based on the Eclectic Paradigm Theory and the New Growth Theory. These theories offer complementary insights into the relationship between digital competitiveness and FDI inflows in EAC countries. The Eclectic Paradigm Theory explores the factors influencing foreign investments, such as ownership, location, and internalization advantages, while the New Growth Theory highlights the importance of human capital, knowledge transfer, and technological innovation in fostering long-term economic growth and competitiveness. This section justifies the choice of these theories, discussing their key proponents, core arguments, strengths, weaknesses, and relevance to the research.

2.2.1 Eclectic Paradigm Theory

The Eclectic Paradigm Theory, also known as the OLI framework, was developed by John Dunning in the late 1970s to explain firms' decisions regarding FDI (Dunning, 2015). The theory integrates three key determinants: ownership advantages (O), location advantages (L), and internalization advantages (I). Ownership advantages refer to firm-specific resources such as technology, brand reputation, and managerial expertise that give firms a competitive edge in foreign markets (Al-Matari & Al_arussi, 2016). Location advantages encompass factors such as natural resources, infrastructure, regulatory policies, and labour market conditions that influence firms' investment decisions in a particular country (Rugman, 2010). Internalization advantages refer to the benefits of establishing subsidiaries in foreign markets rather than outsourcing or licensing operations, particularly when protecting intellectual property and maintaining control over strategic assets (Agyapong & Bedjabeng, 2020).

A major strength of the Eclectic Paradigm Theory is its comprehensive approach to explaining FDI, as it accounts for multiple economic and strategic factors influencing investment decisions (Dunning, 2015). It remains a widely applied framework in international business research, especially in analyzing how digital competitiveness shapes the attractiveness of investment destinations. However, critics argue that the theory is overly broad, lacks precise predictive power, and does not fully account for emerging factors such as digital transformation and political risks (Rugman, 2010). Despite these limitations, the OLI framework remains relevant in explaining how digital competitiveness through technological capabilities, cybersecurity policies, and digital infrastructure creates competitive advantages that attract FDI into EAC countries.

2.2.2 New Growth Theory

The New Growth Theory, developed by Paul Romer in the late 1980s, challenges traditional neoclassical models by emphasizing endogenous technological change as a key driver of economic growth (Romer, 1986). The theory posits that investment in human capital, innovation, and knowledge creation leads to sustained economic development. Unlike earlier models that treated technological progress as an external factor, the New Growth Theory argues that innovation and R&D investments are integral to long-term economic growth (Thach, 2021). This perspective is particularly relevant in the digital age, where digital skills, knowledge spillovers, and innovation ecosystems shape economic competitiveness and investment attractiveness.

One of the strengths of the New Growth Theory is its ability to explain how policies that support technological development, intellectual property protection, and education drive economic growth (Chirwa & Odhiambo, 2019). However, the theory has been criticized for the difficulty in quantifying human capital and knowledge spillovers, making empirical validation challenging (Farooque & Yarram, 2013). Additionally, it does not explicitly address institutional factors such as legal frameworks and governance structures, which also play a crucial role in influencing FDI inflows. Nevertheless, the New Growth Theory remains highly relevant to this study, as it highlights the importance of digital literacy, ICT investments, and innovation-driven policies in enhancing digital competitiveness and attracting foreign investors to EAC countries.

In summary, the selection of the Eclectic Paradigm Theory and the New Growth Theory is justified by their ability to explain the relationship between digital competitiveness and FDI inflows. The

OLI framework provides insights into how digital infrastructure, cybersecurity regulations, and ICT capabilities create location and ownership advantages for foreign investors. Meanwhile, the New Growth Theory underscores the role of human capital development, knowledge diffusion, and innovation policies in shaping digital competitiveness. By integrating these theoretical perspectives, this study establishes a strong foundation for understanding how digital transformation influences FDI patterns in EAC countries

2.3 Empirical Review

2.3.1 Digital Knowledge and Foreign Direct Investment

The relationship between digital competitiveness and FDI inflows has been widely studied, with most empirical research suggesting a positive correlation. However, the extent of this effect varies based on host country characteristics such as market size, the degree of digitalization, and the quality of the labour force. This empirical review examines the existing literature on the subject, categorizing findings into key thematic areas while identifying gaps that warrant further investigation.

A significant body of research highlights digital competitiveness as a critical driver of FDI. Studies indicate that foreign investors are more likely to be attracted to economies with strong digital infrastructure, a skilled workforce, and an environment conducive to technological advancement. The European Commission. Joint Research Centre (2023) examined the role of inward innovative FDI in knowledge acquisition within the European Union, emphasizing its contribution to the development of green and digital technologies. Similarly, Götz (2020) investigated Poland's digital competitiveness and found that FDI plays a crucial role in fostering innovation, strengthening digital infrastructure, and facilitating technology transfer. However, Götz also noted that the relationship between FDI and digital competitiveness is bilateral, making it difficult to determine a clear causal link. Furthermore, Tulder (2022)explored the impact of digital FDI on crisis management and resilience, concluding that investments in digital infrastructure, skills development, and regulatory support are key to attracting and benefiting from FDI, particularly in times of economic instability. While these studies underscore the importance of digital competitiveness in attracting FDI, they often fail to fully address potential reverse causality—where FDI itself acts as a catalyst for digital competitiveness rather than merely responding to it. Additionally, contextual variations between different regions remain underexplored, raising

questions about the generalizability of findings beyond developed economies. The current study is based in EAC a regional block for developing economies.

The EAC presents a more complex and varied picture. Kenya, often regarded as the regional tech hub, has made significant strides in digital infrastructure, particularly in mobile banking and connectivity, attracting tech-driven FDI such as Google's investment in local hubs (Wenxiu, 2021). Similarly, Rwanda's Vision 2050 strategy has prioritized ICT infrastructure and digital governance, enhancing its appeal to foreign investors in the digital economy. Research by Aimilia (2023) notes that Rwanda's Smart Rwanda Master Plan has played a pivotal role in catalyzing both domestic innovation and FDI interest. However, digital readiness across the EAC remains uneven. Uganda and Tanzania have demonstrated progress in expanding internet access and mobile connectivity, but still face challenges with high data costs and limited rural penetration. For example, while Uganda's National ICT Policy outlines digital transformation as a growth pillar, its implementation has been hampered by fiscal constraints and limited human capital development (Jjagwe et al., 2024). Similarly, while Tanzania has attracted FDI in the mobile telecommunications sector, the impact of such investments on broader digital competitiveness is still emerging.

Countries like Burundi and South Sudan remain significantly behind in digital infrastructure and skills development. These digital gaps deter meaningful FDI flows, especially in sectors requiring advanced technology. In Burundi, low internet penetration and limited policy coordination impede digital advancement (Bigirimana et al., 2024). In South Sudan, ongoing political instability further compounds infrastructure and institutional challenges, making it difficult to attract FDI outside extractive industries (De'Nyok, 2025). The DRC, one of the newest EAC entrants, offers both significant opportunities and challenges. While DRC is rich in minerals critical for digital devices its digital infrastructure is underdeveloped, and legal frameworks for digital investment remain weak (Fuamba, 2022). This dichotomy presents a policy opportunity for leveraging resource-based FDI into broader digital ecosystem development.

Another crucial factor influencing FDI inflows is the state of a country's digital infrastructure and workforce skills. Research suggests that well-developed digital infrastructure and a highly skilled labour force enhance a country's ability to leverage FDI for economic growth. Laitsou et al.

(2020b) assessed Greece's digital competitiveness using the Digital Economy and Society Index (DESI) and found that while Greece had made progress in digital infrastructure and connectivity, deficiencies in digital skills and innovation capacity hindered its overall competitiveness. Similarly, McAweeney (2016.) examined FDI inflows into Africa's knowledge-based industries, emphasizing the significance of robust legal frameworks, strong infrastructure, and access to skilled labour in attracting investment to technology-driven sectors. However, despite their valuable insights, these studies do not adequately address how variations in digital infrastructure maturity influence FDI inflows across diverse economic contexts. This research refines policy recommendation to cater for EAC specific regional needs.

Empirical evidence also suggests that FDI can catalyze digital transformation in host economies, provided that supportive conditions exist. Dang & Merino (2024) analyzed the impact of FDI on digital capabilities in Southeast Asia, finding that FDI primarily contributes to digital transformation through technology transfer and capacity-building initiatives. However, they stressed that the benefits of FDI in this regard are contingent on pre-existing digital infrastructure and supportive policies. Similarly, Rong et al. (2022) investigated the relationship between host-country digital economy development and Chinese outbound FDI (OFDI). Their findings revealed a significant positive correlation, indicating that countries with more advanced digital economies are more likely to attract Chinese investment. While these studies provide compelling evidence of FDI's role in digital transformation, they do not sufficiently consider the influence of regulatory frameworks and institutional quality in moderating these effects. This research explored the effect of regulatory frameworks in the EAC region in attracting FDI.

The emergence of artificial intelligence (AI) and automation is also reshaping global investment patterns and influencing FDI attraction and competitiveness. Petrova (2021) explored the role of AI patents in driving digital transformation, finding that enterprises with robust AI patent portfolios exhibit higher levels of digital transformation and market resilience. Likewise, Zekos (2023) examined how autonomous artificial intelligence (AAI) enhances the efficiency of FDI by optimizing decision-making and reducing transaction costs. However, he also highlighted the ethical and regulatory challenges associated with AI-driven FDI. While these studies provide valuable insights into the role of AI in attracting investment, they predominantly focus on

developed economies. There is limited research assessing how AI-driven FDI affects developing regions, particularly within the EAC.

A synthesis of the empirical literature reveals several research gaps. First, there is a limited focus on regional contexts, with most studies examining developed economies and providing little insight into the specific role of digital competitiveness in attracting FDI within the EAC. Second, while studies establish a correlation between digital competitiveness and FDI, the direction of causality remains ambiguous. More longitudinal and experimental studies are needed to clarify these relationships. Third, institutional and policy factors remain underexplored, particularly regarding their role in moderating the relationship between digital competitiveness and FDI. Finally, while AI and automation are transforming investment patterns in developed economies, their role in shaping FDI inflows to developing countries is not well understood.

This research has addressed the gaps by providing more tailored policy recommendations that enhance digital competitiveness and attract FDI in the East African Community. By fostering an enabling environment for digital transformation, EAC countries can strengthen their attractiveness to foreign investors and improve their positioning in the global digital economy.

2.3.2 Digital Technology and Foreign Direct Investment

Technology represents an economy's capacity to develop and integrate digital technologies that foster innovation and economic growth. Empirical studies suggest that digital infrastructure and supportive policies significantly influence the attractiveness of a country to foreign investors.

Satyanand (2021) explored the relationship between FDI and the digital economy in the Asia-Pacific region, utilizing a mixed-methods approach. The study found that economies with strong digital infrastructure attract higher FDI inflows, which, in turn, accelerates digital development. However, disparities exist, with developed economies benefiting more substantially from the interaction between FDI and digital transformation. Similarly, Götz (2020) examined Poland's investment strategies in the digital era, concluding that well-developed industrial clusters and supportive policies enhance FDI attractiveness. The study also highlighted the need for adaptive policies to address challenges arising from digital transformation.

Nguyen (2023) investigated the role of digitalization in shaping the relationship between FDI and income inequality across different economies. Findings indicated that digitalization mitigates income inequality in developed countries by fostering inclusive growth. However, in developing countries, inadequate digital infrastructure can exacerbate inequality, limiting the broader economic benefits of FDI. Peng et al. (2022) examined the impact of digital transformation on outward FDI (OFDI) among emerging market firms. Results demonstrated that digitalization enhances operational efficiency, facilitates market entry, and reduces transaction costs, particularly in technology-intensive sectors.

Research also highlights regional policy differences in attracting digital-driven FDI. Hristova Zaevska et al. (2024) analyzed Industry 4.0 policies and inward FDI trends across European regions, concluding that digital readiness and strategic alignment with multinational corporate needs enhance FDI inflows. Similarly, kaya,(2024) found that digital innovation correlates strongly with increased FDI in the EU, particularly in technology-driven industries.

A recurring theme in the literature is the role of government policies in mediating digital technology's influence on FDI. Studies by Dang & Merino (2024) and Nguyen (2022) emphasize that FDI fosters digital capability development, but the extent of its impact depends on supportive institutional frameworks. Research on China (Ma, 2024; (Bing Enguang, 2023)) further supports this perspective, indicating that a robust digital economy enhances FDI attractiveness by reducing transaction costs and fostering an innovative business environment.

In the context of the EAC, evidence shows varying levels of digital readiness and policy support. Kenya and Rwanda have emerged as regional leaders in digital transformation through initiatives such as Kenya's Digital Economy Blueprint and Rwanda's Broadband Policy. These countries have attracted increasing digital-focused FDI, particularly in fintech and ICT services (Otieno, 2021). Uganda and Tanzania, while making strides in mobile connectivity and digital services, face infrastructural bottlenecks and policy inconsistencies that limit their potential. In contrast, countries such as Burundi, the Democratic Republic of Congo, and South Sudan lag in digital infrastructure and regulatory frameworks, thus receiving minimal digital FDI. Moreover, EAC-wide studies underscore the importance of harmonized regional digital policies to foster a competitive investment environment. According to Arnold (2022), a lack of digital integration and

interoperability among EAC member states creates inefficiencies and deters cross-border digital investments. National digital strategies often operate in silos, reducing the potential for economies of scale in attracting technology-oriented FDI.

In summary, empirical studies affirm the positive impact of digital technology on FDI but emphasize the moderating role of institutional quality, policy support, and infrastructure disparities. This research paper has explored the implications of digital transformation on FDI patterns in developing regions, focusing on policy interventions that maximize investment benefits while mitigating associated risks.

2.3.3 Future readiness and Foreign Direct investment

Future readiness refers to an economy's or organization's ability to anticipate, adapt to, and leverage emerging digital technologies to drive sustainable growth and attract global investment. The increasing digitization of economies has been widely acknowledged as a critical factor influencing macroeconomic stability, competitiveness, and FDI inflows. This section reviews the empirical literature on the relationship between digital competitiveness and FDI, identifying key themes and research gaps relevant to the EAC.

Digitalization has been found to play a crucial role in enhancing economic resilience, particularly during periods of crisis. Yuliia Humenna, et al. (2021) analyzed the impact of digitalization on macroeconomic stability in the European Union (EU) during the COVID-19 pandemic. Their findings indicated that advancements in e-commerce, digital payments, and remote work technologies helped mitigate economic disruptions. Similarly, Ha & Huyen (2022) examined the role of digitalization in fostering economic growth across a global sample, highlighting that digital adoption positively contributed to economic resilience, particularly in economies with pre-existing digital infrastructure. However, these studies also reveal disparities in digital readiness, which present barriers to economic recovery and investment attraction in less digitally advanced nations.

The concept of digital competitiveness has also been explored in the context of FDI attraction. Stankovic et al. (2021) developed a composite index to measure digital competitiveness across 30 European countries, revealing that Nordic countries ranked highest, while Eastern European nations lagged. In a similar study, (Matyushenko et al., 2021) assessed Ukraine's technological

competitiveness, highlighting strengths in education and scientific expertise but identifying weaknesses in institutional support and policy frameworks, which hinder investment potential. (Horobeț et al., 2021) applied machine learning techniques to identify key factors influencing FDI attraction in Central and Eastern Europe, emphasizing digitalization, market size, labour force characteristics, and economic potential as significant determinants.

Big data readiness has emerged as a critical component of digital competitiveness, influencing the ability of countries to leverage digital transformation for economic growth and investment attraction. Joubert et al. (2023) developed an index to measure big data readiness in African nations, identifying substantial disparities in infrastructure and human capital. Their findings highlight the importance of targeted investments and policy interventions to bridge the digital divide and enhance digital capabilities. Similarly, Ekeogu (2002) conducted a comparative study on the digital readiness of West African nations versus newly connected developing countries such as China, Brazil, and Mexico. The study found that gaps in digital infrastructure, education, and government support hinder the ability of West African countries to compete in the global digital economy, underscoring the need for enhanced policy measures and capacity-building initiatives.

Moreover, digital innovation and strategic capabilities have been identified as crucial factors in maintaining competitiveness and attracting investment. Goncharenko & Shynkarenko, (2022) investigated the impact of digital innovation on Norway's economy, concluding that robust digital infrastructure and proactive ICT adoption significantly enhanced productivity in industries such as energy, healthcare, and finance. Andrade and Gonçalo (2021) explored digital transformation in BRICS nations, identifying strategic capabilities such as technological innovation, leadership adaptability, and organizational learning as key drivers. However, their study also pointed to disparities in infrastructure and policy support across BRICS countries, emphasizing the need for coordinated strategies to improve digital readiness and competitiveness.

The human capital dimension plays a critical role in FDI attraction within the EAC. Empirical research by Fuamba (2022) underscores the importance of educational reforms and skill development in driving FDI. The establishment of innovation hubs and partnerships between universities and the private sector in Kenya and Uganda has led to increased foreign investments in high-tech industries. However, challenges remain in terms of the quality of education and

vocational training, which can hinder the region's ability to meet the demands of foreign investors seeking skilled labor. Moreover, a study by Talens (2025) suggest that while countries have made progress in fostering innovation ecosystems, gaps in the regulatory environment and access to finance continue to limit the potential for attracting more FDI. These empirical findings highlight that while Future Readiness is advancing, sustained efforts in digital infrastructure, education, and governance reforms are necessary to enhance the EAC's competitiveness and appeal to foreign investors.

Despite the valuable insights provided by these studies, several research gaps remain. First, while there is extensive literature on digital competitiveness and FDI in Europe, BRICS, and other global regions, there is limited empirical research focusing on the EAC. This gap makes it difficult to determine how digital readiness influences FDI inflows in this region. Second, existing studies primarily focus on macroeconomic indicators, with insufficient analysis of sector-specific impacts. Understanding how digitalization affects FDI in key sectors such as fintech, manufacturing, and telecommunications in the EAC could provide more nuanced insights. Third, while several studies emphasize the importance of digital infrastructure and skills development, there is a lack of comprehensive policy recommendations aligning digital transformation with FDI growth. Finally, comparative analyses of digital competitiveness within regional economic communities, including the EAC, remain scarce, limiting the ability to draw lessons from best practices and regional policy frameworks.

Addressing these research gaps is essential for understanding the nexus between digital competitiveness and FDI inflows in the EAC. This study aims to contribute to the literature by providing empirical insights into how digital readiness influences investment attractiveness in the region and offering policy recommendations to enhance digital transformation and economic growth.

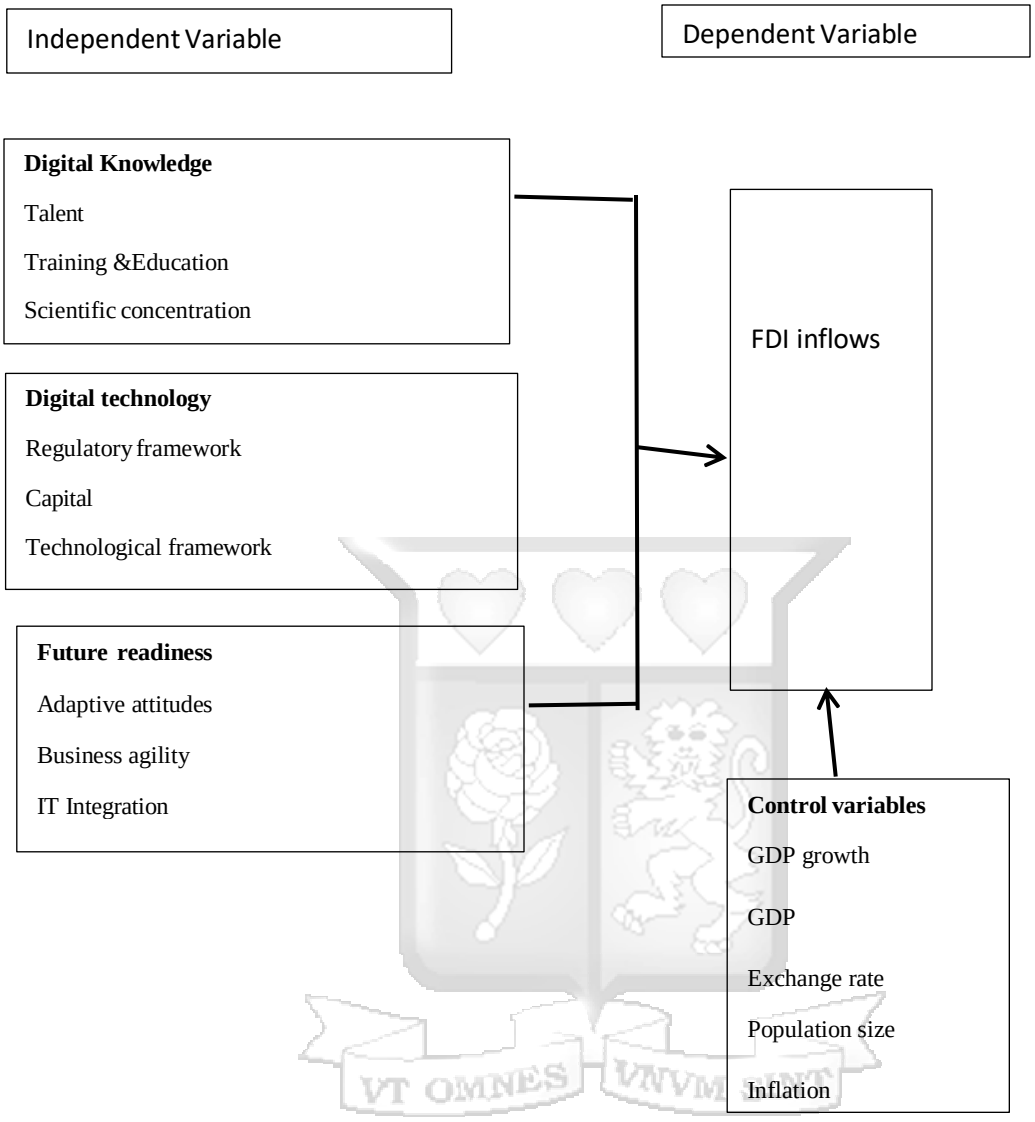
2.4 Summary of the Literature and Research Gap(s)

Article Title	Authors	Findings	Research Gap
The Role of Inward Innovative FDI in Knowledge Acquisition within the EU	European Commission Joint Research Centre (2023)	FDI contributes to the development of green and digital technologies.	Limited regional focus on EAC.
Digital Competitiveness and FDI in Poland	Götz (2020)	FDI fosters innovation, strengthens digital infrastructure, and facilitates technology transfer.	The causality between digital competitiveness and FDI remains unclear.
Digital FDI and Crisis Management	Tulder et al. (2022)	Investments in digital infrastructure, skills, and regulatory support enhance resilience.	Lack of sector-specific analysis in developing regions.
Digital Economy and Society Index (DESI) Assessment in Greece	Laitsou et al. (2020b)	Greece made progress in digital infrastructure, but deficiencies in skills hinder competitiveness.	More comparative research is needed on digital infrastructure maturity in different regions.
FDI in Africa's Knowledge-Based Industries	McAweeney (2016)	Robust legal frameworks and strong infrastructure attract FDI.	Insufficient focus on EAC policy frameworks.
The Impact of FDI on Digital Capabilities in Southeast Asia	Dang & Merino (2024)	FDI enhances digital transformation through technology transfer.	Influence of regulatory frameworks and institutional quality underexplored.
Host-Country Digital Economy Development and Chinese OFDI	Rong et al. (2022)	Countries with advanced digital economies attract more Chinese investment.	Limited research on regulatory frameworks moderating these effects.
AI Patents and Digital Transformation	Petrova (2021)	AI-driven innovation enhances digital competitiveness and investment attraction.	Lack of research on AI-driven FDI in EAC.

Autonomous Artificial Intelligence (AAI) and FDI Efficiency	Zekos (2023)	AI optimizes decision-making and reduces transaction costs.	Ethical and regulatory challenges remain underexplored.
Relationship Between FDI and the Digital Economy in the Asia-Pacific	Satyanand (2021)	Strong digital infrastructure attracts more FDI and accelerates digital transformation.	Disparities in digital readiness between developed and developing economies.
Role of Digitalization in FDI and Income Inequality	Nguyen (2023)	Digitalization mitigates income inequality in developed economies.	Limited insights into the impact on developing nations.
Industry 4.0 Policies and Inward FDI Trends in Europe	Hristova Zaevska et al. (2024)	Digital readiness enhances FDI inflows.	Comparative studies between EAC and other economic blocs are lacking.
Big Data Readiness in African Nations	Joubert et al. (2023)	Digital infrastructure disparities affect economic potential.	More studies are needed on EAC's big data readiness.
Digital Innovation and Economic Productivity in Norway	Goncharenko & Shynkarenko (2022)	Digital infrastructure and ICT adoption enhance industry productivity.	Lack of sector-specific impact studies in the EAC.
Digital Transformation in BRICS Nations	Andrade & Gonçalo (2021)	Technological innovation and policy support drive competitiveness.	Limited policy recommendations aligning digital transformation with FDI growth in EAC.

2.5 Conceptual Framework

The independent variables are the digital competitiveness indicators from the world competitive center including knowledge, technology and future readiness. The dependent variable is the FDI inflows. The study will use various control variables, including GDP growth, GDP, population size, inflation and exchange rate. Below is a diagram illustrating the relationship between the variables. The selection of these control variables is grounded in both economic theory and empirical literature on the determinants of FDI. GDP and GDP growth rate are included to capture the size and performance of the host economy, as larger and rapidly growing economies are generally more attractive to foreign investors due to greater market opportunities and higher potential returns(Götz, 2020). Inflation is used as a proxy for macroeconomic stability, as high inflation may signal economic uncertainty and discourage investment. Population size is considered to reflect both the market size and labor force availability, which are important for investors seeking economies of scale or low-cost labor. Lastly, the exchange rate is included to control for the cost of capital and potential returns on investment, with stable and competitive exchange rates often associated with greater investor confidence(Musili, 2023). Including these control variables helps to isolate the specific impact of digital competitiveness on FDI inflows, ensuring that the analysis captures the net effect of the digital environment while accounting for broader macroeconomic conditions.


Independent Variable
Dependent Variable
Digital Knowledge
Talent
Training &Education
Scientific concentration
Digital technology
Regulatory framework
Capital
Technological framework
Future readiness
Adaptive attitudes
Business agility
IT Integration
FDI inflows
Control variables
GDP growth
GDP
Exchange rate
Population size
Inflation

2.5.1 Operationalization of the Variables

In the operationalization of study variables, selecting an appropriate and credible data source is paramount to ensuring the reliability and validity of the research findings. This study utilizes data from the World Bank, given its comprehensive, globally recognized, and methodologically rigorous datasets. While alternative sources such as the International Telecommunication Union (ITU) and the United Nations Conference on Trade and Development (UNCTAD) provide relevant sectoral data, they do not offer the same breadth and integration across economic, social, and technological indicators necessary for this study. The World Bank dataset offers extensive coverage across multiple dimensions, ensuring consistency and comparability across different economies. Unlike ITU, which focuses on ICT indicators, or UNCTAD, which specializes in trade and development metrics, the World Bank consolidates data from national statistical offices and international institutions, adhering to standardized methodologies that enhance cross-country comparability (World Bank, 2023). Additionally, World Bank indicators are widely used in policy formulation and academic research, making them a preferred choice for empirical studies on economic and technological development. Given its methodological transparency, regular updates, and policy relevance, the World Bank emerges as the most suitable data source for this study. The matrix below highlights the operationalization of variables in assessing the relationship between the dependent and the independent variables.

Variable	**Description**	**Measure**	**Source**
Independent			
1. Knowledge	Captures human capital and skills that influence economic growth.		
Talent	Availability of skilled labour in the economy.	Labor force participation rate	World Bank
	Employment conditions for skilled workers.	Unemployment rate, skilled workers	World Bank
Training & Education	Educational attainment and investment in human capital.	Gross enrollment ratio (primary, secondary, tertiary)	World Bank

	Government expenditure on education.	Expenditure on education (% of GDP)	World Bank
Scientific Concentration	Innovation and research capacity.	Research and development (R&D) expenditure (% of GDP)	World Bank
	Scientific research output.	Scientific and technical journal articles	World Bank
2. Technology	Captures factors influencing technological adoption and economic growth.		
Regulatory Framework	Regulatory effectiveness.	Regulatory Quality Index	World Bank
	Strength of legal protections for investors.	Strength of Legal Rights Index	World Bank
Capital	Financial resources available for investment.	Domestic credit to private sector (% of GDP)	World Bank
	Investment in physical assets.	Gross capital formation (% of GDP)	World Bank
Technological Framework	Infrastructure supporting digital transformation.	Fixed broadband subscriptions (per 100 people)	World Bank
	Mobile technology penetration.	Mobile cellular subscriptions (per 100 people)	World Bank
	Secure internet infrastructure.	Secure internet servers (per 1 million people)	World Bank
	Digital trade capacity.	ICT goods and services exports (% of total goods exports)	World Bank

2. Future readiness	Reflects a country's preparedness for future innovation and technological change.		World Bank
Adaptive attitudes	Willingness and ability to adopt new technologies.	Internet users (% of the population)	World Bank
	The basic education level of the population	Adult literacy rate	World Bank
Business Agility	Ease of establishing and expanding businesses.	Time required to start a business (days)	World Bank
	Business dynamism and entrepreneurial activity.	Number of new businesses registered	World Bank
	The financial barrier to entrepreneurship.	Cost to start a business (% of GNI per capita)	World Bank
IT Integration	Level of integration of digital technologies in the economy.	High-Technology Exports (% of manufactured exports)	World Bank
Dependent Variable	Measures the level of foreign investment in the country.	Foreign Direct Investment: net inflows (% of GDP)	World Bank
Control variables	GDP Growth	GDP growth (annual %)	World Bank
	GDP	GDP (current US$)	World Bank
	Population size	Population, total	World Bank
	inflation	consumer prices (annual %)	World Bank
	Exchange rate	Official exchange rate (LCU per US$, period average)	World Bank

2.6 Chapter summary

This chapter reviewed the theoretical and empirical literature on the relationship between digital competitiveness and FDI inflows, with a focus on the EAC. It drew on theories like the Eclectic Paradigm Theory and the New Growth Theory to explain how digital infrastructure, technological capabilities, human capital, and innovation drive FDI attractiveness. Empirical evidence from global contexts demonstrated that digital competitiveness significantly influences FDI, although

the relationship is complex and mediated by factors like infrastructure quality, labour skills, and institutional frameworks.

The chapter also explored how emerging technologies, such as artificial intelligence (AI) and automation, shape global investment patterns, emphasizing the importance of future-ready digital strategies for developing economies. Several research gaps were identified, including the lack of region-specific evidence for the EAC and the need to understand causal relationships and the role of institutional quality. The conceptual framework outlined key digital competitiveness indicators (knowledge, technology, and future-readiness) and their relationship with FDI inflows, setting the stage for empirical analysis and policy recommendations in subsequent chapters.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter explored the different methodological approaches used to address the research problem. It covered aspects such as the research philosophy, design, target population, and data collection tools. The chapter also included an overview of the research procedures, diagnostic tests, and the methods used for data analysis and presentation of results. Finally, it outlined the ethical considerations followed throughout the study.

3.2 Research Philosophy

Research philosophy serves as the foundation for any study, guiding the choice of methodology and analytical approach. Various research philosophies, including positivism, interpretivism, pragmatism, and critical realism, offer distinct perspectives on how knowledge is generated and interpreted (Resnick, 2011). This study adopts positivism as the most suitable approach due to its emphasis on empirical evidence, objectivity, and statistical analysis. Positivism is grounded in the belief that reality exists independently of human perception and can be objectively measured (Creswell, 2014). This philosophy aligns with quantitative research methodologies, where hypotheses are tested through empirical data collection and statistical analysis. By adopting positivism, this study ensures that findings are unbiased, replicable, and generalizable to a broader population. The ontological orientation of this research follows realism, which posits that while data collection methods may have limitations, an objective understanding of relationships between variables is achievable (Bhaskar, 2008).

Other research philosophies, such as interpretivism, pragmatism, and critical realism, were considered but found unsuitable for this study. Interpretivism emphasizes subjective meaning and human experiences, making it more appropriate for qualitative research (Bryman, 2016). Pragmatism advocates for a mixed-methods approach, integrating both qualitative and quantitative data, whereas this study strictly follows a quantitative methodology (Creswell, 2014). Critical realism acknowledges an objective reality but also considers the influence of social structures and power dynamics, making it more relevant for complex social studies rather than empirical hypothesis testing (Bhaskar, 2008).

The choice of positivism as the research philosophy was appropriate for this study, as it emphasized objectivity, empirical evidence, and statistical analysis aligned with a quantitative

methodology. This philosophical stance ensured that the findings were measurable, unbiased, and generalizable, making it the most suitable approach for examining the relationships between variables(Saunders et al., 2009)

3.3 Research Design

This study adopted a quantitative correlational research design, which utilized numerical data and statistical analysis to test hypotheses and infer relationships between variables (Saunders et al., 2009). This design was particularly suitable for the study as it allowed for a structured and objective examination of the relationship between the key variables. Through the correlational design, the study assessed the strength and direction of the associations between the variables, identifying patterns and connections. By employing this approach, the research tested the hypothesis and evaluated the nature of the relationship between the variables under consideration.

3.4 Population and Sampling

The population of the study comprised the eight East African Community member states, which included Kenya, Burundi, Rwanda, Uganda, the Democratic Republic of Congo, Tanzania, South Sudan, and Somalia. The selection of these countries was based on their membership in the East African Community**.**

Table 1. 2 Sample breakdown

	Number
Number of member states in EAC	8
Final sample	8

3.5 Data Collection Methods

Secondary panel data was collected annually across the eight countries in the EAC from 1990 to 2022. This period spanned various economic cycles, providing a long-term perspective essential for drawing meaningful and generalizable conclusions. The data type was macroeconomic, representing country-level analysis. The secondary data was readily available from the World Bank databank. The selected research data was extracted using the form presented in Appendix I.
To ensure a balanced panel structure while retaining all EAC member states, missing data for South Sudan whose available records begin post-2011 were imputed using linear interpolation. This approach allowed for consistent temporal coverage across all countries in the analysis period

3.6 Data collection procedure

The study adhered to all required guidelines. Firstly, approval from the research supervisor was obtained before submitting the proposal to the institution for authorization to proceed with data collection. Additionally, a permit from the Institutional Ethical Review Board was secured before commencing the data extraction process. The study ensured that all collected data was used exclusively for the stated academic objectives. Before data extraction, the extraction tool was reviewed in collaboration with the research supervisor to ensure it aligned with the study's operationalization and adequately addressed all research objectives.

3.7 Diagnostic tests

The data collected for the study was panel data, requiring the conduct of various diagnostic tests to ensure it met the necessary criteria for panel regression analysis. The tests outlined in the following sections were implemented in this study.

3.7.1 Autocorrelation tests

Autocorrelation refers to the correlation between elements of a series of observations arranged either over time, as seen in time series data, or across space, as in cross-sectional data. The presence of serial correlation suggests that the variables in the model may violate the assumptions of regression (Honnery et al., 2004). To assess this, the study utilized the Durbin-Watson test. The standard for this test is that the Durbin-Watson statistic should fall between 1.5 and 2.5 to confirm the absence of autocorrelation issues.

3.7.2 Multicollinearity Test

Multicollinearity was assessed to examine the inter-correlations among all pairs of predictors and determine whether it posed a potential issue (Ullah, et.al, 2019). If multicollinearity was detected, Field (2009) suggests combining the variables into a composite variable or eliminating one or more of the highly correlated variables. In this study, the Variance Inflation Factor (VIF) was used to conduct the collinearity tests. According to the established criteria, the VIF should not exceed 10.

3.7.3 Normality test

The normality of the data was tested using the Shapiro-Wilk test. The Shapiro-Wilk test evaluates the null hypothesis that the data is normally distributed. If the p-value is greater than the chosen significance level (typically 0.05), the null hypothesis is not rejected, indicating that the data does

not significantly deviate from normality (Bader et al., 2022). Conversely, if the p-value is less than 0.05, the null hypothesis is rejected, suggesting that the data significantly deviates from a normal distribution. The results of the Shapiro-Wilk test were carefully analyzed to determine whether normality assumptions were met for the subsequent statistical analyses in the study.

3.7.4 Stationarity test

A unit root test was used to determine whether a time series is non-stationary, meaning its statistical properties change over time. The presence of a unit root suggests non-stationarity (Fowler et al., 2024). The null hypothesis posits that the panels contain unit roots, while the alternative hypothesis suggests that the panels are stationary.

3.7.5 Hausman Specification test

The Hausman specification test compares the consistency of an estimator with an alternative estimator (Hausman & Taylor, 1981). In this study, it was used to determine whether a random effect or fixed effect model is more appropriate, based on whether the unobserved individual effects are correlated with the independent variables (Pace & LeSage, 2008). A p-value below 0.05 indicates the random effect model is preferred, while a value above 0.05 suggests the fixed effect model should be used (Torres-Reyna, 2007)

3.8 Data Analysis and Presentation

The study employed the Hausman Test to determine the more appropriate model between Fixed Effects and Random Effects, with the results indicating that the Random Effects model was the most suitable. Data were initially extracted using Microsoft Excel, cleaned, and then imported into Stata 16 for quantitative analysis. Descriptive statistics including the mean, maximum, minimum, standard deviation, sum, and number of observations were used to summarize the dataset. Subsequently, Pearson correlation analysis was conducted to explore the relationships among the variables. Panel regression analysis was then performed to examine the relationship between the predictor variables and the dependent variable, foreign direct investment. The results were presented in both tabular and graphical formats, and the following panel regression model was employed in the study:

General Equation:

$$FDI_{it} = \beta_0 + \beta_1 Tech_{it} + \beta_3 knw_{it} + \beta_3 Fut\_red_{it} + \sum^{n} CONTROLS_{it} + \varepsilon_{it}$$

Specific Equations

$$FDI_{it} = \beta_0 + \beta_1 lbr_{it} + \beta_2 enr\_edu_{it} + \beta_3 exp\_edu_{it} + \beta_4 rd\_exp_{it} + \beta_5 rsch\_rd_{it} + \beta_6 stch\_jn_{it} + \delta_1 GDP_{it} + \delta_2 Pop\_SZ_{it} + \delta_4 ER_{it} + \varepsilon_{it}$$

(Equation 1)

$$FDI_{it} = \beta_0 + \beta_1 Reg\_qlty_{it} + \beta_2 str\_leg_{it} + \beta_3 d\_crd_{it} + \beta_4 gr\_cap_{it} + \beta_5 brdband_{it} + \beta_6 clr\_sub_{it} + \beta_7 Sec\_int_{it} + \beta_8 ict_{it} + \delta_1 GDP_{it} + \delta_2 Pop\_SZ_{it} + \varepsilon_{it}$$

(Equation 2)

$$FDI_{it} = \beta_0 + \beta_1 int\_users_{it} + \beta_2 Adlt\_lit_{it} + \beta_3 t\_bs_{it} + \beta_4 c\_bs_{it} + \beta_5 n\_bs_{it} + \beta_6 tech\_exp_{it} + \delta_1 GDP_{it} + \delta_2 Pop\_SZ_{it} + \delta_3 IF_{it} + \delta_4 ER_{it} + \delta_5 TO_{it} + \varepsilon_{it}$$

(Equation 3)

Where:

FDI_{it} – Foreign direct investment in the time t

Pop_SZ_{it} – population size in time t

$\delta_{13} ER_{it}$– Exchange Rate in time t

GDP – Gross domestic product in time t

lbr_{it} - Labor force participation rate in time t

enr_edu_{it} - Gross enrollment ratio (primary, secondary, and tertiary education) in time t

exp_edu_{it} - Expenditure on education (% of GDP) in time t

$lt_{rt_{it}}$ - Literacy rate, adult total in time t

rd_exp_{it} - Research and development (R&D) expenditure (% of GDP) in time t

$stch\_jn_{it}$ - Scientific and technical journal articles in time t

Reg_qlty - Regulatory Quality Index

str_leg - Strength of Legal Rights Index

d_crd_{it} - Domestic credit to private sector (% of GDP) in time t

gr_cap - Gross capital formation (% of GDP)

$brdband_{it}$ - Fixed broadband subscriptions (per 100 people) in time t

clr_sub_{it} - Mobile cellular subscriptions (per 100 people)

Sec_int_{it} - Secure internet servers (per 1 million people)

ict_{it} - ICT goods and services exports (% of total goods exports)

int_users_{it} - Internet users (% of the population)

$Adlt\_lit_{it}$ - Adult literacy rate

t_bs_{it} - Time required to start a business (days)

$tech\_exp_{it}$ - High-Technology Exports (% of manufactured exports)

β_1 – Coefficients of the independent variables

δ_1 – Coefficients of the independent control variables

ε_{it}– Error term

The index i denotes the cross section (the various countries in the panel) and t the periods in the panel

3.9 Research Reliability and Validity

Research quality and validity consistent with secondary data was done following rigorous procedure. The source's reputation was in no doubt as is quite credible being World Bank database. The data was accurate consistent and not outdated.

3.10 Chapter summary

The chapter detailed the methodological framework adopted to address the research problem. It began by outlining the research philosophy, where positivism was selected for its emphasis on objectivity and empirical analysis, aligning with the study's quantitative approach. A correlational research design was employed to explore the relationships between key variables using statistical methods. The study population consisted of all eight EAC member states, with secondary panel data collected from 1990 to 2022 sourced from the World Bank database.

The data collection procedure followed institutional ethical guidelines and obtained the necessary approvals. Diagnostic tests including autocorrelation, multicollinearity, normality, stationarity, and the Hausman specification test were conducted to ensure data validity and model appropriateness. Data analysis involved descriptive statistics, correlation analysis, and panel regression modeling using Stata 16, with results presented in both tabular and graphical formats. The use of the Random Effects model was justified through the Hausman test, and multiple regression equations were specified to assess the impact of digital knowledge, technological readiness, and institutional quality on foreign direct investment inflows across the EAC region.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the findings from the analysis of the collected quantitative panel data. It is divided into three sections: Section 1 highlights the descriptive statistics of the study variables diagnostic tests, Section 2 discusses the diagnostic tests, and Section 3 examines the inferential statistics related to the three study objectives.

4.2 Descriptive statistics

The study variables are summarized using measures of central tendency, including the mean, median, standard deviation, minimum, and maximum values. Additionally, frequency distributions are employed to categorize the data into five quintiles, allowing for a clearer understanding of the distribution patterns across the variables. This approach facilitates the comparison and interpretation of the data across the selected EAC countries over the study period.

Table 4. 1 Measures of central tendency Digital knowledge levels on FDI inflows

	Mean	Median	Standard Deviation	Minimum	Maximum
Labor force participation rate	70.20	74.10	15.11	34.60	90.92
Government expenditure on education, total (% of GDP)	3.90	3.99	1.55	0.96	7.52
Scientific and technical journal articles	229.25	45.34	366.36	0.00	2007.14
Research and development expenditure (% of GDP)	0.29	0.26	0.18	0.06	0.76
Gross enrolment ratio for tertiary education, both sexes (%)	3.32	2.82	2.45	0.33	11.46

n =272
source: own study

Table 4.1 provides insights into the digital knowledge indicators and their distribution across EAC member states over the study period. The labor force participation rate had a high mean of 70.20%, with a median of 74.10%, indicating relatively strong workforce engagement across the region. However, the standard deviation of 15.11 suggests considerable variability among countries, with participation rates ranging from 34.60% to 90.92%. Government expenditure on education averaged 3.90% of GDP, closely aligned with the median of 3.99%, implying a consistent national investment in education, though the values ranged significantly from 0.96% to 7.52%. Scientific and technical journal articles displayed extreme variability, with a mean of 229.25 but a much lower median of 45.34, and a high standard deviation of 366.36, reflecting the presence of outliers—likely countries with more developed research ecosystems—ranging from 0 to 2007.14 articles. Research and development (R&D) expenditure, while modest with a mean of 0.29% of GDP, showed a relatively narrow distribution (standard deviation = 0.18) and a maximum of 0.76%, indicating limited but fairly consistent national commitments to R&D. Lastly, the gross tertiary enrolment ratio had a mean of 3.32%, suggesting low participation in higher education across the region, though the standard deviation of 2.45 and maximum of 11.46% point to disparities in tertiary access between countries. Overall, the results underscore disparities in digital knowledge capacity, with notable gaps in scientific output and higher education access that may influence foreign direct investment inflows.

Table 4. 2Measures of central tendency - Digital technology utilization on FDI inflows

Variables	Mean	Median	Standard Deviation	Minimum	Maximum
Domestic credit to private sector (% of GDP)	13.69	12.67	9.38	0.49	48.53
Mobile cellular subscriptions (per100 people)	25.38	10.57	29.91	0.00	122.79

Fixed broadband subscriptions (per100 people)	0.28	0.04	0.54	0.00	2.50
Strength of Legal Rights Index	4.94	5.00	3.15	0	11
Gross capital formation (constant LCU)	8,799,134,843,751.74	1,710,175,000,000.00	14,067,784,160,230.40	1825000000.00	70345421582600.00
Regulatory Quality: Estimate	-0.96	-0.71	0.74	-2.55	0.19
Secure Internet servers (per 1 million people)	27.43	4.30	61.80	0.00	297.13
ICT goods exports (% of total goods exports)	0.85	0.38	1.48	0.00	6.77

n = 272

Source: own study 2025

Table 4.2 indicates that domestic credit to the private sector, a proxy for financial access and digital finance uptake, had a mean of 13.69% of GDP and a median of 12.67%, with a standard deviation of 9.38. The wide range from 0.49% to 48.53% suggests substantial differences in financial market development across the region. Mobile cellular subscriptions, a core digital connectivity indicator, averaged 25.38 per 100 people, but with a median of only 10.57 and a high standard deviation of 29.91, indicating that while mobile penetration is high in some countries (up to 122.79 subscriptions per 100 people), others remain at near-zero levels, showing significant digital divides. Fixed broadband subscriptions had a low mean of 0.28 per 100 people, with a median of just 0.04 and a maximum of only 2.50, highlighting limited access to high-speed internet across most of the EAC. The Strength of Legal Rights Index, measuring financial legal frameworks, had a mean of 4.94 out of a maximum of 12, and a standard deviation of 3.15, suggesting moderate but uneven legal support for lending and borrowing across countries. Gross capital formation, reflecting investment levels, showed extreme variation. The mean value (in constant LCU) was 8.80 trillion, with a median of 1.71 trillion, and a very high standard deviation (14.07 trillion). This large spread—from 1.83 billion to over 70 trillion—indicates a skewed distribution, with a few countries accounting for the majority of capital investment. Regulatory quality had a mean estimate of -0.96, with most countries scoring below zero, suggesting weak or underdeveloped regulatory environments, though one country reached a relatively positive maximum of 0.19.The number of secure internet servers, an indicator of digital infrastructure readiness, averaged 27.43 per 1 million people but had a median of only 4.30 and a very high standard deviation of 61.80, indicating wide disparities in cybersecurity infrastructure, with some countries having no secure servers at all. Finally, ICT goods exports accounted for 0.85% of total goods exports on average, with a median of 0.38% and a maximum of 6.77%, showing that the region's contribution to global digital trade remains low and unevenly distributed.

Table 4. 3 Measures of central tendency - Future readiness for digital transformation on its ability to attract FDI inflows

Variables	Mean	Median	Standard Deviation	Minimum	Maximum
Literacy rate, adult total (% of people ages 15 and above)	67.58	69.55	13.01	27.00	82.88
High-technology exports	31,519,375.	14,675,348.	42,506,938.	22492.0	186259360.

(current US$)	63	00	29	0	00
Individuals using the Internet (% of population)	4.80	1.10	7.88	0.00	40.81
Time required to start a business (days)	31.88	26.00	32.02	4.00	166.50
Cost of business start-up procedures (% of GNI per capita)	176.60	78.30	266.27	0.00	1486.10
New businesses registered (number)	8,611.13	6,039.00	10,176.55	247.00	49037.00

n = 272

Source: own study 2025

In table 4.3 the adult literacy rates a foundational element of human capital and future digital skills averaged 67.58%, with a median of 69.55% and a standard deviation of 13.01. While the highest observed value was 82.88%, the lowest was just 27%, indicating notable inequalities in basic education across the region. High-technology exports, which signal innovation capacity and integration into global digital value chains, had a mean of approximately USD 31.5 million and a median of USD 14.7 million. The large standard deviation (USD 42.5 million) and the wide range from USD 22,492 to over USD 186 million show that a few countries dominate this segment, while others have minimal participation in the high-tech export economy. The percentage of individuals using the internet remains remarkably low, with a mean of only 4.80% and a median of 1.10%. The standard deviation of 7.88 and a maximum value of 40.81% suggest that while some progress has been made in internet access, the majority of the population in many countries remains offline, reflecting significant digital exclusion. Time required to start a business had a mean of 31.88 days and a median of 26 days, with a standard deviation of 32.02. The values ranged from as little as 4 days to as many as 166.5 days, illustrating major inefficiencies and delays in business registration processes across several countries an important barrier to both local entrepreneurship and foreign investment. Similarly, the cost of business start-up procedures expressed as a percentage of GNI per capita was highly variable. The mean stood at 176.60%, with a median of 78.30% and an exceptionally high standard deviation of 266.27. The cost ranged from 0% to an exorbitant 1,486.10%, indicating extreme regulatory and financial burdens on new businesses in some economies. Finally, the number of new businesses registered annually averaged 8,611, with a

median of 6,039. The large standard deviation (10,176.55) and the range from 247 to 49,037 businesses suggest substantial differences in entrepreneurial activity, which could be linked to varying levels of institutional efficiency and economic dynamism.

Table 4. 4Measures of central tendency – Dependent and control variables

	Mean	Median	Standard Deviation	Minimum	Maximum
Foreign direct investment, net inflows (% of GDP)	2.09	1.76	2.18	-1.30	12.72
GDP growth (annual %)	3.87	5.00	6.91	-50.25	35.22
Population, total	26,829,520.37	17,978,899.00	21,938,367.73	4,737,633.00	105,789,731.00
GDP (current US$)	17,991,997,458.42	8,600,376,379.08	22,864,799,856.22	709,297,578.50	114,448,978,152.64
Official exchange rate (LCU per US$, period average)	1,875.86	727.34	4,869.45	0.00	31,558.91

n = 272

Source: own study 2025

In table 4.4 the net inflows of FDI as a percentage of GDP, the main dependent variable, had a mean of 2.09% and a median of 1.76%, with a standard deviation of 2.18%. The values ranged from -1.30% to 12.72%, indicating both positive and negative net inflows. The presence of negative values suggests occasional disinvestment or capital repatriation in some countries or years. The moderate mean indicates that, on average, FDI inflows remain a relatively small part of GDP in the region. GDP growth rates exhibited significant variation, with a mean of 3.87% and a median of 5.00%, but with a notably high standard deviation of 6.91%. The range—from a sharp contraction of -50.25% to a robust growth of 35.22%—reflects periods of both economic crises and booms in different countries or years. Such volatility can have important implications for investor confidence and long-term FDI planning. Total population figures had a mean of approximately 26.8 million and a median of 18 million, with a standard deviation of around 21.9 million. The population ranged from 4.7 million to over 105 million, highlighting the demographic diversity across the EAC. Countries with larger populations may offer broader consumer markets and labor pools, potentially attracting higher FDI inflows. Gross Domestic Product (GDP) in current US dollars also showed substantial variation. The mean GDP was about USD 17.99 billion, with a median of USD 8.6 billion. The standard deviation was USD 22.86 billion, and the GDP ranged from as low as USD 709 million to as high as USD 114.4 billion. These disparities indicate significant differences in economic scale among EAC member states. Lastly, the official exchange rate (LCU per USD, period average) had an exceptionally wide range, with a mean of 1,875.86, a median of 727.34, and a standard deviation of 4,869.45. The values extended from 0.00 to 31,558.91, pointing to substantial differences in currency valuation and potential exchange rate volatility across countries. These fluctuations may influence FDI attractiveness due to associated currency risk and cost predictability for foreign investors

4.3 Diagnostic Tests

Panel data was used in this study, necessitating various diagnostic checks to ensure the data's suitability for panel regression analysis. The results of these diagnostic checks are presented below

4.3.1 Test for Normality

The normality assumption ensures that the model residuals follow a normal distribution, which is essential for obtaining accurate standard errors for the model parameter estimates. To test the normality of the error terms, the Shapiro-Wilk test was conducted (Bader et al., 2022). The null hypothesis posits that the error terms follow a normal distribution, while the alternative hypothesis suggests they do not. With a p-value of 0.487, which is greater than the significance level of 0.05, the

null hypothesis cannot be rejected. Thus, it can be concluded that the data follows a normal distribution, as shown in Table 4.5.

Table 4. 5 Tests for Normality

Variable	Obs.	Pr. (Skewness)	Pr. (Kurtosis)	adj_chi2(2)	Prob>chi2
residuals	12	0.374	0.490	1.440	0.487

Source: own study 2025

4.3.2 Multicollinearity VIF

Each predictor variable contributes differently to the explanation of the outcome when multicollinearity is believed to be absent (Reddy & Balasubramanyam, 2021). Additionally, because a significant amount of data from one predictor is missing from the others, it indicates that there is no redundancy in the independent variables. Multicollinearity raises the standard errors. In our study, we used the Variance Inflation Factors. The VIF values were computed as shown below, and the results are shown in Tables 6 to 8 by each objective.

While multicollinearity between the independent variables is the alternative hypothesis, the null hypothesis states that there is no multicollinearity among the independent variables. Multicollinearity is apparent when the VIF values exceed 10. Therefore, when the VIF values are more than 10, the null hypothesis is rejected. Tables 6-8 make it evident that all of the VIF values were below 10. Therefore, there was no issue with multicollinearity because the null hypothesis was not rejected.

Table 4. 6Digital knowledge levels on FDI inflows

	VIF	1/VIF
Labor force participation rate	7.642	.131
Scientific and technical journal articles	6.862	.146
Expenditure on education (% of GDP)	6.477	.154
Gross enrollment ratio (primary, secondary, and tertiary education)	5.335	.187
Research and development (R&D) expenditure (% of GDP)	2.046	.489
Mean VIF	5.672	.

Source: own study 2025

Table 4. 7Digital technology utilization on FDI inflows

	VIF	1/VIF
Mobile cellular subscriptions (per 100 people)	8.38	.119
Domestic credit to private sector (% of GDP)	5.555	.18

Gross capital formation (% of GDP)	4.961	.202
Strength of Legal Rights Index	4.034	.248
Regulatory Quality Index	3.323	.301
Fixed broadband subscriptions (per 100 people)	3.259	.307
Secure internet servers (per 1 million people)	2.307	.433
ICT goods and services exports (% of total goods exports)	1.309	.764
Mean VIF	4.141	.

Source: own study 2025

Table 4. 8 Future readiness for digital transformation on its ability to attract FDI inflows

	VIF	1/VIF
Time required to start a business (days)	7.484	.134
Internet users (% of population)	4.319	.232
Cost to start a business (% of GNI per capita)	3.768	.265
Adult literacy rate	2.185	.458
Number of new businesses registered	2.069	.483
High-Technology Exports (% of manufactured exports)	1.46	.685
Mean VIF	3.547	.

Source: own study 2025

4.3.3 Heteroskedasticity Test

Differences in variance are referred to as heteroscedasticity. According to Pernecky (2016), heteroscedasticity can be problematic when using regression analysis since it can invalidate statistical tests that presume the modeling error is normally distributed and uncorrelated. The Breusch Pagan/Cook-Weisberg approach was employed in the study to determine whether heteroscedasticity issues were present in the regression models. A p-value greater than 0.05 indicates that heteroscedasticity is not an issue. Below is Table 4.9.

Table 4. 9Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity

Study objective	Chi-Square	df	Sig.
Digital knowledge levels on FDI inflows	1.43	1	0.2316
Digital technology utilization on FDI inflows	0.00	1	0.9958
Future readiness for digital transformation on its ability to attract FDI inflows	0.04	1	0.8391

4.3.4 Model fit test -Hausman Test

To test for model fit, the Hausman Test was used to determine between fixed and random effects model fit the data for the study. The tests were done across all three objectives and results were obtained in Table 9 below.

The Hausman test typically investigates the alternative hypothesis that the preferred model is fixed effects, which implies that the errors are correlated with the regressors and the null hypothesis that the preferred model is random effects, which indicates that there is no significant correlation between the errors and regressors (Rüttenauer & Ludwig, 2023). Results in Tables 10, 11 and 12 confirmed the best model fit across all three objectives for this study was the random effects model where $p > 0.05$.

Table 4. 10Hausman specification test

Objective	Chi-square test value	p-value
Digital knowledge levels on FDI inflows	2.982	0.703
Digital technology utilization on FDI inflows	1.006	0.995
Future readiness for digital transformation on its ability to attract FDI inflows	8.439	0.134

Source: own study 2025

4.3.5 Autocorrelation Test

To make sure the chosen regression model did not contain serial correlation, the study used autocorrelation tests. The Wooldridge test for autocorrelation in panel data was used in the study. We

conclude that there is no first-order autocorrelation based on the data in Table 4.11 below, where the F statistic for study objectives were Digital knowledge levels on FDI inflows 1.357, Digital technology utilization on FDI inflows 0.422 and Future readiness for digital transformation on its ability to attract FDI inflows 0.052 being > 0.05 an indication there was no first order autocorrelation.

Table 4. 11 Wooldridge test for autocorrelation in panel data

Objective	Wooldridge test sig.
Digital knowledge levels on FDI inflows	0.282
Digital technology utilization on FDI inflows	0.540
Future readiness for digital transformation on its ability to attract FDI inflows	0.835

Source: own study 2025

4.3.6 Unit root test

A unit root test checks if a time series statistical property changes over time by testing for the presence of a "unit root," which, if present, indicates non-stationarity (Fowler et al., 2024).

Under the null hypothesis, panels contain unit roots against the alternative hypothesis panels are stationary. From the results in Table 4.12 below $p < 0.05$ across all the study variables, we reject the null hypothesis and conclude that there is no unit root in the data on all variables.

Table 4. 12 Unit root Test on FDI inflows

Variable	Statistic	p-value
Foreign direct investment net inflow	-2.0304	0.0212
Labor force participation rate	-1.9225	0.0273
Unemployment total of total labor force	-11.6055	0.0000
Government expenditure on education	-1.6704	0.0474
Mobile cellular subscriptions (per 100 people)	-2.2487	0.0106
Fixed broadband subscriptions (per 100 people)	-3.5467	0.0074
Strength of legal rights index	-2.5480	0.0292
Scientific and technical journal articles	-3.3384	0.0037
Gross capital formation (% of GDP)	-7.0565	0.0000
Patent applications (per capita)	-2.2490	0.0040
Regulatory Quality Index	-3.3070	0.0038
Research and development (R&D) expenditure (% of GDP)	-2.6966	0.0035
Literacy rate, adult total	-4.3723	0.0000
High-Technology Exports (% of manufactured exports)	-2.3822	0.0086
GDP Growth Rate	-3.9907	0.0000
Population Size	-1.2124	0.0089
Inflation Rate	-2.7900	0.0026
GDP (Gross Domestic Product)	-5.8405	0.0000
Secure internet servers (per 1 million people)	-11.8093	0.0000
ICT goods and services exports (% of total goods exports)	-2.4458	0.0074
Internet users (% of population)	-2.4778	0.0066
Time required to start a business (days)	-1.4696	0.0319
Gross enrollment ratio (primary, secondary, and tertiary education)	-2.1633	0.0056
Cost to start a business (% of GNI per capita)	-1.9821	0.0163
Number of new businesses registered	-1.1346	0.0447
Exchange Rate Stability	-5.1510	0.0000

Source: Own study (2025)

4.4 Correlation analysis

4.4.1 Correlation analysis for Digital knowledge levels on FDI inflows

Understanding the relationship between digital knowledge indicators and FDI inflows is essential for assessing how human capital and research capacity can contribute to a country's attractiveness to foreign investors. Table 4.13 presents the results of a correlation analysis between key indicators of digital knowledge and their potential influence on FDI inflows across EAC region. The analysis examines the strength and direction of linear relationships between variables such as unemployment, tertiary enrolment, government education expenditure, labor force participation, scientific and

technical journal articles, and research and development (R&D) expenditure.

The results indicate several statistically significant relationships that offer insight into the interplay between education, labor market activity, and knowledge production. Notably, unemployment exhibits a strong and statistically significant negative correlation with labor force participation rate ($r = -0.699$, $p < 0.001$), suggesting that higher levels of participation in the labor market are associated with reduced unemployment. This finding underscores the importance of active labor market engagement as a component of digital readiness and overall economic dynamism.

Unemployment is also negatively correlated with government expenditure on education ($r = -0.426$, $p < 0.001$), implying that higher investment in education may contribute to lowering unemployment levels, possibly by equipping the labor force with skills that meet market demands. Additionally, unemployment shares a moderate negative correlation with the number of scientific and technical journal articles published ($r = -0.432$, $p < 0.001$), reinforcing the notion that countries with higher research output tend to have more robust labor markets.

Gross enrolment in tertiary education shows a significant positive correlation with scientific and technical journal article output ($r = 0.382$, $p < 0.001$), highlighting the critical role of higher education in supporting research productivity. Interestingly, tertiary enrolment is negatively correlated with labor force participation ($r = -0.562$, $p < 0.001$), suggesting that as more individuals pursue higher education, immediate entry into the workforce may be delayed—an expected trend in developing countries investing in long-term human capital formation.

Government expenditure on education, while significantly related to unemployment and weakly related to R&D ($r = -0.379$), demonstrates an unexpectedly weak and statistically insignificant correlation with tertiary enrolment ($r = 0.099$, $p = 0.446$). This raises concerns regarding the efficiency and targeting of educational investments, as higher spending does not appear to directly translate into increased enrolment at the tertiary level. This could reflect issues such as limited institutional capacity, affordability barriers, or quality constraints within the education system.

Labor force participation exhibits a small but statistically significant positive correlation with scientific journal output ($r = 0.233$, $p = 0.001$), suggesting that an engaged workforce may indirectly support knowledge production. Meanwhile, scientific output is positively and significantly associated with both tertiary enrolment and R&D expenditure, reinforcing the synergistic link between education, research investment, and knowledge generation.

R&D expenditure, although positively correlated with scientific output (r = 0.382, p = 0.034), shows weaker and statistically insignificant relationships with other variables, including labor participation and government education expenditure. This may be due to the relatively low levels of R&D funding in the region or the time lag between research investments and observable socio-economic impacts.

Overall, the correlation analysis reveals a network of interconnected relationships between digital knowledge indicators that may collectively shape a country's ability to attract FDI. The strong associations between tertiary education, labor force participation, and scientific output highlight the importance of a well-educated and active workforce in supporting innovation and economic competitiveness. However, the weak linkage between public education spending and tertiary enrolment points to potential structural inefficiencies that could hinder the translation of investment into measurable outcomes. These findings suggest that for the EAC countries to enhance its digital competitiveness and attract greater FDI inflows, policies must not only increase investments in education and research but also ensure their effective implementation and alignment with labor market needs.

***Table 4. 13*Correlation analysis for Digital knowledge levels on FDI inflows**

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Unemployment	1.000					
(2) Gross enrolment ratio for tertiary education	0.394	1.000				
p value	(0.000) ***					
(3) Government expenditure on education	-0.426	0.099	1.000			
p value	(0.000) ***	(0.446)				
(4) Labor force participation rate	-0.699	-0.562	-0.039	1.000		
p value	(0.000) ***	(0.000) ***	(0.659)			
(5) Scientific and technical journal articles	-0.432	0.382	0.108	0.233	1.000	
p value	(0.000) ***	(0.000) ***	(0.251)	(0.001) ***		
(6) Research and development	-0.184	0.264	-0.379	-0.281	0.382	1.000
p value	(0.322)	(0.223)	(0.148)	(0.126)	(0.034) **	

Note: **, *** indicates significance at the 95% and 99%, level respectively, p values in parenthesis

Source: Own study (2025)

4.4.2 Correlation analysis for Digital technology levels on FDI inflows

Ease of Doing Business exhibited a very strong positive correlation with Regulatory Quality ($r = 0.958$, $p = 0.000$), highlighting the tight interdependence between institutional effectiveness and business facilitation. This relationship suggests that countries with better regulatory environments are also more likely to offer more conducive business conditions, which is crucial for attracting FDI. Similarly, Strength of Legal Rights Index was also strongly and significantly correlated with both Ease of Doing Business ($r = 0.849$, $p = 0.000$) and Regulatory Quality ($r = 0.764$, $p = 0.000$), reinforcing the central role of robust legal institutions in enhancing investor confidence.

Domestic Credit to the Private Sector (% of GDP), an indicator of financial depth and access to capital, showed significant positive correlations with Ease of Doing Business ($r = 0.786$, $p = 0.000$), Regulatory Quality ($r = 0.582$, $p = 0.000$), and Strength of Legal Rights ($r = 0.524$, $p = 0.000$). These relationships imply that increased access to credit is not only facilitated by better regulatory and legal frameworks but also contributes to a more favorable environment for business operations and investment.

Interestingly, Gross Capital Formation, which reflects investment in physical assets, showed a significant but moderate negative correlation with Ease of Doing Business ($r = -0.352$, $p = 0.035$) and Strength of Legal Rights ($r = -0.376$, $p = 0.007$). This suggests that, in the context of EAC economies, capital formation may not always align with institutional quality, possibly due to inefficient allocation of resources or the dominance of public-sector-led investments.

Digital infrastructure variables demonstrated interlinkages as well. Fixed Broadband Subscriptions were moderately and significantly correlated with Domestic Credit to Private Sector ($r = 0.236$, $p = 0.014$) and Gross Capital Formation ($r = 0.502$, $p = 0.000$), indicating that investment in broadband may be supported by both financial sector depth and broader capital investments. Additionally, Mobile Cellular Subscriptions were strongly and significantly correlated with several variables, including Regulatory Quality ($r = 0.385$, $p = 0.000$), Strength of Legal Rights ($r = 0.693$, $p = 0.000$), Domestic Credit ($r = 0.485$, $p = 0.000$), and Fixed Broadband ($r = 0.617$, $p = 0.000$). These findings highlight the synergistic nature of digital infrastructure development.

Secure Internet Servers were also positively correlated with Mobile Subscriptions ($r = 0.707$, $p = 0.000$) and Fixed Broadband ($r = 0.570$, $p = 0.000$), reinforcing the idea that the expansion of digital access is mirrored by improvements in cybersecurity infrastructure. Their correlation with Domestic Credit ($r = 0.458$, $p = 0.000$) further emphasizes the role of financial access in supporting digital

transformation.

The variable ICT Goods Exports had weaker and mostly insignificant correlations, with the exception of a positive correlation with Regulatory Quality ($r = 0.273$, $p = 0.004$) and Gross Capital Formation ($r = 0.239$, $p = 0.010$), suggesting a limited but noteworthy role of ICT exports in the digital economy landscape of the region.

Lastly, Access to Electricity, a foundational infrastructure variable, was significantly correlated with nearly all other digital variables, including Mobile Subscriptions ($r = 0.756$, $p = 0.000$), Fixed Broadband ($r = 0.657$, $p = 0.000$), Secure Internet Servers ($r = 0.635$, $p = 0.000$), and Domestic Credit ($r = 0.543$, $p = 0.000$). This underscores that reliable electricity supply is a critical enabler of digital technology utilization and thus a key component in enhancing a country's investment attractiveness. In summary, the analysis indicates that digital technology utilization is strongly influenced by institutional quality, access to finance, and infrastructure development. These factors are significantly interlinked and collectively enhance the ecosystem necessary for attracting and sustaining FDI inflows in the EAC region.

4.4.3 Correlation analysis for Digital technology utilization on FDI inflows

***Table 4. 14*Correlation analysis for Digital technology utilization on FDI inflows**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Ease of doing business	1.000									
(2) Regulatory Quality	0.958	1.000								
p value	(0.000) ***									
(3) Strength of legal rights index	0.849	0.764	1.000							
p value	(0.000) ***	(0.000) ***								
(4) Domestic credit to private sector	0.786	0.582	0.524	1.000						
p value	(0.000) ***	(0.000) ***	(0.000) ***							
(5) Gross capital formation	-0.352	-0.134	-0.376	-0.091	1.000					
p value	(0.035) **	(0.084)	(0.007) ***	(0.233)						
(6) Fixed broadband subscriptions	0.143	0.046	0.042	0.236	0.502	1.000				
p value	(0.400)	(0.616)	(0.772)	(0.014) **	(0.000) ***					
(7) Mobile cellular subscriptions	0.785	0.385	0.693	0.485	0.420	0.617	1.000			
p value	(0.000) ***	(0.000) ***	(0.000) ***	(0.000) ***	(0.000) ***	(0.000) ***				
(8) Secure Internet servers	0.478	0.308	0.449	0.458	-0.154	0.570	0.707	1.000		
p value	(0.002) ***	(0.001) ***	(0.001) ***	(0.000) ***	(0.131)	(0.000) ***	(0.000) ***			
(9) ICT goods exports	0.077	0.273	-0.005	-0.036	0.239	-0.088	0.014	-0.108	1.000	
p value	(0.688)	(0.004) ***	(0.975)	(0.720)	(0.010) ****	(0.419)	(0.880)	(0.388)		
(10) Access to electricity	0.285	0.084	0.315	0.543	0.491	0.657	0.756	0.635	-0.039	1.000
p value	(0.075)	(0.268)	(0.021) ***	(0.000) ***	(0.000) ***	(0.000) ***	(0.000) ***	(0.000) ***	(0.677)	

4.4.4 Correlation analysis for Future readiness for digital transformation on its ability to attract FDI inflows

A strong and statistically significant positive correlation was observed between the cost of starting a business and the time required to start a business ($r = 0.846$, $p = 0.000$). This suggests that countries where it takes longer to establish a business also tend to have higher startup costs. Such conditions potentially deter foreign investors by increasing the initial barriers to market entry. These findings highlight the importance of streamlining bureaucratic procedures and reducing the cost burden of entrepreneurship as part of broader investment climate reforms.

The number of new businesses registered was found to be negatively correlated with the cost of starting a business ($r = -0.396$, $p = 0.002$), indicating that lower startup costs are associated with higher business formation rates. Although the relationship between new business registration and adult literacy rate was positive ($r = 0.355$), it was not statistically significant ($p = 0.178$). Nonetheless, the direction of the relationship suggests that greater literacy may encourage entrepreneurial activity, reinforcing the role of human capital in economic dynamism.

High-technology exports, a proxy for a country's technological capacity and global competitiveness, showed a moderate positive correlation with the time required to start a business ($r = 0.500$, $p = 0.000$). While this result might seem counterintuitive, it could reflect that countries with developed high-tech industries are more likely to have complex regulatory systems, thereby increasing startup times. Alternatively, it may indicate that high-tech firms in the region operate within specific regulatory frameworks that differ from general business norms.

One of the most compelling findings is the role of digital connectivity. The proportion of individuals using the Internet was significantly and positively correlated with adult literacy ($r = 0.459$, $p = 0.004$), reaffirming the critical interplay between basic education and digital adoption. Furthermore, internet usage was negatively and significantly correlated with both the time required to start a business ($r = -0.314$, $p = 0.001$) and the cost of business start-up procedures ($r = -0.414$, $p = 0.000$). This implies that improved digital access not only enhances administrative efficiency by facilitating online registration and e-government services but also reduces the financial and procedural burdens for entrepreneurs and investors.

Additionally, internet usage was positively associated with the number of new businesses registered ($r = 0.433$, $p = 0.001$). This finding strengthens the case for investment in ICT infrastructure as a key enabler of entrepreneurial activity and FDI readiness. In an increasingly digitized global economy, the ability of citizens and businesses to connect and operate online has become a fundamental determinant of investment attractiveness.

In contrast, some relationships were not statistically significant. For example, the correlation between adult literacy and the cost of starting a business was weak and non-significant ($r = -0.223$, $p = 0.319$), as was the relationship between high-tech exports and literacy ($r = 0.152$, $p = 0.489$). These findings may reflect that while

literacy is a foundational skill, other factors such as policy frameworks, infrastructure, and international trade linkages play more direct roles in influencing export performance and business environments.

The analysis highlights that future readiness for digital transformation measured through a combination of regulatory efficiency, human capital, and digital infrastructure is crucial to enhancing a country's appeal to foreign investors. Statistically significant correlations emphasize the importance of reducing business startup costs and times, promoting internet access, and supporting high-tech industries. These efforts are likely to contribute to a more conducive investment climate that aligns with the demands of a digital global economy.

4. 15Correlation analysis for Future readiness for digital transformation on its ability to attract FDI inflows

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Time required to start a business	1.000					
(2) Adult literacy rate	0.040	1.000				
	(0.861)					
(3) Cost to start a business	0.846	-0.223	1.000			
	(0.000) ***	(0.319)				
(4) Number of new businesses registered	-0.049	0.355	-0.396	1.000		
	(0.719)	(0.178)	(0.002) ***			
(5) High-Technology Exports	0.500	0.152	0.181	0.258	1.000	
	(0.000) ***	(0.489)	(0.177)	(0.091)		
(6) Internet users	-0.314	0.459	-0.414	0.433	0.038	1.000
	(0.001) ***	(0.004) ***	(0.000) ***	(0.001) ***	(0.749)	

4.5 Trend analysis for Foreign Direct Investment inflows.

This section examines the historical trends in foreign direct investment (FDI) inflows across the East African Community (EAC) member states and selected neighboring countries over a 34-year period. The visual representation in Figure 4.1 highlights significant temporal fluctuations in FDI inflows, while Figure 4.2 presents a comparative average of FDI inflows by country.

From the analysis of Figure 4.1, it is evident that the Democratic Republic of Congo (DRC) experienced notably high FDI inflows during two key periods—2006 to 2008 and 2010 to 2012. These surges in investment may reflect periods of relative political or economic stability, often linked to global commodity cycles as well as temporary improvements in the business climate. However, the volatility in FDI trends in the DRC can largely be attributed to persistent political instability and conflict, which periodically undermines investor confidence and disrupts economic activity.

In contrast, Somalia and South Sudan show negligible or no data on FDI inflows across most of the time period.

This trend can be explained by Somalia's lack of a centralized, stable government for much of the period under study, which has hindered the establishment of regulatory frameworks necessary to attract international investment. Similarly, South Sudan, having gained independence only in 2011, is still in the early stages of developing a structured economic environment conducive to foreign investment. Ongoing internal conflicts and weak institutions further limit its capacity to attract FDI.

According to the long-term average illustrated in Figure 4.2, Uganda stands out as the country with the highest average FDI inflow rate at 3.16% of GDP over the study period. Uganda's relative political stability, ongoing economic reforms, and strategic positioning as a regional hub may have contributed to this performance. Conversely, Somalia registered no recordable average, reflecting its prolonged economic and institutional fragility.

Overall, the trend analysis reveals that political stability, regulatory infrastructure, and institutional capacity play critical roles in shaping a country's ability to attract and sustain foreign investment. Countries with prolonged conflict, weak governance, or underdeveloped institutions face considerable barriers to FDI inflows, while those that have maintained relative stability and undertaken market reforms are better positioned to attract international capital.

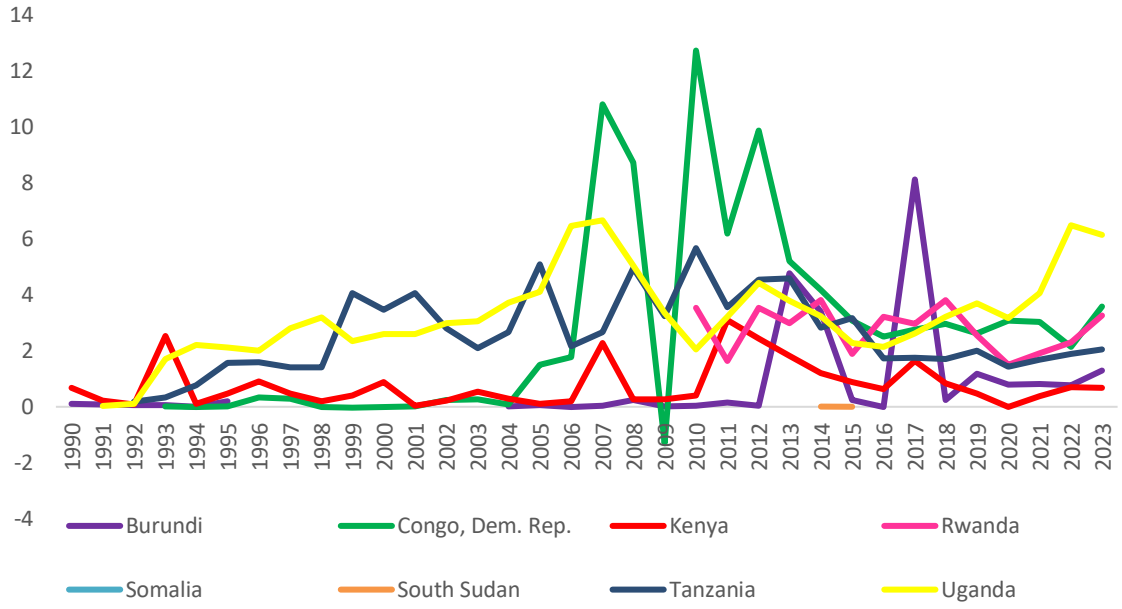


***Figure 4. 1*FDI trend analysis**

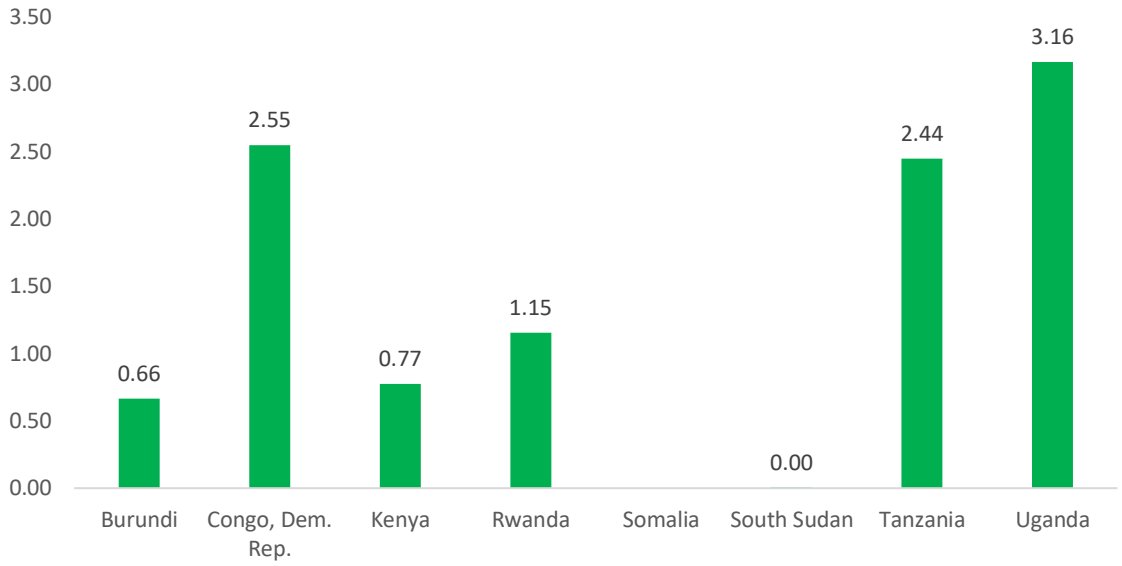


Figure 4. 2Trend average by country

4.6 Inferential statistics

This section examines the relationship between the dependent and independent variables using Random Effects regression analysis. The results are presented and discussed in alignment with the specific objectives of the study, providing insights into the statistical significance and direction of the associations observed.

4.6.1 To assess the effect of digital knowledge levels on FDI inflows in select EAC member countries

Results in Table 4.13 on the effect of digital knowledge levels on FDI inflows in select EAC member countries had Scientific and technical journal articles $p < 0.01$ with R squared of 0.827 an indication the factors under study contributed to 82.7% variation in FDI inflows and one unit change in FDI inflows led to 1.2% positive change in Scientific and technical journal articles. With control variables, none of the predictors was significant and R squared improved to 0.961 an indication control variable had a positive influence increment of 13.4% on FDI.

Table 4. 16Random effect Model - Effect of digital knowledge levels on FDI inflows without and with control variables

Attributes	Without control	With control
Constant	-4.476	-16.576
	(0.568)	(0.776)
Gross enrollment ratio	0.085	0.086
	(0.840)	(0.911)
Expenditure on education	0.823	3.066
	(0.097)	(0.246)
Labor force participation rate	-0.013	-0.011
	(0.894)	(0.947)
Scientific and technical journal articles	0.012***	0.064
	(0.004)	(0.101)
Research and development	3.826	18.335
	(0.063)	(0.288)
GDP growth annual		-1.376
		(0.998)
Population total		0.000
		(0.540)
Inflation		0.234
		(0.068)
GDP current US		0.000
		(0.0367)
Exchange Rate		0.000
		(0.742)
Chi square	6.693 (0.000) ***	4.970 (0.384)
R squared	0.827	0.961
No. Observations	272	272

Note: **, *** indicates significance at the 95% and 99%, level respectively, p values in parenthesis

Source: Own study (2025)

4.6.2 To investigate the effect of digital technology utilization on FDI inflows in EAC member countries

Results in Table 4.14 on the effect of digital technology utilization on FDI inflows in select EAC member countries had all the predictors not significantly driving FDI inflows without control variables with R-squared of 0.297 an indication these factors influence FDI inflows by 29.7%. With control variables, GDP growth annual and Inflation were significant and R squared improved to 0.715 an indication control variable had a positive influence increment of 41.8% on FDI. One

unit change in FDI inflows leads to 36.8% positive change in GDP growth annual and 32.9% positive change in Inflation rate.

Table 4. 17 Random effect Model - Effect of digital technology utilization on FDI inflows without and with control variables

Attributes	Without control	With control
Constant	6.162***	0.967
	(0.005)	(0.116)
Regulatory Quality Index	1.257	-3.576
	(0.181)	(0.095)
Strength of legal rights index	0.047	0.388
	(0.784)	(0.383)
Domestic credit to private sector	-0.059	-0.194
	(0.403)	(0.189)
Gross capital formation	0.000	0.000
	(0.844)	(0.452)
Fixed broadband subscriptions	-0.496	-1.036
	(0.622)	(0.784)
Mobile cellular subscriptions	-0.035	-0.018
	(0.368)	(0.650)
Secure internet servers	0.002	-0.015
	(0.825)	(0.766)
ICT goods and services exports	-0.020	0.083
	(0.932)	(0.959)
GDP growth annual		0.368**
		(0.037)
Population total		0.000
Inflation		0.329***
		(0.007)
GDP current US		0.000
		(0.721)
Exchange Rate Stability		0.000
		(0.643)
Chi	1.477	3.854***
square R	0.297	0.715
squared	272	272
No. Observations		

Note: **, *** indicates significance at the 95% and 99%, level respectively, p values in parenthesis

Source: Own study 2025

4.6.3 To analyze the effect of a country's future readiness for digital transformation on its ability to attract FDI inflows within the EAC countries

Results in Table 4.14 on the effect of a country's future readiness for digital transformation on its ability to attract FDI inflows within the EAC countries had Adult literacy rate and High-Technology Exports significantly driving FDI inflows without control variables with R-squared of 0.684 an indication these factors influence FDI inflows by 68.4%. One unit change in FDI inflows causes a decline in Adult literacy rate by 21% and no change for High-Technology Exports. With control variables, none of the variables significantly drove FDI though R squared improved to 0.920 an indication control variable had a positive influence increment of 23.6% on FDI.

Table 4. 18Random effect Model - effect of a country's future readiness for digital transformation on its ability to attract FDI inflows

Attributes	Without control	With control
Constant	15.945***	6.582
	(0.007)	(0.790)
Time required to start a business	0.027	0.250
	(0.682)	(0.532)
Adult literacy rate	-0.210**	-0.062
	(0.027)	(0.881)
Cost to start a business	0.027	-0.026
	(0.100)	(0.779)
Number of new businesses registered	0.000	0.000
	(0.057)	(0.700)
High-Technology Exports	0.000**	0.000
	(0.030)	(0.758)
Internet users	0.189	0.002
	(0.120)	(0.997)
Population total		0.000
		(0.645)
Inflation		-0.087
		(0.832)
Exchange Rate Stability		-0.004
		(0.578)
Chi-square	1.805	1.282
R squared	0.684	0.920
No. Observations	272	272

Note: **, *** indicates significance at the 95% and 99%, level respectively, p values in parenthesis

Source: Own study 2025

4.7 Chapter Summary

Tables, charts, and the researcher's subjective assessment of the study's results were all included in this chapter. Following the introduction of descriptive statistics, diagnostic tests and inferential statistical analysis between the variables were provided.

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings from the previous chapters, draws conclusions from the study's findings, and highlights any flaws that were discovered throughout the investigation. The chapter also offers policy suggestions that can aid nations in realizing the significance of foreign direct investment inflows. The chapter concludes with recommendations for other research projects that may prove useful to future researchers.

5.2 Summary of Findings

In the context of intensifying global competition for FDI, digital capabilities are increasingly viewed as strategic assets for developing economies. This study examined the influence of digital knowledge, digital technology utilization, and future readiness for digital transformation on FDI inflows in selected EAC member countries. The research was framed by the Internalization Theory and new growth theory employing a correlational research design. Secondary data was sourced and analyzed using random effects panel regression models, with macroeconomic variables incorporated as controls to isolate the specific impact of digital-related factors on investment flows.

The analysis revealed varying degrees of influence from the three dimensions studied. Digital knowledge, particularly the output of scientific and technical publications, showed a strong initial association with FDI inflows, though this significance diminished when macroeconomic controls were applied. Digital technology utilization had no significant independent effect, but GDP growth and inflation emerged as key contributors once broader economic conditions were considered. Similarly, indicators of future readiness such as adult literacy and high-technology exports initially influenced FDI but lost their predictive power when adjusted for macro-level factors. These findings suggest that while digital capabilities are important, they are not standalone drivers of foreign investment in the region; instead, they function effectively in tandem with stable and supportive economic environments.

5.3 Discussions

5.3.1 Digital knowledge levels on FDI inflows in EAC member countries

The findings of this study reveal a strong and positive association between digital knowledge levels and foreign direct investment inflows across EAC member countries. Scientific and technical journal publications, used as a proxy for research output and innovation capacity, emerged as a key indicator in explaining variations in FDI. This suggests that countries demonstrating higher

levels of intellectual activity and technological advancement are more likely to attract foreign investors. These results support the idea that knowledge-based assets, such as research and innovation, play a pivotal role in signaling technological capability and investment readiness to multinational enterprises.

These insights are well aligned with the Ownership-Location-Internalization (OLI) framework, particularly the location-specific advantages that emphasize institutional and technological capacities. Countries that cultivate strong knowledge systems and innovation ecosystems offer attractive conditions for foreign firms looking to invest in technologically sophisticated or evolving markets. From the lens of the New Growth Theory, which posits that long-term economic growth is driven by knowledge, human capital, and innovation, the findings reinforce the critical role of digital knowledge infrastructure in enhancing investment attractiveness.

While other indicators such as education expenditure, enrolment levels, labor force participation, and R&D spending were not individually significant, their positive associations imply long-term potential in creating a robust intellectual environment. These elements contribute to building a foundation for future innovation and economic dynamism, key pillars of sustained foreign investment. Moreover, when macroeconomic variables were included in the model, the overall explanatory strength improved, highlighting the complementary role that stable economic fundamentals play alongside digital knowledge in shaping investment decisions.

These results echo global trends and affirm that, beyond physical infrastructure or market access, countries that invest in developing their intellectual infrastructure through science, education, and technology—position themselves more competitively in the global investment landscape. To enhance their FDI potential, EAC countries should prioritize policies that support research development, foster collaboration between academia and industry, and build digital literacy across sectors. In doing so, they create an innovation-driven economy aligned with both theoretical models and practical investment criteria.

5.3.2 Digital technology utilization on FDI inflows in EAC member countries

This study explored the relationship between digital technology utilization and FDI inflows in the East African Community, with a focus on indicators such as regulatory quality, legal rights, and access to digital infrastructure. The findings indicate that these digital technology factors, when considered in isolation, do not significantly influence FDI inflows. However, the inclusion of

macroeconomic control variables highlighted a stronger explanatory relationship, with some economic indicators playing a more significant role in driving investment. This suggests that digital technology alone may not be sufficient to attract foreign investors unless it is supported by a stable and conducive economic environment.

These results resonate with the Ownership-Location-Internalization (OLI) framework, which posits that multinational enterprises seek locations that offer not only market potential and resources but also supportive institutional and technological environments. Although digital technology utilization may not have shown a direct impact, it forms part of the location-specific advantages that contribute to long-term investment attractiveness. From the perspective of the New Growth Theory, digital infrastructure and technological readiness are important enablers of innovation and productivity growth, which in turn contribute to a more competitive investment climate.

The findings imply that while EAC countries are making strides in expanding digital access and regulatory frameworks, these must be accompanied by macroeconomic stability and consistent policy implementation to create a fully enabling environment for FDI. Improvements in broadband access, mobile penetration, and digital financial services need to be strategically aligned with broader development goals. By integrating technology with institutional reforms and economic planning, EAC countries can enhance their position as viable destinations for technology-driven foreign investment.

5.3.3 The country's future readiness for digital transformation on its ability to attract FDI inflows within the EAC countries

The analysis of indicators related to future readiness for digital transformation reveals a meaningful relationship with foreign direct investment inflows in EAC member countries. Although individual readiness factors such as adult literacy, internet use, business startup costs, and entrepreneurship rates did not show strong direct effects on their own, their combined influence appears to be important in shaping investment attractiveness.

From the perspective of the OLI framework, a country's future readiness reflects its location advantages, particularly in terms of institutional quality and human capital—critical components that investors consider when selecting destinations for expansion. Even if current metrics do not individually predict investment flows, the overall trajectory of digital preparedness signals to multinational enterprises that a country is improving its capacity to support complex and knowledge-intensive operations. This enhances the perceived benefits of investing, especially for firms seeking to internalize their technological capabilities in dynamic markets.

The New Growth Theory further supports this view by emphasizing the importance of human capital, innovation, and institutional development as engines of sustainable economic growth. Digital readiness is not merely about infrastructure but also about building an ecosystem that encourages innovation, entrepreneurship, and knowledge diffusion. Countries that invest in these areas create a foundation for long-term competitiveness, which in turn attracts investment that values future potential over immediate returns.

The lack of statistically significant results for individual variables may reflect current developmental challenges in the EAC region. For example, limited internet penetration and persistent structural inefficiencies in business startup processes may reduce the immediate impact of digital readiness on investment decisions. Nonetheless, investors appear to respond positively to broader improvements in policy environments, institutional trust, and the promise of enhanced human capital, all of which are key drivers of confidence and investment in the longer term.

Policy-wise, this suggests that digital transformation should be approached as an integrated development strategy rather than a purely technological upgrade. Efforts to enhance digital literacy, streamline online business registration, foster innovation ecosystems such as tech hubs and incubators, and ensure transparent legal and regulatory frameworks will signal to investors

that the country is committed to sustained growth and a supportive business environment.

In summary, while the direct impact of individual digital readiness indicators may currently be limited, the overall future readiness of EAC countries plays a vital role in attracting foreign investment. Aligning digital transformation with institutional and economic development strategies will strengthen the region's appeal as a destination for long-term, knowledge-driven investment

5.4 Conclusion

The findings provide important insights into how digital and economic variables interact in shaping investment outcomes in the region. First, digital knowledge levels particularly as measured by scientific and technical journal publications showed a significant positive relationship with FDI inflows. This indicates that countries with stronger intellectual capital and research output tend to attract more foreign investment, likely due to perceived innovation potential and a more skilled labor force. Although other education-related indicators were not statistically significant, their positive direction suggests that investments in human capital may yield long-term FDI benefits.

Second, digital technology utilization, though essential, did not show a strong direct influence on FDI in its current form across EAC countries. Low levels of broadband access, secure internet servers, and ICT infrastructure likely limit the capacity of these economies to support technology-intensive investments. However, when combined with macroeconomic stability, the contribution of digital infrastructure becomes more pronounced, indicating that digital investments are most effective in environments supported by sound governance and policy frameworks.

Third, a country's future readiness for digital transformation was found to explain a substantial proportion of the variation in FDI inflows, despite individual indicators lacking statistical significance. This suggests that readiness factors such as internet usage, literacy, and ease of starting a business are influential when viewed holistically. Investors may interprete

improvements in these areas as signals of a country's long-term viability and openness to innovation-driven growth.

The study concludes that while digital transformation alone does not guarantee increased FDI, it plays a foundational and enabling role especially when paired with stable macroeconomic conditions and institutional effectiveness. For EAC countries to become more competitive in attracting FDI, a dual strategy is recommended: one that prioritizes investments in digital infrastructure and skills development, alongside policy reforms that enhance the overall business environment.

5.5 Recommendations

Firstly, there is a critical need to strengthen the region's research and innovation ecosystem. The positive relationship between scientific and technical journal publications and FDI inflows underscores the importance of a knowledge-based economy. EAC member states should institutionalize a regional framework for supporting scientific research and innovation. This could involve establishing an EAC Research and Innovation Fund that supports collaborative projects among universities and research institutions across member states. In addition, harmonizing intellectual property protection laws would ensure that innovators are safeguarded and that regional research outputs can attract high-value investment from abroad. Efforts should also be made to promote mobility and resource-sharing among researchers within the EAC to foster a vibrant and interconnected academic community.

Secondly, improving access to and the quality of digital infrastructure across the region is imperative. Despite global digital progress, large portions of the EAC especially rural and underserved areas remain disconnected or inadequately connected. To address this, EAC member states should invest in joint regional infrastructure projects, such as a digital backbone initiative, to expand broadband connectivity across borders. Region-wide frameworks for affordable mobile data pricing and internet roaming should also be pursued to reduce access barriers. Moreover, harmonized digital standards and policies are essential to ensure interoperability of systems and to support digital cross-border trade and investment.

Human capital development must also be prioritized to support a transition to a digital economy. The region faces considerable digital skill gaps that limit its competitiveness in attracting knowledge-driven FDI. A coordinated regional approach to digital skills development is necessary. This includes investing in technical and vocational education and training (TVET) programs with a digital focus, introducing digital literacy in basic education, and supporting partnerships between the private sector and educational institutions. Additionally, standardizing digital education certifications across the EAC can enhance labor mobility and provide investors with a consistent understanding of workforce qualifications across countries.

Reducing the cost and complexity of starting a business remains a pressing need. The study found that high start-up costs and long registration times act as deterrents to investment. EAC countries should consider adopting minimum standards for business registration times and costs as part of the implementation of the EAC Common Market Protocol. The use of digital platforms to register businesses and process licenses can drastically improve efficiency and transparency. Furthermore, regional incentive schemes for digital start-ups—such as tax reliefs, grants, or subsidized office space—can stimulate entrepreneurship and attract innovation-driven investors to the region.

In conclusion, while EAC member states differ in their levels of digital readiness, they share common opportunities and challenges that can be more effectively addressed through coordinated regional action. By investing in research and human capital, strengthening digital infrastructure, aligning policies, and improving the ease of doing business, the EAC can significantly enhance its attractiveness to foreign investors. A digitally integrated and future-ready EAC will not only appeal to global investors but also foster sustainable economic growth, innovation, and regional cohesion.

5.6 Areas for further research

Several potential research gaps have emerged from this study, offering avenues for further empirical inquiry. Firstly, this analysis assessed FDI inflows in aggregate, without disaggregating them by economic sector. Future studies could explore the influence of digital competitiveness on sector-specific FDI inflows, which would provide more nuanced insights. Additionally, comparative analyses between the EAC and other regional economic blocs, such as SADC or COMESA, could yield valuable findings regarding the relative impact of digital competitiveness across region.

Given the study's reliance on secondary data, there is a need for empirical validation of the findings through primary data collection or mixed-method approaches. Furthermore, future research should consider examining other dimensions of digital competitiveness not addressed in this study, in order to build a more comprehensive understanding of its role in attracting FDI.

5.7 Limitations of the study

This study faced several limitations that may have affected its findings. First, while the EAC comprises eight-member states; Kenya, Uganda, Tanzania, Rwanda, Burundi, the DRC, Somalia, and South Sudan—data limitations were evident for the DRC, Somalia, and South Sudan. These countries, often affected by political instability, had significant gaps in available data, which may have influenced the overall results.

Second, the study relied on a 33-year panel of secondary data (1990–2023), which, although extensive, may not be sufficient for broad generalizations. Future research should consider utilizing longer datasets, spanning 50 years or more to provide a more comprehensive understanding of the long-term effects of digital competitiveness on FDI inflows within EAC member states.

Lastly, the exclusive use of secondary data restricted the ability to capture current stakeholder perspectives. Incorporating primary data, especially from policymakers and lawmakers, would be valuable in assessing contemporary views on digital competitiveness and its potential to attract FDI into the region.

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APPENDICES

DATA EXTRACTION TEMPLATE

Variable/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Labor force participation rate																																	
Unemployment rate, skilled workers																																	
The net migration rate of skilled workers																																	
Gross enrollment ratio (primary, secondary, and tertiary education)																																	
Expenditure on education (% of GDP)																																	
Quality of education systems (e.g., Harmonized Test Scores)																																	
Literacy rate, adult total																																	
Research and development (R&D) expenditure (% of GDP)																																	
Researchers in R&D (per million people)																																	
Patent applications (per capita)																																	
Scientific and technical journal articles																																	
Ease of doing business index																																	
Regulatory Quality Index																																	
Strength of Legal Rights Index																																	
Domestic credit to private sector (% of GDP)																																	
Gross capital formation (% of GDP)																																	
Fixed broadband subscriptions (per 100 people)																																	
Mobile cellular subscriptions (per 100 people)																																	
Secure internet servers (per 1 million people)																																	
ICT goods and services exports (% of total goods exports)																																	
Electricity access (% of population)																																	
Internet users (% of the population)																																	
Adult literacy rate																																	
Time required to start a business (days)																																	
Cost to start a business (% of GNI per capita)																																	
Number of new businesses registered																																	
High-Technology Exports (% of manufactured exports)																																	
Foreign direct investment, net inflows (% of GDP).																																	
GDP (Gross Domestic Product)																																	
Population Size																																	
Inflation Rate																																	
Exchange Rate Stability																																	
GDP Growth Rate																																	
Trade Openness																																	

STUDY WORK PLAN

Work Plan					
	2024/2025				
Description	**Oct - Jan**	**Feb**	**Mar**	**April**	**May**
Proposal Development					
Proposal defense					
Proposal corrections					
Data Collection					
Data Cleaning, coding and entry					
Data analysis					
Report Writing					
Thesis Presentation					
Thesis Correction					
Submission of final thesis					

STUDY BUDGET

Item	Description	Cost Estimate (KES)
Data Collection	Collection of secondary data from public sources.	KES 0.00 (No cost incurred)
Data Analysis Software	Hiring Stata software for data analysis (1 month).	KES 10,000.00
Statistician Support	Hiring a statistician for data analysis assistance (10 hours @ $20/hour).	KES 20,000.00
Miscellaneous Expenses	Communication, internet costs, printing, and other incidental expenses.	KES 10,000.00
Travelling		KES 10,000.00
Contingency	Unforeseen expenses (10% of total budget).	KES 5,000.00
Total Estimated Cost		**KES 55,000.00**

Strathmore UNIVERSITY

8th April 2025

Ms Miriti Nelly,
nelly.miriti@strathmore.edu

Dear Ms Miriti,

RE: The Nexus Between Digital Competitiveness and Foreign Direct Investment Inflows in East Africa Community Countries

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2816/25.** The approval period is from **8th April 2025 to 7th April 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

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