

**FINANCIAL TECHNOLOGY AND FINANCIAL INCLUSION EFFECT ON
WOMEN ECONOMIC EMPOWERMENT IN KENYA**

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DECLARATION

This research project is my original work and has not been submitted for a degree in any other university or any other award.

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I confirm that the work reported in this research project was carried out under my supervision.

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DEDICATION

I dedicate this research to my family, whose unwavering support and belief in me made this achievement possible. To my mentors and friends who inspired and guided me along the way, I am profoundly grateful. This work is also dedicated to all scholars and practitioners committed to using knowledge to drive positive change, may it serve as a step toward that vision.

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ACRONYMS AND ABBREVIATIONS

CBK:	Central Bank of Kenya
FSD:	Financial Sector Deepening
FinAccess:	Financial Access
Fintech:	Financial Technology
ICT:	Information Communication Technology
KCB:	Kenya Commercial Bank
KDHS:	Kenya Demographic and Health Survey
KNBS:	Kenya National Bureau of Statistics
PCA:	Principal Component Analysis
WEE:	Women Economic Empowerment
WFE:	Women's Financial Empowerment:

OPERATIONAL DEFINITION OF TERMS

Digital Credit	Loans accessed through digital channels, without the need for physical bank interactions.
Economic Empowerment	How much access women have to financial services and how much knowledge they have to make informed financial decisions
Financial Inclusion	The extent to which people can effectively and easily access a variety of financial services
Fintech	Technological innovations used to support or enable banking and financial services.
Micro-Insurance	Insurance products that offer coverage to low-income households, accessible through mobile technology
Mobile Money	A type of banking where individual complete transactions using a mobile device.
M-Pesa	A form of payment using mobile phones, microfinance, and money transfer service that Vodafone introduced in 2007 for Safaricom and Vodacom.
Regulatory Environment	The framework of laws and regulations that affect the financial sector, especially concerning Fintech.
Savings Behavior	The regularity and amount of money saved by individuals using formal financial instruments.

ABSTRACT

The Fintech industry in Kenya is expanding rapidly, propelled by mobile technology platforms such as M-Pesa, which offer a distinctive prospect to augment financial inclusiveness. Even with the widespread use of mobile technology, there is still a sizable gender disparity in financial access, with women being less likely than males to actively use financial services. Fintech can help close these gaps, however there are now limitations in women's access and usage, which begs the question of how well-suited present Fintech solutions are to promote true economic empowerment and inclusion. The primary objective is to examine the impact of Fintech and financial inclusion on women's economic empowerment in Kenya. This entails understanding how Fintech could enhance women's financial behaviors and contribute to the reduction of the gender disparity in financial inclusion. Examining the effects of fintech and financial inclusion on women's economic empowerment in Kenya is one of the study's main objectives. The study used a cross-sectional survey from the Kenya National Bureau of Statistics' 2021 FinAccess Household Survey. Principal component analysis will be utilized to create indexes for women's economic empowerment and Fintech usage. Additionally, the relationship between Fintech usage and demographic characteristics is examined. The multinomial logit model is used to examine the data. The study found that fintech has a negative significance on women's economic empowerment while financial inclusion has a positive significance effect on women's economic empowerment in Kenya. The study's policy implications highlight the necessity for tailored interventions, including enhancing financial literacy among women, reducing digital transaction costs, and implementing gender-sensitive financial policies. The research contributes to the broader discourse on leveraging FinTech to promote economic inclusion and empowerment, particularly for marginalized groups such as women in developing economies.

CHAPTER ONE

INTRODUCTION

1.1 Background

The rapid growth of information, communication, and technology (ICT) has yielded numerous benefits that are appreciated in nearly every country on the globe, spanning multiple economic domains. These economic sectors include but are not limited to financial, educational, agriculture, construction, among others (Bilbao-Osorio, Dutta, & Lanvin, 2013). The financial sector has greatly benefited from the innovative initiatives to transform the manner in which people move money from one party to the other. The increasing availability and use of mobile phones can be attributed to the Fintech industry's exponential expansion. The other factor that would be attributable to the growth of Fintech industry is the increased advancement and penetration of information communication technology (ICT) infrastructure globally. These infrastructures include satellites, and base stations with increased capabilities to reach larger and unreached population (Maryuningsih, Hidayat, Riandi, & Rustaman, 2020).

The increase in mobile phones from button phones to smart phones has led to the increase in the number of users. Banks and other financial institutions are not left behind in tapping into this opportunity to increase their customer base, ease transactions and ensure that mobile money services is within the reach of many (Delloite, 2021). Many businesses have adopted the use of mobile money services and transactions across their base platforms integrating payment for goods and services with ease from customers and clients (Raithatha, 2023). Mobile phone owners whether button or smartphone can easily transact with businesses at the convenience of their homes, offices and at their local shops and

stores. However, as much as this technological capability of mobile money has been adopted and widely being used across the globe, some sectors or sections of the economy, still find it inconveniencing to fully accept payment through mobile money services (Kendall, Machoka, Veniard, & Maurer, 2011).

The global financial landscape is witnessing a transformative wave with the rise of Financial Technology (Fintech), characterized by the convergence of innovative business models and technology (Feyen *et al.*, 2021). While Fintech in developed economies primarily targets online customers, in developing contexts like Kenya, it holds immense potential for promoting financial inclusion among broader populations through mobile technology (Demirguc-Kunt *et al.*, 2018).

1.1.1 Fintech and Financial Inclusion in Kenya

Kenya is already a pioneer in mobile money services, and fintech has quickly grown to be an important part of the financial services industry there. The Central Bank of Kenya (CBK) study from 2021 states that Fintech services include digital lending, mobile money, internet banking, investment platforms, and insurtech. The major participants in the mobile money market are Equity Bank (*Equitel*), Airtel (*Airtel Money*), and Safaricom (*M-Pesa*). The Fintech industry in the nation has grown thanks to these service providers. With Safaricom 2007 launch of *M-Pesa*, millions of unbanked Kenyans were able to perform transactions straight from their mobile phones, revolutionizing financial access. Fintech technologies, such as digital loans, insurance policies, micro-investment platforms, and mobile banking, have surged in popularity as a result of this success (Esmaeilpour & Karami, 2023).

Kenya, a recognized Fintech hub in Africa, owes much of its success to the groundbreaking mobile money transfer platform, *M-Pesa*. *M-Pesa's* remarkable uptake, particularly among women, coupled with a favourable business environment and flexible regulations, has

fuelled the rapid growth of Fintech companies in the country, exceeding 80% increase in investment (between 2021 and 2022) and 48 deals in 2021 alone (Fintech Global, 2023). This rapid rise highlights the need to precisely examine how Fintech and Financial Inclusion affect Women's Economic Empowerment in Kenya, as well as whether they are effective in bridging inclusion gaps and expanding access to financial services.

The regulatory framework that protects consumers and encourages innovation supports the growth of this industry. In addition to promoting growth, the Central Bank of Kenya's policies—such as the National Payments System Act and guidelines for online lenders and finance-related startups—have drawn foreign Fintech investors to Kenya (Esmailpour & Karami, 2023). Even with these developments, problems like digital fraud, cybersecurity, and unequal access to technology still exist. External partners and the public and business sectors are still working together to overcome these issues and enhance Kenya's Fintech environment.

Financial inclusion in Kenya has benefited significantly from the integration of Fintech solutions into everyday financial activities, dramatically enhancing service access through platforms such as *M-Pesa*. These services have transformed financial transactions across the socioeconomic spectrum (Aicha, 2023). Today, over 80% of adults have access to financial services, a steep rise from less than 30% in 2006, largely because of the widespread use of mobile money systems (Adera & Abdisa, 2023). These systems provide a vital alternative to traditional banking, particularly in underserved rural areas (Ndung'u *et al.*, 2017; Ndung'u 2021).

Fintech developments have made financial services more accessible to a wider range of people, particularly small merchants and underprivileged communities, by significantly lowering transaction costs and improving ease. These innovations allow providers to offer

customized financial products to diverse user groups (Aicha 2023). Financial inclusion crucially underpinned Kenya's economic growth by enhancing its citizens' financial stability and supporting small business development. This has enabled better risk management, savings, and investment in growth opportunities. Importantly, it has also empowered women, providing them with greater control over financial resources, and fostering gender equality and economic development (Kimenyi & Ndung'u, 2009).

While the Kenyan government promotes Fintech development through supportive policies, ongoing challenges such as financial literacy and digital divide remain significant barriers. Continued efforts are necessary to improve digital literacy and to develop regulatory frameworks that protect consumers without hindering innovation (Ndung'u *et al.*, 2017). The successful interplay between technological advancement and policy support in Kenya serves as a model for financial inclusion that other developing countries look to emulate. To sustain this growth and overcome new challenges, a balanced approach that involves regulation, innovation, and education is essential.

1.1.2 Women Economic Empowerment and Inclusive Finance

Women empowerment is the act of accepting women's point of view and making efforts to raise the status in the society through education and training. Empowering women allows them to make life-determining decisions amid society problems. While Kenya boasts impressive overall financial inclusion figures, with 83.7% of the population accessing formal services as per the 2021 FinAccess Household Survey, the picture for women remains unexploited. The gender gap has narrowed steadily, dropping from 8.5% in 2016 to 4.2% in 2021 (KNBS, 2022) Figure 1.1 show the trend.

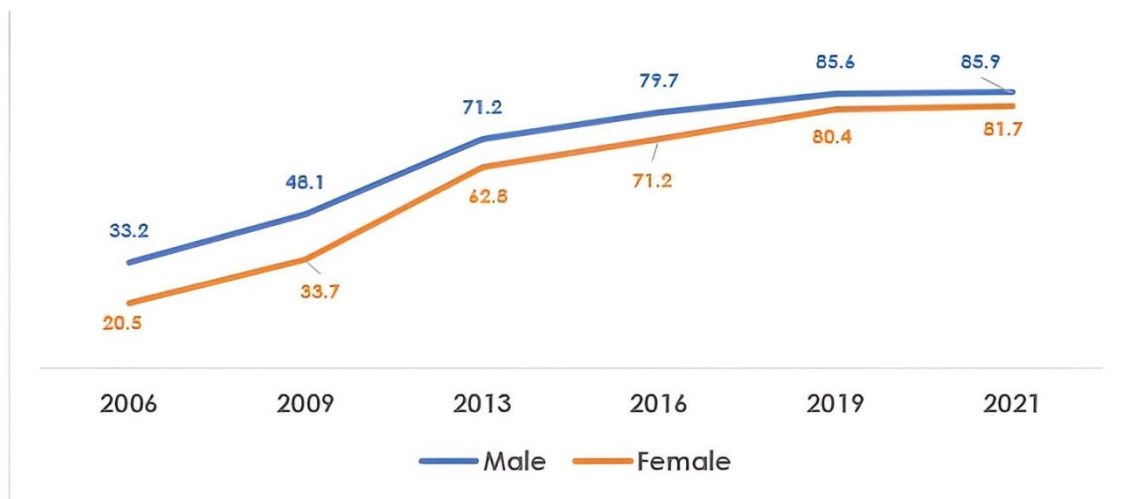


Figure 1.1 Formal financial inclusion (male vs Female)

Source: KNBS 2021 Fin Access Survey report

The figure shows that financial inclusion among male and female is on the upward trend, however, the rate of inclusion is increasing at a decreasing rate. Additionally, the pattern indicates that the gender gap is closing, and the nation's advancement in financial technology is to blame for this closing gap. Based on the trend, it is clear that in the future, there will likely be more women than men who are financially included. This is because women adopt technology at a higher rate than males do, empowering them and fostering economic growth and development that benefits the entire population as well as the economy (Esmailpour Moghadam, & Karami, 2023).

A deeper delve into the data reveals that beyond formal services, women heavily rely on informal financial mechanisms to meet their needs. This holds true regardless of income or education level (Figure 1.2). This reliance underscores the significance of informal finance's flexible terms and rich information base, often built on crucial social capital and networks

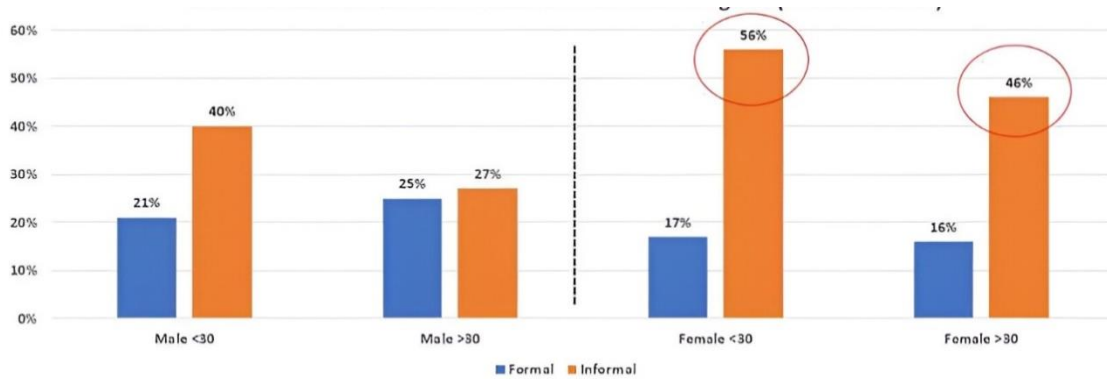


Figure 1. 2: Utilizing formal and informal finance to meet goals

Source: KNBS 2021 Fin Access Survey report

Figure 1.2 indicates that male utilize both formal and informal financial services relative to female, in contrast, women are more inclined to use unofficial financial services like Mary go-round and Shylocks, who exploit them unnecessarily in the name of advancing their careers (Johnen & Mußhoff, 2023). This is because the formal sector discriminates against women by enforcing stringent lending criteria, such as those involving collateral, guarantors, bank accounts, and cultural barriers, women are less likely than males to use formal financial services due to lack of collateral to guarantee loans from formal financial institutions.

Financial inclusion, the bedrock of equitable societal participation and economic agency, encompasses individuals' and communities' fundamental right to access essential financial services like savings, credit, payment mechanisms, and insurance (Thomas & Hedrick-Wong, 2019). In this dynamic landscape, Fintech companies emerge as potential disruptors, bridging the financial divide and extending these critical services to traditionally excluded segments, including women who have often remained on the periphery of the formal system (Gabor & Brooks, 2020).

Kenya stands as a beacon of how Fintech can empower women. Platforms like *M-Shwari*, with its micro-loans tailored to women's income patterns, and KCB *Mobi* bank's integration of financial literacy modules, have demonstrably increased women's access to credit, savings, and economic participation. This mobile-first approach transcends mere access by acting as a "vehicle for engagement," equipping women with budgeting tools and enabling micro-entrepreneurship through merchant payments (Ahmed, 2021). The Kenyan success story, with its quantifiable impact on women's financial agency, provides concrete evidence for the broader narrative of Fintech's potential as an agent of positive change and global empowerment for women (Corrêa et al., 2022; Ahmed, 2021).

In developing nations like Kenya, financial technology (Fintech) services have become indispensable instruments for advancing women's economic empowerment and financial inclusion. Fintech has improved online payment, digital lending, and mobile banking platforms, which helps women access financial services and raises their socioeconomic standing in society. For women in Kenya, who have traditionally faced barriers to traditional banking services, mobile banking platforms like M-Pesa have greatly increased access to financial services (Jack and Suri, 2016). These platforms also allow women to save money and manage their finances effectively and efficiently, which improves their control over their financial resources (Demirgüç-Kunt *et al.*, 2020). In developing nations like Kenya, financial technology (Fintech) services have become indispensable instruments for advancing women's financial inclusion and economic empowerment.

Women can obtain loans using various digital lending platforms, such as Tala, Branch, OKASH, and iPesa, without the requirement for conventional collateral (Demirgüç-Kunt *et al.*, 2018). Kaffenberger and Totolo (2018) opines that the platforms have enabled women to start and expand businesses leading to increased income and economic stability hence improved standards of living. On other hand, FSD Kenya (2020) asserts that credit

access is very crucial for women economic participation and growth by providing quick and easy access to loans which otherwise many women would not have qualified for via traditional banking systems. Mobile loans have reached thousands of women who use the funds for entrepreneurial activities hence enhancing economic women and economic development (Tala, 2021)

Despite the positive impacts, women in Kenya still face several challenges in fully utilizing Fintech services. Limited digital literacy among women hinders their ability to effectively use Fintech services (CGAP, 2019). Gender norms and cultural practices have also restricted women's access to and control over financial resources (Duflo, 2012). However, the affordability and access to technology have reduced the cost of smartphones and internet access can be prohibitive for low-income women (World Bank, 2020).

1.2 Statement of the Problem

Even after significant worldwide progress in raising financial inclusion, gender disparities in access to financial services persist, particularly in developing countries. In Kenya, where the financial technology (Fintech) sector has seen rapid growth, the potential for Fintech services to enhance financial inclusion and empower women remains under-explored and under-leveraged. Due to obstacles including social and cultural hurdles, lower rates of formal employment, and restricted access to collateral for loans, women in Kenya confront particular difficulties when trying to access traditional financial services. These challenges result in reduced economic opportunities and hinder women's ability to participate fully in economic activities. Addressing the persistent gender gap in mobile money usage and financial access, this study fills this crucial gap by exploring how Fintech can enhance women's engagement with financial services. It explores how Fintech might help Kenyan women become more financially literate and possibly change their financial habits for

better results. The data on financial inclusion have shown that women are less relatively utilizing formal financial services than male counterparts due to social and cultural constraints. This makes female to be excluded from enjoying this crucial service limiting their economic growth.

Financial technology (FinTech) and financial inclusion enhance economic empowerment by expanding access to financial services for underserved populations, promoting economic growth through efficient transactions and entrepreneurship, and reducing poverty by providing affordable financial services (Demirgüç-Kunt & Klapper, 2012; Miah, 2023; Omar & Inaba, 2020). These improvements foster socioeconomic development by enabling savings, investments, and better financial risk management. Additionally, financial inclusion facilitated by FinTech improves living standards, reduces income inequality, and enhances economic stability, benefiting the overall economy.

However, despite the advancements and benefits brought by financial technology (FinTech) and financial inclusion, a significant gender gap in women's economic empowerment persists in Kenya (Kehinde-Peters, 2024; Johnen & Mußhoff, 2023). Despite the fact that FinTech has boosted economic growth and expanded access to financial services, there are still obstacles that keep women from fully engaging in the financial system. This inequality limits the overall impact of FinTech and financial inclusion on women's economic independence.

Fintech offers innovative means of narrowing the disparity in women's financial inclusion. Examples of this include digital loans, online payment systems, and mobile banking. Research on gender inequality in the digitalization of financial services in India was conducted by Kulkarni and Ghosh (2021); research on digital credit and the gender gap in financial inclusion in Kenya was conducted by Johnen and Mubhoff (2023); research on

the impact of financial technology on reducing the gender gap in financial inclusion was conducted by Yeyouomo *et al.* (2023).

Cross-sectional and panel data were also used in the past studies. Though much research has been done in this area, the current study examines how financial technology and financial inclusion effect women's economic empowerment in Kenya. None of the reviewed papers explored this relationship. Since these earlier studies did not consider the impact of these technologies on women's economic empowerment, particularly with regard to increased access to credit, savings, insurance, and investment opportunities, the overall goal of this study is to investigate the impact of FinTech and financial inclusion on women's economic empowerment in Kenya.

1.3 Research Questions

- i. What is the effect of Fintech on women economic empowerment in Kenya?
- ii. What is the effect of financial inclusion on women economic empowerment in Kenya?

1.4 Objectives of the Study

The main aim of the study was to analyze the effect of FinTech and financial inclusion on women economic empowerment in Kenya. The specific objectives are:

- i. To analyze the effect of Fintech on women economic empowerment in Kenya.
- ii. To analyze the effect of financial inclusion on women economic empowerment in Kenya.

1.5 Significance of the study

The results of the study can be used by the government to identify policy gaps that should be closed in order to improve the provision of financial services. This was accomplished

by interpreting the study's findings, which provided the foundation for developing new policies or enhancing current ones for the benefit of the economy as a whole when policy gaps are identified.

For the regulators, legislators, and other stakeholders, the study's conclusions regarding the role of financial technology, or Fintech, to the growth of women's financial inclusion in Kenya are critical. This emphasizes how important mobile technology is to closing the financial access gap in poor nations, where women are disproportionately disadvantaged in gaining access to basic financial services due to traditional constraints. This study closes a significant gap by addressing the ongoing gender disparity in Fintech usage and access and by highlighting Fintech as a catalyst for improving women's involvement with financial services.

This study offers valuable insights for policymakers and regulators into tailoring regulatory environments to support inclusive Fintech solutions, thereby fostering a more inclusive financial sector. The emphasis on Fintech as an instrument for enhancing women's social and economic capabilities aligns with global endeavors to mitigate the gender gap in financial inclusion. These findings have worldwide ramifications and can serve as a guide for nations looking to use Fintech to advance women's financial inclusion. Kenya is known as a Fintech hotspot.

Overall, by supporting creative solutions that give women economic empowerment, this study adds to the conversation on Fintech's potential to create a more inclusive and equitable financial environment. It calls for targeted policy interventions and regulatory frameworks that accommodate Fintech growth, ensuring that its benefits are equally distributed, especially among women who have historically been marginalized in the financial sector.

1.6 Study Scope

The goal of this study is to gain a deeper understanding of the potential benefits of financial technology (Fintech) and financial inclusion for women's economic empowerment in Kenya. The FinAccess Household Survey (KNBS) from the Kenya National Bureau of Statistics (2021) would be the main source of secondary data for the research. The data for this study came from 22,024 homes scattered across all 47 counties of Kenya utilizing the Kenya Household Master Sample Frame (K-HMSF), which was developed based on the 2019 Kenya Population and Housing Census. The selection of households was aimed at covering a wide range of demographics and geographic locations, ensuring a comprehensive understanding of financial inclusion across different segments of the Kenyan population. By focusing on Fintech, this study aims to explore how digital financial services contribute to economic empowerment and improved access to financial services for women, aligning with global shifts towards digitalization in the financial sector. This approach is expected to offer critical insights into the effectiveness of Fintech solutions in bridging gender gaps in financial access within the background of Kenya's evolving economic landscape.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter entails theoretical reviews which discuss the theories that anchor the study. Additionally, the chapter looks into empirical review of the study variables to inform the conceptual framework. Lastly, the chapter covers critique of literature reviewed and closes down with research gaps that necessitate the study.

2.2 Theoretical Review

The following theories are reviewed by the study

2.2.1 The institutional theory of financial inclusion

Individual decisions about interacting with the formal financial sector are largely shaped by their continual contacts with formal and informal society institutions, according to Ozili (2023) institutional theory of financial inclusion. This theory explores how these interactions affect perceptions of the necessity, trust, and feasibility of financial services. Key assumptions of the theory include a lack of complete information on accessing financial services, understanding the requirements, and recognizing potential risks, such as financial discrimination and the dangers of bank failures or high transaction costs (Ozili, 2020; Claessens & Tzioumis, 2006). Trust in both formal and informal institutions significantly affects decision-making processes regarding financial services, as frequent interactions shape individuals' understanding of the benefits and challenges of these services.

Informal institutions, such as cultural norms and unwritten behavioral codes, critically influence attitudes toward the formal financial system. These can either foster distrust if they perpetuate negative stereotypes, or build trust by reinforcing positive experiences with formal financial services. Conversely, formal institutions, established by legal frameworks,

directly impact financial inclusion by protecting consumers from exploitation, raising awareness about rights within the financial system, and shaping perceptions of institutional effectiveness through their responses to consumer complaints and enforcement of fair practices. These elements dictate whether formal institutions encourage or prohibit their involvement in the financial industry.

The implications of this theory are profound and highlight how both market and non-market structures influence financial inclusion. Institutions that enhance trust can encourage unbanked adults to use formal financial services, whereas those that generate mistrust may increase financial exclusion. Understanding these institutional roles allows for the development of strategies to improve the effectiveness of financial inclusion efforts to create a more inclusive financial system.

Institutional theory offers a comprehensive framework for understanding how societal structures affect financial inclusion (Ediagbonya & Tioluwani, 2023). This underscores the importance of a focused policy approach that considers the impacts of both formal and informal institutions on financial behaviors, advocating tailored solutions to foster broader financial inclusion.

2.2.2 Acceptance and Technology Use Unified Theory.

In 2003, Venkatesh and colleagues created the Unified Theory of adoption and Use of Technology (UTAUT), a paradigm for technology adoption (Venkatesh *et al.*, 2003). This theory clarifies the motivations behind customers' use of information technologies and how those motivations impact their behavior. The theory is based on four fundamental ideas: social conditioning, performance expectancy, effort expectation, and enabling environment. In order to mitigate the effects of these primary components on usage intentions and behavior, as well as the hurdles to technology adoption, the theory

emphasizes the role that experiences, gender, age, and convenience of use play (Verkatesh *et al.*, 2008). The theory which suggests that a user's decision on how and when to utilize technology when confronted with new technology, was ranked lower than the Unified Theory of Acceptance. Innovation is defined by Manuelli *et al.* (2007) as "perceived usefulness" and "ease of use" being extensively employed inside the TAM-based adoption technique.

TAM is a commonly utilized paradigm for analyzing the uptake and effects of information communication technology (ICT), according to Forman and Goldfarb (2009). This concept clarifies why people choose to embrace or reject the use of ICTs in financial institutions or other organizations. However, Manuelli *et al.* (2007) felt that diffusion theory, which includes novel elements, is a more flexible theory than TAM. TAM was also criticized for not taking rival conduct and outside variables into consideration. Four main concepts make up the Theory Reasoned Action (TRA) model: behavioral attitude, intention to use, actual usage, and subjective criteria (Gibbs *et al.*, 2007).

2.2.3 Empowerment theory

Perkins and Zimmerman (1995) introduce empowerment theory, highlighting that participation in community service activities can enhance individuals' self-efficacy, sense of control, and involvement in decision-making processes. This theory suggests that empowering individuals, communities, or groups can boost their personal, interpersonal, and political power, leading to improved life conditions and societal change (Zimmerman, 2000). As both a value orientation and a theoretical framework in social work and community development, empowerment theory emphasizes fostering agency and advocating for equality across social, economic, and political spheres, thereby enabling individuals and society to take control of their situations. This approach is particularly

crucial in tackling systemic inequalities and promoting long-term social change (Perkins & Zimmerman, 1995).

Owning money, assets, and real estate in addition to receiving an education are all parts of economic empowerment (Dalal, 2011). According to Rao et al. (2014), it has a direct impact on economic development and vice versa. It involves the capacity for decision-making in the context of women's economic empowerment (Mohyuddin *et al.*, 2012). Women who are economically empowered make decisions about leadership, money, time, resources, and other factors (Mohyuddin *et al.*, 2012; Aziz *et al.*, 2021).

2.2.4 Network Theory of Financial Inclusion

Introduced by Jackson and Zenou (2015), the Network Theory of Financial Inclusion delves into the intricacies of social and economic interconnections and their profound implications for financial accessibility. At the heart of this theory lies the idea that our embeddedness within a myriad of networks, be it familial, professional, or community-based, can considerably influence our engagement with financial services. An individual's positioning within these networks, especially if they occupy a central or influential node, can amplify their exposure to and hence their uptake of diverse financial services.

The theory paints a vivid picture of networks as dynamic conduits of information. The fluidity and efficiency with which information travels within these networks can either propel or impede the dissemination of knowledge regarding financial opportunities. For instance, a centrally located individual in a community network might be privy to new banking schemes or financial products earlier than someone on the periphery, owing to the swifter information flow in their direction. This not only bolsters their personal financial inclusion, but can also serve as a catalyst for others in their circle, given their influential position. On the other hand, a fragmented or poorly connected network might slow down

the diffusion of such vital information, inadvertently contributing to financial exclusion for its members. The theory underscores the role that networks play, emphasizing that fostering robust and well-connected networks can be pivotal in promoting a more inclusive financial landscape.

2.3 Empirical Literature Review

Johnen and Mußhoff (2023) examined digital credit and the gender disparity in financial inclusion in Kenya using data from the FinAccess household surveys conducted in 2009, 2012, 2015, and 2018. Using a logit model, they investigated the association between using digital credit and various explanatory factors. Contrary to early beliefs, their data demonstrate that formal digital credit has inadvertently expanded the gender gap in financial inclusion. This mismatch is mostly explained by the fact that contract terms in the digital credit market are uniform and gender variations in socioeconomic characteristics exist. The authors propose that initiatives targeted at improving women's socioeconomic status and the introduction of more varied contract conditions could assist to close this gender gap.

Wandeda *et al.* (2023) used information from the Financial Access Survey 2021 to conduct a critical study on digital financial inclusion among women in Kenya. Propensity score matching was used in this study to assess women's adoption of digital finance and the ensuing effects on their financial well-being. There is a significant difference between those who use and do not use digital financial services based on key sociodemographic factors such as age, residency, married status, education, and religion. These factors were found to be significant predictors of the usage of digital financial services. When women own mobile phones and televisions, they are more likely to use digital financial services, and they also tend to have better financial health than non-owners. The findings point to a

significant research gap that must be closed in order to properly examine the ways in which financial technology and financial inclusion impact women's economic empowerment in Kenya.

Adera and Abdisa (2023) examined on the relationship between financial inclusion and women's economic empowerment in Ethiopia. Access to financial services encourages equitable economic growth and helps to reduce poverty, but it has a limited impact on women's economic empowerment. The findings showed that women's economic empowerment is significantly enhanced by financial inclusion. This suggests that improved financial results for women are a result of greater access to financial services. Collaboration between financial institutions, development partners, and aligned policy makers is made possible by the implementation of successful financial inclusion initiatives that are specifically designed to fit a nation's economic climate. Descriptive research design with cross-sectional data was employed to undertake the study. The data was analyzed using instrumental variable mode encompassing endogenous switching regression model to control the biasness that can arise due to both observe and unobserved parameters.

Kulkarni and Ghosh (2021) conducted a study on gender disparities in the digitalization of financial services in India using secondary data in order to examine the gender variations in digital financial inclusion across different locales. The study employed logit regression analysis to determine the factors influencing women's use or non-use of mobile banking in addition to OLS regression analysis to assess the influence of smartphone ownership on female autonomy. The findings disprove preconceived notions by demonstrating that there is no relationship between gender differences in digital financial inclusion and a state's economic progress. Furthermore, the research findings indicated significant barriers impeding women's use of digital financial services and suggested that digitalization might

significantly improve women's social and financial autonomy. This study emphasizes how important it is for financial inclusion policy initiatives to have a gender-sensitive strategy in order to effectively address these inequities. This study highlights a research gap in the knowledge of the influence of financial technology and financial inclusion on women's economic empowerment in Kenya and highlights the necessity of examining how Fintech affects Kenyan women's financial practices. It also calls for a reexamination of the relationship between Fintech and inequality in the context of financial inclusion, as well as an evaluation of the role that regulations play in fostering the creation of inclusive Fintech solutions. The research conducted by Kulkarni and Ghosh highlights the need of taking gender differences into account when developing and executing strategies for financial inclusion. These findings provide insightful guidance for tackling comparable issues in Kenya and other regions.

Yeyoumo *et al.* (2023), examined the impact of financial technology (Fintech) services on the gender gap in financial inclusion in Sub-Saharan Africa from 2011 to 2017. Their research, which employed a multilevel Tobit regression model using panel data, discovered that Fintech considerably narrows the gender gap in financial inclusion by enhancing women's utilization and access to financial services. This report does, however, also imply that Fintech could not be enough to fully close the gender gap, highlighting the necessity of specific legislative initiatives meant to address this inequality. These insights are crucial for economic policy because they show that women have made substantial progress in improving their financial circumstances and closing the gender gap in financial inclusion. The results of the study offer a fundamental comprehension of the advantages and constraints of Fintech. In order to achieve full financial inclusion for women in Kenya and maybe in similar contexts, the study emphasizes the need of striking a balance between governmental programs and technological advancements.

Esmailpour and Karami (2023) did a study on the worldwide effects of financial inclusion through financial technology (Fintech) on women's economic empowerment. Data were analyzed from 113 countries using principal component analysis (PCA) and cross-sectional data analysis methodologies, which were sourced from the World Bank and Global Findex (2017) databases. After establishing an overall index for financial inclusion enabled by Fintech (FIF) by PCA, the researchers examined the impact of FIF on women's financial empowerment (WFE) in two distinct groups of nations, taking into account the degree of discrimination against women in each of the countries. In countries with minimal levels of gender discrimination, FIF and WFE show a high positive correlation, according to their research. FIF, on the other hand, has relatively little impact on WFE in nations where gender discrimination is widespread. This highlights the ongoing issue of gender inequality and how it keeps women from achieving financial independence. According to this report, without additional, targeted government programs aimed to address gender inequality and shift societal norms, fintech alone might not be sufficient to close the gender gap in financial inclusion or grant women financial empowerment. In light of the proposed examination of the relationship between technology and financial inclusion and women's economic empowerment in Kenya, this report highlights a research gap. Moreover, the objective of the present study is to integrate the PCA technique utilized in this inquiry.

Ghosh (2022) investigated how technology can improve women's financial involvement using district-level survey data to perform a study on gender and financial inclusion in India. The study revealed that women were notably less probable than males to use their phones for banking-related tasks like creating an account and using an active account—a 12% and 9% drop, respectively. This study also found that the effects of mobile phones differed depending on the social class, with women living in poverty being most affected. This demonstrates the critical need for targeted policy measures to reduce the gender gap

in mobility, which could contribute to a wider reduction in the gender gap in financial inclusion. These findings demonstrate the challenges women face in achieving financial inclusion as well as the limitations of technology in the absence of suitable legislative frameworks. This study highlights a research gap that is especially pertinent to a future investigation into how financial technology services affect women's financial inclusion in Kenya. Ghosh's results provide critical insights for tackling comparable issues in Kenya and elsewhere, emphasizing the significance of nuanced, gender-sensitive methods in policymaking and Fintech development.

Cabeza-Garcia *et al.* (2019) did a study on the impact of female financial inclusion on women's inclusive financial growth and found that it had a positive effect on reducing income inequality and promoting women's economic advancement. Women's participation in the financial system improves their socioeconomic well-being by reducing inequality and fostering economic growth. A panel data set comprising 91 developed and developing countries was employed for analysis. An instrumental variable regression model was employed for data modeling. Women's access to bank accounts and credit are two examples of women's financial inclusion processes. It has been discovered that these two factors positively impact women's economic empowerment in Kenya, whereas access to financial systems significantly negatively impacts women's economic empowerment in Kenya.

2.4 Critique of Reviewed Literature

Reviewing the body of literature on women's economic empowerment in Kenya and around the world uncovers important new information as well as research needs in the areas of financial technology and financial inclusion

Johnen and Mußhoff (2023) highlighted that, while digital credit aimed to improve financial inclusion, it unexpectedly widened the gender gap in Kenya, suggesting a need for policies that offer diverse contract terms and improve women's socioeconomic

conditions. Wandenda *et al.* (2023) focused on digital financial inclusion among Kenyan women, finding key socio-demographic factors influencing digital finance usage and advocating for gender-responsive policies and enhanced digital literacy to improve financial health among women.

Kulkarni and Ghosh (2021) concluded that gender disparities in digital financial inclusion are not directly driven by economic development after looking into gender discrepancies in digital financial services in India. Their findings require that a gender-conscious approach be taken when addressing financial inclusion. Concerns were expressed that Fintech might not be able to close the gender gap in financial inclusion on its own without particular legislative reforms in Yeyouomo *et al.* (2023) analysis of the sector's contribution to closing the gap in Sub-Saharan Africa.

According to Esmaeilpour and Karami's (2023) analysis, there is a favorable association between Fintech and financial empowerment among women in nations where there is less discrimination against women. Fintech has less of an impact in countries with significant levels of discrimination, which emphasizes the significance of addressing gender inequality in tandem with Fintech development. After PMJDY, women's use of mobile banking for account operations significantly decreased, especially among the poorest strata, according to Ghosh's (2022) assessment of the impact of technology in improving women's financial inclusion in India. This finding highlights the necessity for policies to reduce or minimize the gender gap in mobile banking.

These studies all emphasize how challenging it is to employ financial inclusion and Fintech to empower women economically, and they suggest that in addition to technological solutions, socioeconomic and legal improvements must also be implemented. Among the major research needs they suggest for further study in Kenya are the effects of Fintech on women's financial behavior, the relationship between Fintech and differences in financial

inclusion, and the function of the regulatory environment in supporting inclusive Fintech solutions. In-depth analysis of these elements is provided in this report, along with practical suggestions for boosting women's economic empowerment in Kenya.

2.5 Summary of Literature

The study reviewed theories such as the institutional theory of financial inclusion which opines that interaction with formal financial influence the perceptions, trust and feasibility influence the interaction of individuals with formal financial sector. Other theories include acceptance and technology use unified theory, empowerment theory that seeks to understand how empowering an individual boost their personal and interpersonal power even the political arena. Further the network theory of financial inclusion was also considered. The theory considers how intricacies of social and economic interconnections influences engagement with the formal financial services.

The above literatures reviewed have shown that majority of the studies either focused on financial technology and women economic empowerment or financial inclusion and women economic empowerment. Minority of the studies focused on both aspects of digital financial services that the current study focused on.

The findings of some studies showed that digital credit expanded gender gap financial inclusion while other showed contrary results. Various models were used to analyze the studies' findings giving varying outcomes. Expanding financial access particularly to women improves economic grow hence become economically empowered. The studies have revealed that access to FinAccess such as M-Pesa increases household per-capita consumption and also reduces vulnerability to shocks.

Pathways for women economic empowerment suggested by the studies are improving access to financial services as they reduce barriers to financial services access particularly

to women. In addition, the need to control over resources and financial autonomy as mobile accounts increase women control over money transfers and savings hence improving women economic empowerment.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

An overview of the research is covered in this chapter, beginning with the design and the theoretical framework that underpins it. There is additional discussion of the empirical model, time series tests, data analysis procedures, and variable definitions and measurements as well as data types.

3.2 Research design

This study used cross-sectional data on study variables in a non-experimental research approach. Because the researcher is unable to alter the data on the study variables, the study takes the design into account.

3.3 Theoretical Framework

The Institutional Theory of Financial Inclusion, which Ozili (2023) created, serves as the foundation for the theoretical framework modeling financial inclusion. According to the Institutional Theory of Financial Inclusion, institutional frameworks, rules, and policies are important factors in determining how successful and widespread financial inclusion is in a community. By taking into account how institutional structures and technological advancements combine to either promote or obstruct financial inclusion, this theory can be connected to Fintech.

A theoretical model to represent this could involve variables such as regulatory support (RS), Fintech innovation (FI), and financial inclusion (FInc.). The model is presented as follows:

$$WEE = \alpha + \beta_1(RS) + \beta_2(FI) + \beta_3(RS \times FI) + \epsilon$$

.....(3.1)

Where:

WEE- women economic empowerment

FInc represents the financial inclusion level.

RS indicates the strength and adaptability of regulatory frameworks for Fintech.

FI measures the level of Fintech development and penetration.

(RS×FI) captures the interaction between Fintech innovations and governing structures, indicating that the impact of Fintech on financial inclusion is moderated by the quality of institutional regulations.

α and β s are the parameters to be predicted and ϵ is the error term.

This model suggests that Fintech alone might not be sufficient to ensure broad financial inclusion, unless supported by robust and enabling institutional frameworks. The interaction term highlights the synergy or friction between policy environments and technological advances, underlining the complexity of achieving financial inclusion through Fintech in various institutional contexts.

3.4 Empirical model Specification

The empirical model specifications to analyze the effect of Fintech and financial inclusion on economic empowerment among women in Kenya, borrowed from Esmaeilpour and Karami (2023).

The WEE Index and the Fintech Index built using the Principal Component Analysis (PCA) technique. A statistical method called principal component analysis (PCA) is mostly employed in data analysis to reduce dimensionality. High-dimensional data is made simpler while maintaining trends and patterns. Principal components, which are a new set of variables created from the original variables, are what PCA uses to do this (Jolliffe & Cadima, 2016).

The following measures were used to construct the Fintech index: Using the Internet to purchase bills and make incur expenditures (Intbill), use digital payments (Digitalpay), shop online (Intbuy), and access personal financial institution accounts (Account) through the Internet or mobile devices.

To construct a Women's Economic Empowerment (WEE) Index using data from the Kenya Demographic and Health Survey (KDHS), select variables that reflect financial autonomy, access to resources and decision-making power were used. Based on the KDHS, suitable variables could include:

- (1) Earnings: Income earned by the woman.
- (2) Control over Income: Measures the degree to which women have a say in how their own earnings are used.
- (3) Bank Account Ownership: Whether the woman has or shares ownership of a bank account.

(4) Credit Access: Access to formal lending institutions or microfinance services.

Following Esmailpour and Karami (2023), the overall index (either Fintech index or WFE index) was calculated as follows:

$$I = \sum_{i=1}^4 W_i M_i \dots \dots \dots 3.2$$

Where:

I is the overall index, which could either be the Fintech index or the WEE index depending on the objective.

M_i is variables of the measures used to construct the overall index (the Fintech index and the WEE index have different measures).

W_i is the weight of the different measures used to construct the overall index and it was computed by Equation (3.3):

$$W_i = \frac{\gamma_i}{\sum_{i=1}^4 \gamma_i} \dots \dots \dots 3.3$$

γ_i is the eigen value of each of the measures

To analyze the effect of Fintech on women economic empowerment in Kenya, Equation 3.4 which follows Esmailpour and Karami (2023), was used.

$$WEE = \beta_0 + \beta_1 Fintech_i + \beta_2 Dem_i + \beta_2 (Fintech \times Dem)_i + \varepsilon_i \dots \dots \dots 3.4$$

Where:

WEE represents the women economic empowerment of the i^{th} individual, constructed by KNBS using various metrics of non-transactional usage of financial products/services such as credit, investments as well as savings. Dem are the demographic characteristics of the individual woman which included age, wealth, location and education level.

To analyze the effect of financial inclusion on women economic empowerment in Kenya, Equation 3.5 which follows Esmaeilpour and Karami (2023), was used.

$$WEE = \beta_0 + \beta_1 FI_i + \beta_2 Dem_i + \beta_3 (Fintech \times Dem)_i + \varepsilon_i \dots \dots \dots 3.5$$

Where: WEE is women economic empowerment index, FI- Women Financial Inclusion Index.

3.5 Definitions and Measurements of variables

Table 3.1: Definitions and measurements of Variables

Variables	Definition of the Variables	Measurement
Fintech index	Financial technology refers to a broad spectrum of inventions and technologies intended to challenge conventional financial practices in the provision of financial services.	An index constructed using specific measures that involves several digital and financial behaviors that represent the penetration and usage of financial technology among consumers.
Women Economic Empowerment (WEE) index	This refers to women's capacity for economic success and advancement as well as their ability to create and engage in economic activity.	An index constructed using women economic empowerment indicators; Earnings; Control over Income; Bank Account Ownership; Credit Access.
Financial Inclusion index	The extent to which the general public, especially the disadvantaged and isolated segments in society, can access and use financial services and products.	Index of financial inclusion as determined by KNBS. Three factors make up the Financial Inclusion Index: service quality, consumption of financial services, and accessibility to these services.
Education	Education level of the respondents.	Dummy variable with a value of 1 if the respondent has finished secondary school and 0 otherwise.
Age	The respondents' age given in years.	Categorical
Wealth quintile	measure of how wealth is distributed	Wealth quintiles of the respondents as given by KNBS; 1 for Wealthiest, 2 for second wealthiest, 3 for middle, 4 for second poorest, 5 representing Poorest.
Location	Residence of respondent	It takes 1 if respondent resides in rural and 2 if urban area.

3.6 Data Type and Source

A Cross-sectional data from the Fin Access individual survey of 2021 by the KNBS, Financial Sector Deepening (FSD) Kenya and CBK was used.

3.7 Diagnostic Test

The study carried out diagnostic tests such as heteroscedasticity, normality test and multicollinearity test to ensure that regression results obtained are reliable, verifiable and valid.

3.7.1 Normality Test

The test was carried out using Histogram-normality test and Shapiro-Wilk test to ensure that the sampled data is evenly distributed. The general rule states that if a value at the five percent significance level is more than 0.05, the data is normally distributed; if it is less than 0.05, the data deviates from a normal distribution.

3.8 Data Analysis Process

The data was evaluated using a multinomial logit model, and the equations was estimated using STATA statistical software, in order to achieve the study's objectives. This study estimated Equation (3.4) to evaluate the effect of Fintech on women's economic empowerment in Kenya. Examining the relationship between financial inclusion and women's economic empowerment in Kenya is the second objective of the study. To that purpose, an estimation of Equation (3.5) was performed, and both estimations were employed a multinomial logit model.

CHAPTER FOUR

EMPIRICAL FINDINGS

4.1 Introduction

This chapter presents the empirical findings of the study, including descriptive statistics, correlation analysis, diagnostic tests, and estimation results. The findings are analyzed in relation to the research objectives to determine the effect of FinTech and financial inclusion on women's economic empowerment in Kenya.

4.2 Descriptive Statistics of Study Variables

Table 4.1 presents the descriptive statistics of the study variables. The variables include the Women Economic Empowerment (WEE) Index, education level, age category, marital status, FinTech index, financial inclusion index and location.

Table 4.1: Descriptive Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
WEE Index	20,866	6.05E-09	1.055661	-13.7872	0.518606
Education Level	20,866	2.654989	0.717962	1	4
Age Category	20,866	3.008291	1.063558	1	5
Marital Status	20,866	1.723617	0.447219	1	2
FinTech Index	20,866	5.71E-11	0.16252	-0.80889	6.57368
Financial Inclusion Index	20,866	-1.54E-08	1.096663	-3.9494	0.745186
Location	20,866	0.436452	0.697544	0	2

Source: Study Data

The results show that the WEE Index has a mean value close to zero, indicating that women's economic empowerment varies significantly across different categories, the standard deviation value closer to 1 implies minimal difference among women in terms of

economic empowerment. The low WEE index indicates that women have no power to make economic decisions, minimal access to financial services among other decision-making power. Further, the WEE Index, which measures women's economic empowerment, has an average close to zero, indicating that, on average, women's empowerment levels are balanced across different individuals. However, the large standard deviation (1.055661) suggests a significant variation in economic empowerment across the sample. The minimum value of -13.7872 indicates that some women experience extremely low levels of economic empowerment and financial inclusion, while the maximum value of 0.518606 suggests that a few women have relatively high levels of empowerment.

Education level has a mean value of 2.65 implying that most women have secondary level of education since education was coded as 1-none, 2- primary, 3-secondary and 4-university. Therefore, mean education level indicated by 2.65 almost 3 means that most women only managed to attain secondary level of education. The standard deviation was 0.72 implying low variation from the mean value hence no significant difference among the women under study. The mean age for the women respondents was 3.01 with a standard deviation of 1.1 indicating low variation in ages from one woman to another. It is important to note that the mean education level of 2.65 suggests that most women in the study have an intermediate level of education (likely secondary school or post-secondary education). The relatively small standard deviation (0.717962) indicates that most respondents have education levels close to the mean, meaning there is limited variability in education levels among the sample.

The mean age of 3 implies that most of the women were within the age of 30-45 years since according to the coding 1-below 16 years, 2 "16-30" years, 3"30-46" years, 4"46-60" years and 5"60 and above" years. Then from the mean value it indicates that most of the women

are in the age bracket 30-46 years. This according to economic theory is the active age when persons are more productive hence needs more empowerment particularly women. Age is categorized into different groups, ranging from 1 (youngest group) to 5 (oldest group). The mean of 3.008291 suggests that most respondents belong to a middle-aged category. The standard deviation of 1.063558 indicates a moderate spread in the age distribution, meaning there are respondents across different age groups. However, since the mean is around 3, it implies a relatively balanced representation of younger and older women.

Marital status is a binary variable, where 1 represents single women and 2 represents married women. The mean value of 1.723617 indicates that the majority of the respondents are married. The relatively small standard deviation (0.447219) suggests that most of the respondents have similar marital status, meaning the study population is majorly composed of married women. In addition, marital status exhibit moderate variation with a mean value of 1.72 almost 2 indicating that most of them were married. The standard deviation value of 0.447 rounding off to zero implies that there is no deviation from hence most of the women were married.

The FinTech Index represents women's access to and usage of digital financial services. The mean value is close to zero, suggesting that, on average, there is a low level of FinTech adoption among the sampled women. The standard deviation of 0.16252 indicates that there is a moderate variation in FinTech usage across the study population. The minimum value (-0.80889) indicates that some women have extremely low or no access to FinTech services, whereas the maximum value (6.57368) suggests that some women are highly engaged in digital financial activities. This wide range suggests an unequal distribution of FinTech access, with some women benefiting significantly while others remain excluded

indicated by a wide deviation from the mean value hence some women having more access to Fintech access than others in the same category

The Financial Inclusion Index measures women's access to financial services, such as banking, credit, and savings. The mean value is below zero (-1.54E-08), indicating that financial inclusion levels are generally low among the sampled women. The standard deviation (1.096663) is relatively high, indicating substantial variations in financial inclusion across the respondents. The negative minimum value (-3.9494) suggests that a significant portion of the sample has extremely limited or no financial inclusion, while the maximum value (0.745186) indicates that only a few women have high levels of financial inclusion. This further, indicates some levels of unequal opportunities for women in the same age bracket, same level of education hence limited access to economic empowerment activities within the economy.

The location variable is also binary in nature which categorizes respondents based on their urban or rural residence. The values range from 0 (rural) to 2 (urban/metropolitan). The mean of 0.436452 suggests that the majority of the respondents are from rural areas. The standard deviation (0.697544) indicates some variation in location distribution, though it is not very large. This suggests that while there is some urban representation in the sample, the study primarily consists of women from non-urban settings. This makes women in the urban areas to have more access to financial services and other women economic empowerment activities

4.3 Correlation Analysis

The analysis was conducted using Spearman Moment of Correlation. Table 4.2 presents the correlation coefficients between key variables.

Table 4.2: Correlation matrix

Variables	WEE Index	Education	Age	Location	Financial inclusion index	FinTech Index	Marital Status
WEE Index	1.0000						
Education	-0.1983	1.0000					
Age	0.0954	-0.2669	1.0000				
Location	0.0201	0.0707	-0.0806	1.0000			
Financial Inclusion Index	0.1603	-0.2471	0.1758	-0.0268	1.0000		
FinTech Index	-0.1138	0.1168	-0.0319	0.0468	-0.1699	1.0000	
Marital Status	0.0260	-0.1949	0.2765	-0.0936	0.1800	-0.1097	1.0000

Source: Study Data

The analysis was carried out at 5 percent level of significance. Correlation analysis examines the strength and direction of relationships between key study variables. The correlation coefficients range from -1 to 1, where a positive value indicates a direct relationship between two variables, and a negative value signifies an inverse relationship. A coefficient close to zero suggests a weak or no relationship between the variables. In addition, WEE index has a negative relationship with education level and Fintech Index while positive relationship with other variables such as age, location, financial inclusion index and marital status. Further, the rule of the thumb states that a correlation coefficient less than or equal to 0.8 implies no long-run relationship between any two variables of the study. The results show that all correlation coefficients are less than 0.8 hence the study concludes absence of a long-run relationship among the study variables hence all the variables can be used in the same model to analyse the effect of Fintech and financial inclusion on women economic empowerment in Kenya.

4.4 Normality Test

The study used the normal probability plots to test for the normality of the residual. Figure 4.1 shows the results

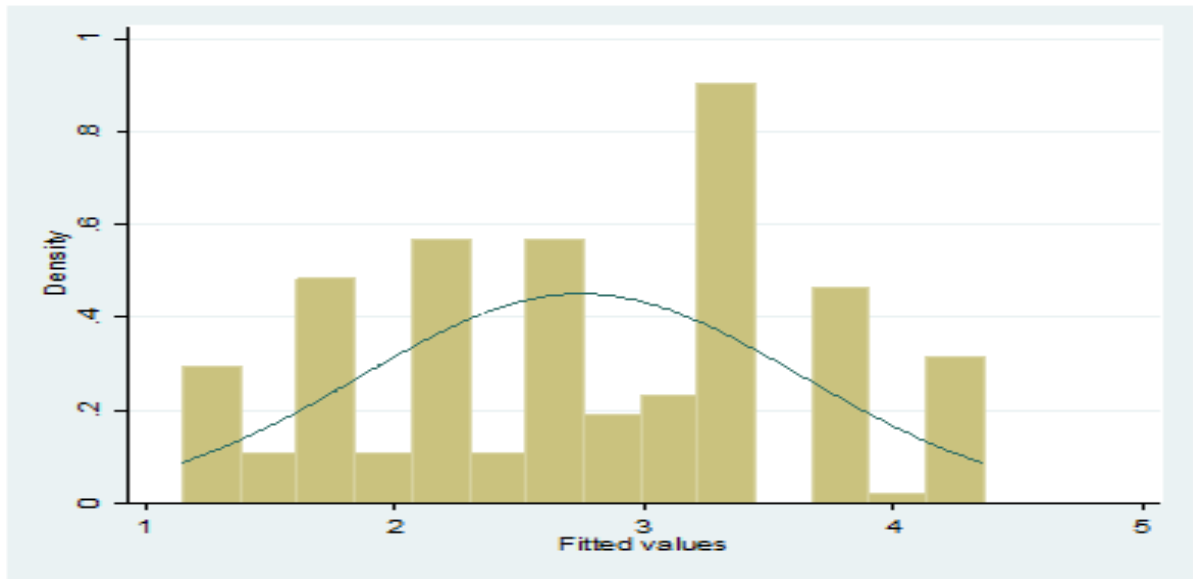


Figure 4.1: Normality Plot

Source: study data

The results show that the data was normality distributed since the histogram has a bell-shaped. This is further confirmed by Sharipo-Wilks normality test shown in table 4.3

Table 4.3: Shapiro-Wilk Normality Test

Variable	Observations	W	V	Z	Prob>z
Error term	20,866	0.94880	474.18	16.796	0.1264

Source: Study data

The null hypothesis was that the data does not conform to normal distribution while the alternative hypothesis was that the data follows normal distribution. The results show that the P-value is not significant at 5 percent level of significance. The rule of the thumb states that a P-value greater than 0.05 at 5 percent significance level shows that the data is normality distributed hence rejecting the null hypothesis that the data is not normally distributed hence the study concludes that the data was normally distributed and fit for the analysis. The results also show that the data gathered by the Kenya National Beraue of Statistics was fit to analyze any study the effect of financial technology and financial inclusion on women economic empowerment in Kenya.

4.5 Regression Analysis

The aim of the study was to analyse the effect of Fintech and financial inclusion on women economic empowerment in Kenya. In order to the objective, the study achieved two specific objectives. Objective one was to analyse the effect of FinTech and financial inclusion on women's economic empowerment and the second objective was to analyse the effect of financial inclusion on women economic empowerment in Kenya. To estimate the effect of Fintech and financial inclusion on women economic empowerment, the study employed a logistic regression model.

4.5.1 Objective One: Effect of FinTech on Women's Economic Empowerment

The first objective sought to analyze the effect of FinTech adoption on women's economic empowerment in Kenya. The regression results for FinTech adoption and other covariates are reported in Table 4.4.

Table 4.4: Regression Results for the Effect of FinTech on Women's Economic Empowerment

Variable	Coefficient	Marginal effect	Std. Err.	z-score	P-Value
Education Level (No education)					
Primary (>6 years)	-2.344	-0.0422	0.0075	-5.61	0.000
Secondary (3 years)	-3.128	-0.0912	0.0027	-34.24	0.000
Post-secondary (4 years)	-3.351	-0.1116	0.1076	-1.04	0.300
Age Group (<16 years)					
16-30 years	-1.915	-0.0870	0.0057	-15.36	0.000
31-45 years	-1.822	-0.0788	0.0061	-12.89	0.000
46-62 years	-1.204	-0.0376	0.0063	-5.98	0.000
Above 62 years	-0.0487	-0.0008	0.0058	-0.14	0.885
Marital Status (Single)					
Married (>1)	0.4684	0.0369	0.0052	7.08	0.000
FinTech Index	-0.1664	-0.0124	0.0062	-1.98	0.017
Location (Rural)					
Urban/Peri-urban	0.3882	0.0288	0.0031	9.24	0.000
Number of observations		20866	Prob>Chi-Square		0.000
Likelihood Ratio Chi-Square		1047.58	Pseudo R-Square		0.8661
Log Likelihood		-55			

Source: Study Data

The results of the multinomial logit model indicate that the model is statistically significant at 5 percent level of significance. This is indicated by a Chi-Square value of 0.000. The value is confirmed by the significance of the study variables at difference categories. The Pseudo R² values of 0.8661 suggests that the model is fit and effective to analyze the effect of Fintech adoption on women economic empowerment in Kenya. Further, the model is suitable for estimating the log likelihood of the probability of a woman being economically empowered. The log likelihood indicates that the probability of a woman being economically empowered is 86.61 percent. This implies that the factors that the study considered contribute to women economic empowered in Kenya and only 13.39 percent of the women are less likely to be influenced by the factors the study considered. Overall, the logit model provides a robust and statistically significant framework for analyzing the effect of Fintech adoption in influencing women economic empowerment in Kenya.

Education level also plays a crucial role in economic empowerment. The effect of education on women economic empowerment is captured the marginal effect which is statistically significant at both levels of education. The probability of a woman being economically empowered decreases with the level of education, this is indicated a larger negative magnitude for the secondary level. The coefficient for both primary level and secondary level were negative (0.0422) and (0.0912) respectively and statistically significant. This implies that the probability of a woman being economically empowered increases as number of years of schooling increase by 4.22 percent for primary and 9.12 percent for secondary. The likelihood of a woman being economically empowered increases further when she is having post-secondary education by 11.16 percent. The findings agree with Johnen and Mubhoff (2023) that more years on schooling enhance a woman independency in terms of decision-making, financial access and other essential services for human well-being hence the likelihood of economic empowerment increases for such women in the

society. Economic theories like capability approach have shown that education is typically expected to enhance economic opportunities, this finding suggests that other systemic barriers such as gender discrimination in labor markets, lack of access to high-paying jobs, and inadequate business support systems may prevent educated women from translating their academic achievements into economic gains hence reducing chances of economic empowerment.

Age is another significant determinant of women's economic empowerment at 5 percent level of significance. The marginal effect of age on women economic empowerment decreases as age advances. The results show that the marginal effect is statistically significant. This means that as a woman gets older, the likelihood of being economically empowered. This is because at young age, a woman is economically active and likely to be empowered via access to financial services, ability to own property contributed by exposure to modern financial tools, digital literacy and increased employment opportunities that enhances the probability of economic empowerment. The findings corroborate with Wandeda *et al.*, (2023) that age of a woman plays a key role in usage of digital financial services due ownership of mobile phones, televisions therefore, are more likely to use digital financial services gaining economic empowerment. However, the likelihood decreases as age advances due to inability of a woman to utilize digital services to access financial services.

The study considered marital status as a categorical variable in the sense that a woman is either married or single. Being single was used as a base category. The results indicate that the probability of a woman being economically empowered when married is 3.69 percent relative to being single. The likelihood of being empowered increase with marriage. The finding confirms Adera and Abdisa (2023) that found a positive significant likelihood of a

woman being economically empowered when married than when single. In addition, location where the woman stays influences the probability of being empowered economically. The study used rural as base location, the finding shows that the probability of being economically empowered increases by 2.88 percent when a woman stays in urban relative to rural. The finding agrees with Kulkami and Ghosh (2021) that a woman who stays in urban areas is likelihood to access banking services and also utilize mobile or digital banking services than the one in rural areas due to access to internet services hence enhancing autonomy of the woman in terms of investment decisions undertaken in the process breaking the barriers impeding women from such banking services. Similarly, married women appear to be more economically empowered than single women, possibly because they benefit from dual-income households or shared financial responsibilities, which provide greater financial security and access to resources. Women residing in urban and peri-urban areas are more likely to be economically empowered compared to those in rural areas. This disparity highlights the urban-rural divide in financial accessibility and opportunities, where women in urban areas have better access to financial institutions, employment opportunities, digital connectivity, and supportive economic networks. Conversely, women in rural areas may face limited banking services, fewer job prospects, and cultural restrictions that hinder their financial independence.

Finally, the results show that the marginal effect for FinTech adoption has a negative and statistically significant effect on women's economic empowerment at 5 percent level of significance. The probability of women enjoying economic empowerment with Fintech adoption is 1.24 percent, this means that adoption of fintech increase the likelihood of a woman getting economically empowered. Similarly, the finding suggests that increased adoption of FinTech services does not necessarily translate into higher economic empowerment for women in Kenya. The significant likelihood opines the findings by

Yeyuomo *et al.*, (2023) that found adoption of fintech services to narrow the gap between the least empowered women and most empowered women in the society. This is because of limited digital financial literacy among women. Although FinTech services are widely available, many women may lack the necessary knowledge and skills to navigate digital financial platforms effectively, reducing the economic benefits they could otherwise gain. Additionally, the high costs of digital transactions could serve as a significant barrier. Mobile banking fees, digital credit interest rates, and transaction costs may outweigh the benefits of accessing digital financial services, particularly for low-income women who already face financial constraints. Another critical factor is unequal access to digital credit, where women often encounter stricter borrowing conditions than men. Many financial institutions and digital lending platforms require collateral or income proof that women may not readily possess, limiting their ability to utilize FinTech services for entrepreneurial or business growth. Furthermore, cultural barriers to financial control remain a substantial challenge. Even when women have access to digital financial tools, decision-making authority over financial matters often rests with male household members, restricting women's ability to use FinTech for their economic benefit.

4.5.2 Effect of Financial Inclusion on Women's Economic Empowerment

The second objective of the study is to analyze the effect of financial inclusion on women's economic empowerment. The used multinomial probit regression model to achieve the objective. The results are summarized in Table 4.5

Table 4.5: Regression Results for the Effect of Financial Inclusion on Women's Economic Empowerment

Variable	Coefficient	Marginal effect	Std. Err.	z-score	P-value
Education Level (No education)					
Primary (>6 years)	-0.992	-0.0280	0.0131	-2.13	0.033
Secondary (3 years)	-1.262	-0.0477	0.0047	-10.11	0.000
Age Group (<16 years)					
16-30 years	-0.447	-0.0334	0.0124	-2.69	0.007
31-45 years	-0.345	-0.0231	0.0139	-1.67	0.095
46-62 years	0.0984	0.0068	0.0124	0.54	0.587
Above 62 years	0.7392	0.0211	0.0113	1.86	0.062
Marital Status (Single)					
Married	0.155	0.0108	0.0082	1.31	0.189
Financial Inclusion Index	0.0894	0.0066	0.0026	2.56	0.010
Location (Rural)	0.0128	0.00006	0.0140	0.00	0.997
Log likelihood	-472.44	Prob>Chi-Square			0.000
Number of Observations	3266		Pseudo R-Square		0.7355
Likelihood Ratio Chi-Square	148.06				

The results show that financial inclusion significantly influences women economic empowerment in Kenya at 5 percent level of significance. The model was good and fit to analyze the effect of financial inclusion on women economic empowerment is indicated by probability of Chi-square of 0.000 at 5 percent significance level. The pseudo R-squared value of 0.7355 suggests that the model is well and effective to be used in the analysis to predict the coefficient of financial inclusion. In addition, the log likelihood that the probability of financial inclusion influencing women economic empowerment is 73.55 percent hence the likelihood of a woman being economically empowered is influenced by financial inclusion of the woman.

The regression results indicate that financial inclusion has a positive and statistically significant impact on women's economic empowerment given by the marginal effect value 0.0066, this means that the probability of a woman being economically empowered in 0.66 percent. The findings corroborate Cabeza-Garcia *et al.*, (2019); Adera and Abdisa (2023) that access to financial services encourages equitable economic growth among women and help reduce poverty among them. This finding suggests that greater access to financial services enhances women's economic opportunities, allowing them to participate more

actively in economic activities. However, the effect size remains relatively small, implying that while financial inclusion is beneficial, it is not a standalone solution for achieving substantial economic empowerment. Theories have opined that one of the key ways in which financial inclusion supports women's empowerment is through greater access to credit. When women have access to financial institutions and credit facilities, they can invest in businesses, expand entrepreneurial ventures, or pursue further education, all of which contribute to long-term economic stability. Additionally, financial inclusion promotes increased financial security, as it allows women to accumulate savings, access insurance, and establish independent financial stability, reducing their vulnerability to economic shocks. This is supported by the positive significant marginal effect and agrees with Esmailpour and Karami (2023) financial inclusion boost women economic empowerment by facilitating asset ownership such as land, houses and make investment decisions. Moreover, financial inclusion can enhance women's autonomy in household financial decision-making, giving them greater influence over how money is allocated and spent within the family. This shift in financial agency can contribute to better household financial planning, improved child welfare, and overall enhanced economic well-being.

Despite these positive outcomes, the small effect size indicates that financial inclusion alone is insufficient to drive significant economic empowerment for women. Access to financial services must be complemented by financial literacy programs to ensure that women understand and effectively utilize financial products such as savings accounts, loans, and investment opportunities. Structural barriers, such as gender biases in financial lending, restrictive social norms, and digital access limitations, also need to be addressed to maximize the benefits of financial inclusion for women. Furthermore, the influence of education, age, and location on women's economic empowerment follows similar trends to those discussed under objective one. While financial inclusion plays a role in increasing

women's economic agency, education and digital literacy remain critical factors that enable women to fully capitalize on financial services. Similarly, location disparities suggest that women in urban and peri-urban areas benefit more from financial inclusion than those in rural settings, where access to formal banking institutions may still be limited.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS

5.1 Introduction

This chapter summarizes the study's key findings, draws conclusions, and provides policy recommendations to enhance women's economic empowerment through FinTech adoption and financial inclusion in Kenya. The study aimed to analyze the effect of FinTech and financial inclusion on women's economic empowerment, using multinomial logistic regression models to assess the relationships among key variables, including education, age, marital status, location, and financial service access.

5.2 Study Summary

The rapid growth of information, communication, and technology (ICT) has significantly impacted various economic sectors, including financial, education, agriculture, and construction. The Fintech industry has significantly benefited from innovative initiatives that transform money movement. The increasing use of mobile phones has led to an increase in users, enabling banks and financial institutions to expand their customer base and provide mobile money services. However, some sectors still find it inconvenient to fully accept payments through mobile money services. The global financial landscape is experiencing a transformative wave with the rise of Financial Technology (Fintech), which combines innovative business models and technology. In developing countries like Kenya, Fintech has the potential to promote financial inclusion through mobile technology. The success of Kenya's Fintech hub, M-Pesa, is attributed to its uptake among women and flexible regulations.

Kenya has become a pioneer in mobile money services, with fintech playing a significant role in the financial services industry. Key players include Equity Bank, Airtel, and Safaricom, which have revolutionized financial access for millions of unbanked Kenyans. The Central Bank of Kenya's policies, such as the National Payments System Act, have attracted foreign Fintech investors to Kenya. However, challenges like digital fraud, cybersecurity, and unequal access to technology persist. Despite these challenges, the integration of Fintech solutions has significantly improved financial inclusion in Kenya, with over 80% of adults now having access to financial services. Fintech has made financial services more accessible to a wider range of people, particularly small merchants and underprivileged communities. However, challenges such as financial literacy and digital divide remain. To sustain growth and overcome new challenges, a balanced approach involving regulation, innovation, and education is essential.

Women empowerment involves accepting women's perspectives and raising their status in society through education and training. Financial inclusion, the fundamental right to access essential financial services, is crucial for equitable societal participation and economic agency. Fintech companies, such as M-Shwari and KCB Mobi bank, have been instrumental in bridging the financial divide and extending these services to traditionally excluded segments, including women. In developing nations like Kenya, Fintech services have become indispensable instruments for advancing women's economic empowerment and financial inclusion. Mobile banking platforms like M-Pesa have greatly increased access to financial services, enabling women to save money and manage their finances effectively. However, women in Kenya still face challenges in fully utilizing Fintech services, such as limited digital literacy and gender norms. Despite these challenges, the affordability and access to technology have reduced the cost of smartphones and internet access, making them more accessible for low-income women.

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The study was anchored on four theories which include the institutional theory of financial inclusion, acceptance and technology use unified theory, empowerment theory and network theory of financial inclusion. In addition, the relevant literatures were also reviewed that added more insights to the study in identifying the past studies gaps and enriched the current study. Non-experimental research design was employed with logit and probit estimation models to analyse the study findings. Further, the study conducted both pre-estimation and post-estimation tests to ensure that spurious results are not obtained during analysis.

The study findings reveal that FinTech adoption has significant effect on women's economic empowerment. Despite the expansion of digital financial services, women face barriers such as limited digital financial literacy, high transaction costs, unequal access to digital credit, and cultural constraints in financial decision-making. While digital financial

services offer convenience, these challenges limit their impact on economic empowerment. On the other hand, financial inclusion also has significant but minimal impact on women's economic empowerment. Greater access to financial services enhances women's opportunities, primarily through improved access to credit, financial security, and autonomy in household decision-making. However, the relatively small effect size suggests that financial services alone are insufficient to drive substantial economic change without complementary policies such as financial literacy programs and gender-sensitive financial products.

The study also found that education plays a crucial role in economic empowerment. Women with higher education levels, particularly those with secondary and post-secondary education, are more likely to be economically empowered. However, systemic barriers, such as job market discrimination and limited access to capital, still hinder their ability to translate education into financial independence. Age and marital status also influence economic empowerment. Younger women tend to have higher economic empowerment levels, likely due to greater exposure to digital financial tools and employment opportunities. Married women, while slightly more empowered than their unmarried counterparts, may still face challenges related to financial dependence and gendered financial decision-making norms. Location plays a significant role in economic empowerment, with women in urban and peri-urban areas more likely to be economically empowered than those in rural regions. This finding highlights the persistent urban-rural divide in financial accessibility and employment opportunities.

5.3 Conclusion

The study was guided by two objectives; to analyze the effect of Fintech adoption on women economic empowerment in Kenya and to analyze the effect of financial inclusion on women economic empowerment in Kenya.

The study found that the coefficient of Fintech Index is statically significant, therefore, concludes that FinTech adoption affect women economic empowerment, however, fintech alone is insufficient to drive economic empowerment among women in Kenya due to the minimal coefficient. While digital financial services provide new avenues for financial participation, barriers such as low digital literacy, high transaction costs, and restrictive borrowing conditions limit their effectiveness might have contributed to low marginal effect on women economic empowerment. To maximize the benefits of FinTech, policymakers and financial institutions must address these barriers through digital literacy initiatives, cost reductions, and tailored financial products.

The findings also revealed that the coefficient of financial inclusion positive and statistically significant implying that financial inclusion influences women economic empowerment in Kenya. Financial inclusion contributes positively to women's economic empowerment though to a lower margin. However, access to financial services must be complemented by financial education and structural support to ensure that women can effectively utilize these services to achieve financial independence.

Furthermore, education remains a primary driver of economic empowerment. Enhancing women's access to secondary and post-secondary education, along with vocational training and entrepreneurship programs, can significantly improve their economic prospects.

Additionally, bridging the urban-rural gap in financial access is essential to ensure that all women, regardless of location, have equal opportunities for economic empowerment.

5.4 Policy Implications

Findings have shown that Fintech adoption, financial inclusion, education level, age, marital status, and location where the woman stays significantly influence women economic empowerment. Therefore, there is need to ensure education for all women to improve their financial literacy as it is essential to ensuring that women can effectively manage financial resources, avoid over-indebtedness, and make informed investment decisions. Government agencies, financial institutions, and non-governmental organizations should collaborate to implement comprehensive education programs initiatives targeting women from diverse socioeconomic backgrounds. These programs should focus on practical financial management, budgeting, credit use, and investment planning to empower women with the knowledge and confidence needed to make sound financial choices. The government should further enact policies that focus on improving women's financial decision-making power, providing flexible credit solutions, and expanding access to banking infrastructure in underserved areas.

The study has also revealed that Fintech adoption is very key in ensuring that women are economically empowered, therefore, government and other key stakeholders in the sector should focus on reducing the cost of FinTech services is crucial to increasing accessibility for women, particularly those in low-income groups. High transaction fees and digital credit interest rates discourage women from fully utilizing these services. Policymakers should work with financial service providers to lower these costs, ensuring that digital financial tools are affordable and beneficial to a wider segment of the female population.

Financial institutions should design gender-sensitive financial products can help bridge the financial inclusion gap. Financial institutions should further develop flexible loan products with lower collateral requirements, savings plans tailored to women's financial needs, and investment schemes that encourage long-term economic growth. Encouraging banks and microfinance institutions to adopt gender-inclusive policies can facilitate greater financial participation among women and support their journey toward financial independence.

Non-governmental organizations should focus on strengthening women's fintech adoption which requires heavy investment in technological infrastructure to improve on digital uptake in the financial sector. Governments and development agencies should also develop digital infrastructural facilities to enhance fintech adoption among women. These initiatives can create pathways for women to establish and expand their businesses, contributing to their financial stability and overall economic empowerment.

Enhancing digital and financial infrastructure is necessary to ensure that financial inclusion reaches women in underserved regions. Investment in rural banking infrastructure, mobile banking expansion, and internet accessibility is key to bridging the urban-rural divide. Policymakers should also promote agent banking models and mobile banking solutions to make financial services more accessible in remote areas. Patriarchal financial structures often limit women's financial autonomy. Programs that promote spousal financial training, legal protections for women's financial rights, and awareness campaigns on gender-inclusive financial decision-making can help create an environment where women have greater control over their financial futures.

5.5 Areas for Further Study

The findings have indicated low influence of Fintech adoption and financial inclusion on women economic empowerment. Therefore, future should investigate why the minimal influence on women economic empowerment. In addition, the study has proved that the two variables significantly influence women economic empowerment, therefore, future research should explore the role of digital finance accessibility in FinTech adoption by investigating how mobile phone ownership, internet access, and digital literacy influence women's ability to adopt and benefit from FinTech services. Further, there is need for future studies to examine how cultural factors affect women's financial inclusion and adoption of fintech services by assessing the impact of gender norms, societal expectations, and family structures on women's financial autonomy to develop effective interventions.

REFERENCES

- Adera, A., & Abdisa, L. T. (2023). Financial inclusion and women's economic empowerment: Evidence from Ethiopia. *Cogent Economics & Finance*, 11(2), 2244864.
- Ahmed, S. (2021). A gender perspective on the use of artificial intelligence in the African Fintech ecosystem: case studies from South Africa, Kenya, Nigeria, and Ghana. *Econstor*. www.econstor.eu/bitstream/10419/238002/1/Ahmed.pdf
- Aicha, E. (2023). Effects of Fintech services on financial inclusion in Kenya. Available at SSRN 4347442.
- Aziz, N., He, J., Raza, A., & Sui, H. (2022). A systematic review of review studies on women's empowerment and food security literature. *Global Food Security*, 34, 100647.
- Bilbao-Osorio, B., Dutta, S., & Lanvin, B. (2013, April). The global information technology report 2013. In *World Economic Forum* (pp. 1-383).
- Cabeza-García, L., Del Brio, E. B., & Oscanoa-Victorio, M. L. (2019, November). Female financial inclusion and its impacts on inclusive economic development. In *Women's Studies International Forum* (Vol. 77, p. 102300). Pergamon.
- Central Bank of Kenya (CBK). (2021). *Annual Report*. Retrieved from <https://www.centralbank.go.ke>
- CGAP. (2019). *Fintech and Financial Inclusion: Evidence from Kenya*. Retrieved from <https://www.cgap.org>
- Claessens, S., & Tzioumis, K. (2006). Measuring firms' access to finance. *World Bank*, 1-25.
- Correa, J. C., Dakduk, S., van der Woude, D., Sandoval-Escobar, M., & Lopez-Llamas, R. (2022). Low-income consumers' disposition to use automated banking services. *Cogent Business & Management*, 9(1), 2071099.
- Dalal, K. (2011). Does economic empowerment protect women from intimate partner violence?. *Journal of injury and violence research*, 3(1), 35.
- Delloite. (2021). Embedded finance: customer relationships and value web dynamics. Institute of Financial Finance.
- Demirgüç-Kunt, A., & Klapper, L. F. (2012). Financial inclusion in Africa: an overview. *World Bank policy research working paper*, (6088).
- Demirgüç-Kunt, A., Klapper, L., & Singer, D. (2018). Household finance and economic development. In *Handbook of finance and development* (pp. 534-549). Edward Elgar Publishing.

- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2020). *The Global Findex Database 2020: Financial Inclusion in the Age of COVID-19*. World Bank.
- Duflo, E. (2012). Women Empowerment and Economic Development. *Journal of Economic Literature*, 50(4), 1051-1079.
- Ediagbonya, V., & Tioluwani, C. (2023). The role of fintech in driving financial inclusion in developing and emerging markets: issues, challenges and prospects. *Technological Sustainability*, 2(1), 100-119.
- Esmailpour Moghadam, H., & Karami, A. (2023). Financial inclusion through Fintech and women's financial empowerment. *International Journal of Social Economics*, 50(8), 1038-1059.
- Feyen, E., Frost, J., Gambacorta, L., Natarajan, H., & Saal, M. (2021). Fintech and the digital transformation of financial services: implications for market structure and public policy. *BIS papers*.
- Financial Sector Deepening Kenya (FSD Kenya). (2020). *Digital Credit in Kenya: Evidence from Demand Side Surveys*. Retrieved from <https://www.fsdkenya.org>
- Fintech Global (2023). Kenyan Fintech Sector. Accessed on 26th April 2024 through: <https://Fintech.global/2023/02/24/kenyan-Fintech-sector-sets-new-record-in-2022-with-158m-capital-raised/>
- Gabor, D., & Brooks, S. (2020). The digital revolution in financial inclusion: international development in the Fintech era. In *Material Cultures of Financialisation* (pp. 69-82). Routledge.
- Ghosh, C., & Hom Chaudhury, R. (2022). Determinants of digital finance in India. *Innovation and Development*, 12(3), 343-362.
- Jack, W., & Suri, T. (2016). *The Long-run Poverty and Gender Impacts of Mobile Money*. *Science*, 354(6317), 1288-1292.
- Jackson, M. O., & Zenou, Y. (2015). Games on networks. In *Handbook of game theory with economic applications* (Vol. 4, pp. 95-163). Elsevier.
- Johnen, C., & Mußhoff, O. (2023). Digital credit and the gender gap in financial inclusion: Empirical evidence from Kenya. *Journal of International Development*, 35(2), 272-295.
- Jolliffe, I. T., & Cadima, J. (2016). Principal component analysis: a review and recent developments. *Philosophical transactions of the royal society A: Mathematical, Physical and Engineering Sciences*, 374(2065), 20150202.
- Kaffenberger, M., & Totolo, E. (2018). *A Digital Credit Revolution: Insights from Borrowers in Kenya and Tanzania*. CGAP. Retrieved from <https://www.cgap.org>

- Kehinde-Peters, O. (2024). Fintech and Financial Inclusion: Closing the Gender Gap. In *Women and Finance in Africa: Inclusion and Transformation* (pp. 75-89). Cham: Springer Nature Switzerland.
- Kendall, J., Machoka, P., Veniard, C., & Maurer, B. (2011). An emerging platform: From money transfer system to mobile money ecosystem. *UC Irvine School of Law Research Paper*, (2011-14).
- Kenya National Bureau of Statistics (2022). 2021 Fin Access Household Survey Report. Kenya National Bureau of Statistics. Accessed 20th April, 2024 from: <https://www.knbs.or.ke/download/finaccess-household-survey-report/>
- Kimenyi, M., & Ndung'u, N. (2009). Expanding the financial services frontier: Lessons from mobile phone banking in Kenya. *Washington, DC: Brookings Institution*.
- Klapper, L. (2017). *How Digital Payments Can Benefit Entrepreneurs*. The World Bank. Retrieved from <https://blogs.worldbank.org>
- Kulkarni, L., & Ghosh, A. (2021). Gender disparity in the digitalization of financial services: challenges and promises for women's financial inclusion in India. *Gender, Technology and Development*, 25(2), 233-250.
- Liu, S., Gao, L., Latif, K., Dar, A. A., Zia-UR-Rehman, M., & Baig, S. A. (2021). The behavioral role of digital economy Adaptation in sustainable financial literacy and financial inclusion. *Frontiers in Psychology*, 12, 742118.
- Maryuningsih, Y., Hidayat, T., Riandi, R., & Rustaman, N. Y. (2020). Profile of information and communication technologies (ICT) skills of prospective teachers. In *Journal of Physics: Conference Series* (Vol. 1521, No. 4, p. 042009). IOP Publishing.
- Miah, M. (2023). The Role of Fintech in Bridging the Divide for Economic Empowerment. *Economics and Business*, 37(1), 206-219.
- Mohyuddin, A., Chaudhry, H. U. R., & Ambreen, M. (2012). Economic empowerment of women in the rural areas of Balochistan. *Pakistan Journal of Women's Studies: Alam-e-Niswan*, 19(2).
- Ndung'u, N. (2021). A digital financial services revolution in Kenya: The M-Pesa case study. *African Economic Research Consortium: Nairobi, Kenya*, 23-44.
- Ndung'u, N., Gupta, S., & Keen, M. (2017). Digitalization in Kenya: Revolutionizing tax design and revenue administration. *Gupta et al*, 241-258. In Gupta, et al., (Eds.). (2017). *Digital revolutions in public finance*. International Monetary Fund.
- Omar, M. A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Journal of economic structures*, 9(1), 37.

- Ouma, S. A., Odongo, T. M., & Were, M. (2017). Mobile financial services and financial inclusion: Is it a boon for savings mobilization? *Review of development finance*, 7(1), 29-35.
- Ozili, P. K. (2020). Theories of financial inclusion. In *Uncertainty and challenges in contemporary economic behaviour* (pp. 89-115). Emerald Publishing Limited.
- Ozili, P. K. (2023). Institutional theory of financial inclusion. In *Handbook of Research on Acceleration Programs for SMEs* (pp. 45-53). IGI Global.
- Perkins, D. D., & Zimmerman, M. A. (1995). Empowerment theory, research, and application. *American journal of community psychology*, 23, 569-579.
- Raithatha, R., Awanis, A., Lowe, C., Holliday, D., & Storchi, G. (2023). GSMA State of the Industry Report-Mobile for Development.
- Rao, S., Vlassoff, C., & Sarode, J. (2014). Economic development, women's social and economic empowerment and reproductive health in rural India. *Asian Population Studies*, 10(1), 4-22.
- Suri, T., & Jack, W. (2016). *The Long-run Poverty and Gender Impacts of Mobile Money*. *Science*, 354(6317), 1288-1292.
- Tala. (2021). *Impact Report*. Retrieved from <https://tala.co.ke>
- Thomas, H., & Hedrick-Wong, Y. (2019). How digital finance and Fintech can improve financial inclusion. In *Inclusive Growth: The Global Challenges of Social Inequality and Financial Inclusion* (pp. 27-41). Emerald Publishing Limited.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
- Wandeda, D. O., Poulard, D., Kipkorir, K. M., Ikiriinya, C. K., Lentimalei, J. W., Michael, K., ... & Ntutu, J. (2023). Digital Financial Inclusion and Financial Health in Kenya: Gendered Analysis. *African Journal of Economic Review*, 11(3), 55-68.
- World Bank. (2020). *Kenya Economic Update: Navigating the Pandemic*. Retrieved from <https://www.worldbank.org/en/country/kenya/publication/kenya-economic-update>
- Yeyouomo, A. K., Asongu, S. A., & Agyemang-Mintah, P. (2023). Fintechs and the financial inclusion gender gap in Sub-Saharan African countries. In *Women's Studies International Forum* (Vol. 97, p. 102695). Pergamon.
- Zimmerman, M. A. (2000). Empowerment theory: Psychological, organizational and community levels of analysis. In *Handbook of community psychology* (pp. 43-63). Boston, MA: Springer US.


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15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation (NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix B1: Logit Model Estimation Output – Model 3.4

WEE Index	Coefficient	Std. error	z	P-value
Education level				
Post-secondary	-2.3443	0.35814	-6.55	0.0000
Primary	-3.1285	0.31858	-9.82	0.0000
Secondary	-3.3511	1.1281	-2.97	0.003
Age category				
16-30 years	-1.9158	0.2743	-6.99	0.000
30-45 years	-1.8219	0.2793	-6.52	0.000
46-62 years	-1.2041	0.2875	-4.19	0.000
Above 62 years	-0.04871	0.3391	-0.14	0.886
Marital status				
Married	0.4684	0.06238	7.51	0.000
Fintech index	-0.1664	0.12127	-1.37	0.000
Location	0.38818	0.04179	9.29	0.000
Constant term	6.5404	0.4181	15.64	0.000
Number of observations		20866	Prob>Chi-Square	0.000
Likelihood Ratio Chi-Square		1047.58	Pseudo R-Square	0.8661
Log Likelihood		-55		

Appendix B2: Probit Model Estimation Output – Model 3.5

WEE Index	Coefficient	Std. error	z	P-value
Education level				
Post-secondary	-0.9920	0.3615	-2.74	0.006
Primary	-1.2618	0.3057	-4.13	0.000
Age category				
16-30 years	-0.44714	0.21298	-2.10	0.036
30-46 years	-0.34509	0.23269	-1.48	0.138
46-62 years	0.09840	0.25549	0.39	0.700
Above 62 years	0.73920	0.40069	1.84	0.065
Marital status				
Married	0.1552	0.1091	1.42	0.155
Financial inclusion index	0.8936	0.0348	2.56	0.010
Location	0.0128	0.1868	0.07	0.946
Constant term	3.0189	0.4164	7.25	0.000
Log likelihood	-472.44	Prob>Chi-Square		0.000
Number of Observations		3266	Pseudo R-Square	0.7355
Likelihood Ratio Chi-Square		148.06		

Appendix C: Approval Letter



**KENYATTA UNIVERSITY
GRADUATE SCHOOL**

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 810901 Ext. 4150

Internal Memo

FROM: Executive Dean, Graduate School

DATE: 4th November, 2024

TO: Grivines Omondi Peter
C/o Applied Economics Dept.

REF: K101/PT/CTY/20113/2020

SUBJECT: APPROVAL OF RESEARCH PROJECT PROPOSAL

This is to inform you that Graduate School Board at its meeting of 16th October, 2024 approved your Research Project Proposal for the M. Econ. Degree Entitled, **"Financial Technology and Financial Inclusion Effect on Women Economic Empowerment in Kenya."**

You may now proceed with your Data Collection, Subject to Clearance with Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision tracking and progress report forms per semester. The forms are available at the university's website under Graduate School webpage downloads.

Also, please ensure that you publish article(s) from your project before submitting it to Graduate School for examination as per the Commission for University Education and Kenyatta University guidelines.

Thank you.


JOHN ODONGI
FOR: EXECUTIVE DEAN, GRADUATE SCHOOL
c.c. Chairman, Applied Economics Department.

Supervisors:

1. Dr. Isaac Kimunio
C/o Department of Applied Economics
Kenyatta University

JO/K



Appendix D: Authorization Letter



KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke

Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 8710901 Ext. 57530

Our Ref: K101/PT/CTY/20113/2020

DATE: 4th November, 2024

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR GRIVINES OMONDI PETER – REG. NO. K101/PT/CTY/20113/2020

I write to introduce **Grivines Omondi Peter** who is a Postgraduate Student of this University. The student is registered for M. Econ. degree programme in the **Department of Applied Economics**.

Peter intends to conduct research for a M. Econ. Project Proposal entitled, **“Financial Technology and Financial Inclusion Effect on Women Economic Empowerment in Kenya.”**

Any assistance given will be highly appreciated.

Yours faithfully,


PROF. ALIUD NJAGI
EXECUTIVE DEAN, GRADUATE SCHOOL

JO/w

Transforming Higher Education... Enhancing Lives
Kenyatta University is ISO 9001:2015 Certified



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