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## EFFECT OF DIGITAL SAVINGS ON FINANCIAL INCLUSION OF WOMEN OWNED ENTERPRISES IN NAROK COUNTY

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### ABSTRACT

Digital financial services (DFS) have rapidly transformed financial landscapes worldwide, yet their role in advancing financial inclusion for women-owned enterprises remains insufficiently explored. In regions such as Narok County, where women face unique economic challenges, understanding how DFS can empower marginalized entrepreneurs is critical for sustainable growth and social equity. This study investigated the impact of digital savings on financial inclusion of women entrepreneurs. The research employed a cross-sectional research design targeting 392 women-owned enterprises in Narok County. Stratified sampling was first used to group similar enterprises then simple random sampling was used to select a sample of 194 respondents. Data was collected via structured questionnaires and analyzed using both descriptive and inferential statistical methods. Reliability was confirmed through Cronbach's alpha, and the regression model was validated using a series of diagnostic tests. Data was analyzed by the aid of Statistical Package for Social Sciences (SPSS) version 26, where inferential statistics were computed to assess the relationship between the variables. Result showed that, digital savings affected the financial inclusion of women entrepreneurs in Narok County to a great extent. The results revealed that digital savings also had statistically significant effect on financial inclusion with ( $R=.643$ ;  $R^2=.413$ ;  $F = 114.625$ ;  $\beta =.447$ ;  $t = 5.425$ ;  $p < 0.05$ ) contribution. The study concluded that, the predictor variable significantly affected the level of financial inclusion among women owned enterprises. The findings are expected to provide a framework for policy makers on designing an effective DFS to reduce financial disparities and stimulate economic empowerment among women entrepreneurs.

**KEYWORDS:** Digital Savings, Financial Inclusion, Financial Literacy and Women-Owned Enterprises.

## **1.1 INTRODUCTION**

Since 2010, following the recognition of financial inclusion (FI) by G20 leaders as a catalyst for global development, regulators and policymakers worldwide have shown heightened interest in this concept. Financial inclusion is the process of ensuring that individuals and businesses, regardless of their socioeconomic status, have access to and can effectively use appropriate financial services (Ozili, 2020). Moreover, FI contributes to the achievement of the United Nations Sustainable Development Goals (Ma'ruf & Aryani, 2019), supports financial stability and economic growth (Neaime & Gaysset, 2018), and mitigates income inequality and poverty (Park & Mercado, 2019). Despite the global push for enhanced FI, significant disparities persist among developing regions (Lyons & Kass-Hanna, 2021). The World Bank underscores the significance of financial inclusion, asserting that it is a key enabler for achieving sustainable development goals (World Bank, 2020). In essence, fostering financial inclusion not only enhances individual economic well-being but also plays a pivotal role in advancing societal prosperity and sustainable development.

A cursory review of global financial inclusion data highlights significant progress in expanding access to financial services, with the World Bank Global Findex report (2021) indicating a 50 percent increase in worldwide account ownership from 2011 to 2021. However, gender disparities persist, as evidenced by the 4 percent gender gap in financial access, with only 74 percent of women globally having formal financial institution accounts compared to 78 percent of men in 2021. This gap translates to approximately 740 million unbanked women worldwide, impacting their empowerment, labor force participation, family welfare, and household savings. In various economies, women encounter adverse regulatory environments, such as the requirement for a married woman's husband's consent to open a bank account in Islamic states, highlighting how legal frameworks can hinder women's demand for and access to finance (World Bank, 2023).

India's government has spearheaded ambitious initiatives like the Jan Dhan Yojana, Aadhar-based biometric authentication, and the Unified Payments Interface (UPI), playing a pivotal role in expanding financial services (Pazarbasioglu, 2020). These initiatives have propelled India towards greater financial inclusion, with the widespread adoption of mobile wallets and digital payment platforms empowering millions to access banking services, make digital transactions, and avail insurance and credit facilities. In Europe, the Scandinavian countries have been at the forefront of digital financial inclusion, with Sweden serving as a notable example. Sweden has transitioned into a largely cashless society, with over 98% of the population having access to financial services through digital means (Arvidsson, 2019). The widespread adoption of mobile banking applications, real-time payment systems like Swish and the integration of open banking initiatives have significantly enhanced financial accessibility. Digital saving platforms have gained traction, providing consumers

and small businesses with efficient credit solutions based on alternative credit scoring models (Berg et al., 2020).

Africa has witnessed remarkable advancements in mobile and digital technologies, making it fertile ground for DFS (World Bank, 2020). With a significant portion of the population owning mobile phones, DFS has become accessible even to remote and underserved communities. The surge in DFS across various African nations, driven by the widespread adoption of mobile technology, has significantly transformed traditional financial landscapes (Masocha, 2019). South Africa has made significant strides in advancing digital payment ecosystems with platforms like SnapScan and Zapper (Maree, 2019). These solutions have modernized transactions, promoted cashless payments and contributed to a more inclusive financial landscape (Masango, Maziriri, & Simo, 2020).

Kenya's pioneering role in DFS serves as a global benchmark, with national financial inclusion reaching 83.7% (KIPRA, 2023). The success of M-Pesa has transformed financial transactions by enabling a wide range of services, money transfers, bill payments, and savings, all accessible via mobile phones. Studies have consistently demonstrated that the ease and ubiquity of M-Pesa have significantly advanced financial inclusion, particularly in rural areas with limited traditional banking facilities (Mbiti & Weil, 2015). Digital savings is an emerging component of Kenya's DFS landscape. Recent research has highlighted that mobile money savings products encourage systematic savings behavior among low-income households and small businesses, contributing to financial resilience and greater economic security (Ochieng et al., 2018).

Despite the remarkable progress of Kenya's financial inclusion rate, measured by access to formal financial services, reached 83.7% in 2023, from 26.7% in 2006, significant disparities persist across counties. While urban areas such as Nairobi, Nyeri, Murang'a, Kirinyaga, and Kiambu exhibit inclusion rates exceeding 90%, rural counties like Narok (65.7%) and Garissa (64.5%) lag behind (KNBS, 2021). Gender disparities are also pronounced; for instance, in Narok County, only 56.7% of women have access to formal financial products compared to 73.6% of men (KNBS, CBK, FSD, 2021). These gaps are compounded by cultural norms that limit women's economic participation, particularly in traditionally patriarchal communities such as the Maasai. Collectively, these findings underscore the critical need for tailored DFS interventions that address the diverse challenges faced by Kenyan women entrepreneurs in achieving financial inclusion.

## **1.2 Statement of the Problem**

Financial inclusion is recognized as crucial for economic development, poverty reduction, and social equality, particularly for women. Despite significant national progress in expanding access to financial services, marked regional disparities persist. In Kenya, overall financial inclusion has improved over

the past decades from 26.7% in 2006 to 83.7% in 2023, yet women-owned enterprises in Narok County experience notably lower inclusion rates and wider gender gaps (women have 56.7% and men have 73.6% in access to formal financial products). This discrepancy reflects a complex interplay of historical marginalization, restricted access to formal financial institutions, and socio-cultural barriers that collectively contribute to high business mortality and limited participation in financial decision-making processes. The overarching objective of this study is to explore how digital financial services can enhance financial inclusion among women-owned enterprises in Narok County.

### **1.3 Objectives of the Study**

The general objective of the study was to investigate the effect of digital savings on financial inclusion among women owned enterprises in Narok County.

## **2.1 Theoretical Framework**

### **2.1.2 Financial information Asymmetry Theory**

The Financial Asymmetry Theory, developed by Stiglitz and Weiss (1981), explains how information imbalances between lenders and borrowers influence credit allocation. The theory posits that lenders often lack complete information about borrowers' creditworthiness, leading to challenges such as adverse selection and moral hazard in loan distribution. As a result, traditional financial institutions impose stringent lending conditions, including high collateral requirements and strict credit history evaluations, which disproportionately disadvantage borrowers with limited financial records.

In the context of digital lending, financial technology firms leverage alternative data sources, such as mobile transactions, utility payments, and digital footprints, to assess creditworthiness more accurately (Klein, 2015). This approach enables digital lenders to reduce information asymmetry, extending credit to individuals who may be excluded from traditional banking due to a lack of collateral or formal credit history. Digital lending platforms, therefore, serve as a critical tool for financial inclusion, particularly for underserved groups such as women entrepreneurs in Narok County.

Women-owned enterprises in Narok County face unique challenges related to information asymmetry and access to credit. Many women entrepreneurs operate in the informal sector, where financial records are scarce, limiting their ability to meet traditional lending criteria. Additionally, cultural and socio-economic factors may further restrict their financial opportunities, making them more reliant on alternative lending channels. Financial Asymmetry Theory helps explain how digital lending bridges this gap by providing credit solutions that rely on behavioral and transactional data rather than traditional financial records.

By integrating Financial Asymmetry Theory into the research methodology, this study aims to provide insights into the role of digital lending in addressing credit barriers for women entrepreneurs. The findings will offer policy recommendations for improving digital lending platforms, ensuring that they are more inclusive and accessible to women-owned enterprises in rural areas.

## **2.2 Conceptual Framework**

A conceptual framework is a valuable research tool that provides a visual representation of the relationships among independent and dependent variables within a study. In this framework, digital financial services serve as the independent variable and encompass digital savings. Financial inclusion, assessed through the quality of financial services, is the dependent variable.

## **2.3 Digital Savings and Financial Inclusion**

Garcia and Wang (2022) provided an international perspective on digital saving mechanisms and their role in fostering financial inclusion. Their quantitative analysis employed comparative statistical techniques to examine saving frequencies, account accessibility, and interface usability across various countries. The study demonstrated that digital saving tools can promote improved savings behavior and financial stability especially in emerging markets by nurturing a savings culture that underpins economic resilience. However, the study's reliance on secondary data and cross-national comparisons limits its ability to provide localized insights, which are crucial for understanding the unique context of women-owned enterprises in Narok County.

In several African contexts, Oduro and Mensah (2020) adopted a mixed-methods approach integrating qualitative interviews with quantitative analysis to investigate the relationship between digital saving adoption and savings rates among women and low-income individuals. Their analysis, which included thematic coding and descriptive statistics, revealed a positive association between digital saving initiatives and improved access to formal financial services. The study also noted that an urban-centric focus might obscure the challenges faced in rural areas with less developed digital infrastructure. These findings are particularly relevant for Narok County, where women entrepreneurs may experience similar infrastructural limitations that hinder the effective adoption of digital savings platforms.

Expanding on this theme, Boateng, Mensah, and Adu (2021) focused on mobile-based saving solutions in sub-Saharan Africa by utilizing panel data analysis and regression modeling. They evaluated variables such as deposit amounts, account usage frequency, and customer engagement. Their findings confirmed that mobile saving solutions help lower barriers to formal savings products and enhance overall financial inclusion. However, their narrow focus on customer behavior without

incorporating broader macroeconomic factors suggests that a more holistic approach may be needed. This gap is important for the current study, as it indicates the need to consider both micro-level behavioral aspects and macro-level economic conditions when assessing the impact of digital savings on women-owned enterprises in Narok County.

In Kenya, Mutua and Otieno (2021) employed survey data and econometric techniques, such as multiple regression analysis, to investigate the impact of digital saving initiatives on household financial resilience through mobile money platforms. Their research demonstrated that digital saving services effectively bridge the gap between formal and informal financial sectors, benefiting previously unbanked populations. Although the study provided robust evidence on the positive impact of digital saving, its cross-sectional design limits the ability to assess long-term behavioral changes, a critical consideration when evaluating sustainable financial inclusion strategies for women entrepreneurs.

The reviewed studies collectively illustrate that digital savings platforms positively influence financial inclusion by encouraging disciplined saving behaviors, increasing access to formal financial services, and promoting economic resilience. However, challenges such as limited digital literacy, infrastructural constraints, and security concerns persist, especially in contexts similar to Narok County. These findings underscore the need for further localized research that incorporates both micro-level and macro-level factors affecting women-owned enterprises. The current study aims to address these gaps by applying established theoretical frameworks such as the Financial Inclusion Theory—to examine the specific impact of digital savings on the financial inclusion of women entrepreneurs in Narok County.

## **METHODOLOGY**

### **3.1 Research Design**

The research design refers to the overall plan, structure, and strategy employed to systematically investigate a research problem, guiding the collection and analysis of data to achieve the study's objectives (Creswell & Creswell, 2017). This study adopted a cross-sectional research design to assess the effects of digital financial services (DFS) on financial inclusion among women-owned enterprises in Narok County.

### **3.2 Target Population**

The target population refers to the specific group that the researcher intends to study and draw conclusions (Creswell & Creswell, 2017). For this study, the target population comprised of women-owned enterprises, defined as legally registered businesses that are primarily owned and managed by women. The population consists of 392 licensed women-owned enterprises operating in Narok County

across various sectors namely whole sellers, manufacturers, services, agriculture, retailing, among others.

### 3.3 Sample Size and Sampling Technique

This study employed stratified sampling to determine the sample size, ensuring representation from all sectors of the target population. The process began with the calculation of an initial or “minimum” sample size using Cochran’s formula for large populations:

$$n_0 = \frac{z^2 pq}{e^2}$$

Substituting these values:

$$n_0 = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384$$

This calculation yielded an initial sample size of 384 respondents. However, given that the total target population comprises 392 women-owned enterprises, a finite population correction (FPC) was applied to adjust the sample size. The FPC formula is:

$$N_a = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

Where  $n_a$  is the adjusted sample size and  $N$  is the target population size (392). Using this formula:

$$n_a = \frac{384}{1 + \frac{383}{392}} = 194$$

Thus, the adjusted sample size is 194 respondents. This adjustment ensures that the sample is representative given the small size of the target population while maintaining the desired 95% confidence level and a 5% margin of error. The sample size of 194 respondents was deemed sufficient for this study because it represented more than 10% of the target population. This represented 49.5% of the targeted population which agreed with the other scholars who have suggested that a sample size more than 10% is sufficient for use in a study (Kothari, 2015).

Stratified sampling was selected to ensure that each sector within the target population is adequately represented. The strata were defined by the business sectors—Wholesale, Manufacturing/Processing, Service, Agriculture, Retail Shops, and Others—as listed in Table 3.1. Simple random sampling was then used to select the respondents from each stratum. The sample distribution was therefore computed proportionately for each sector. For example, wholesalers ( $52/392 \times 194 = 26$ ). This helped to ensure representation and reliability of the findings.

This study used structured questionnaires to gather primary data on the use of digital financial services among women-owned enterprises in Narok County. The questionnaires included closed-ended questions for quantitative data, Likert scale items for attitudes and satisfaction, and open-ended questions for participants to share experiences. The questionnaires were distributed through SME associations, ensuring comprehensive data collection. Respondents were given a 14-day period to complete and return the surveys, ensuring the study's overall objective.

### **3.4 Data Analysis**

The data analysis for this study was conducted through a systematic and rigorous approach to ensure the validity and reliability of the findings. Initially, all collected data underwent a meticulous cleaning process to identify and rectify any inconsistencies or errors, thereby enhancing the integrity of the dataset. To explore relationships between variables, Pearson's correlation analysis was utilized to assess the strength and direction of associations between digital savings, and the level of financial inclusion among women-owned enterprises in Narok County. This approach facilitated the identification of significant correlations that informed subsequent analyses.

Building upon the correlation findings, simple linear regression analyses were conducted for each digital financial service component to determine their individual impact on financial inclusion. This step allowed for the quantification of the extent to which each independent variable influenced the dependent variable, providing insights into their relative contributions. The regression model employed is articulated as follows:

$$Y = \beta_0 + \beta_1 X_1 + \epsilon$$

Where:

Y represents financial inclusion (the dependent variable).

X<sub>1</sub> = Digital Savings

$\beta_0$  is the intercept, representing the baseline level of financial inclusion when all independent variables are zero.  $\beta_1$  is the regression coefficients, representing the impact of each digital financial service on financial inclusion.  $\epsilon$  is the error term, accounting for unexplained variance.

## **FINDINGS AND DISCUSSIONS**

### **4.1 Correlation analysis between Digital savings and financial inclusion among women owned enterprises**

The study objective was to find out Effect of digital savings on financial inclusion among women

owned enterprises in Narok County.

The data underwent further analysis using Pearson’s Correlation to determine the relationship between digital savings and financial inclusion among women-owned enterprises in Narok County. The results are summarized in Table 1.

**Table 1: Pearson’s Correlation Analysis between Digital Savings and Financial Inclusion**

		<b>Financial Inclusion</b>
<b>Digital Savings</b>	Pearson Correlation	.643**
	Sig. (2-tailed)	.000
N		165

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

The results in Table 1 demonstrate a strong positive and statistically significant correlation ( $r = 0.643^{**}$ ,  $p = 0.000$ ) between digital savings and financial inclusion among women-owned enterprises in Narok County. This suggests that digital savings play a pivotal role in enhancing financial inclusion among such enterprises. These findings align with previous research by Thompson and Miller (2021) and Adebayo et al. (2022), who similarly highlighted the transformative impact of digital financial services on economic inclusion. However, they contrast with the findings of Rodriguez and Gupta (2020), who argued that traditional financial services still dominate in rural areas, implying potential challenges for digital savings adoption related to infrastructure and user acceptance.

#### **4.2 Regression Tests on effect of digital saving and financial inclusion among women-owned enterprises**

The study further explored the impact of digital savings on financial inclusion among women-owned enterprises in Narok County through simple linear regression, The following null hypothesis was tested,  $H_0$ : Digital saving has no significant effect on financial inclusion among women-owned enterprises in Narok County.

This analysis was conducted using simple linear regression, and the results are detailed in Table 2.

**Table 2: Regression model summary for Digital Savings and financial inclusion**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.643 <sup>a</sup>	.413	.409	.48984	.413	114.620	2	163	.000

a. Predictors: (Constant), obj3

Table 2 illustrates the regression model summary between digital savings and financial inclusion among women-owned enterprises in Narok County. An  $R^2$  of 0.643 indicates that approximately 64.3% of the variability in financial inclusion among women-owned enterprises in Narok County can be explained by digital savings. This high R-squared value suggests a strong effect of digital savings on financial inclusion, indicating that improvements in digital savings significantly affects financial inclusion among women owned enterprises. In other words, digital savings play a crucial role in enhancing financial inclusion among women-owned enterprises in Narok County.

In order to test the contribution of digital savings to financial inclusion among women owned enterprises a simple linear regression model was developed and presented in Table 3.

**Table 3: Regression Coefficients for digital savings and financial inclusion of women-owned**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.347	.294	4.578	.000	
	Digital savings	.710	.066	.643	10.706	.000

a. Dependent Variable: financial inclusion

The results on table 3 shows that the beta coefficient value of 0.710 implies that a unit improvement in digital savings, leads to an increase of 71.0% in financial inclusion among women-owned enterprises in Narok County. This coefficient quantifies the effect of digital savings on enhancing economic participation and inclusivity among women-owned enterprises in the region, confirming a direct and positive relationship between these variables. The t-test value of 10.706 indicates a strong confidence in predicting the effect of digital savings on financial inclusion among women owned

enterprises. This value exceeds the critical t-value, further supporting the conclusion that digital savings significantly enhance financial inclusion among women-owned enterprises in Narok County. The p-value of less than 0.05 confirms that the results are statistically significant, rejecting the null hypothesis that digital savings have no significant effect on financial inclusion.

These findings are consistent with research by Thompson and Miller (2021) and Adebayo et al. (2022), who found that digital financial services contribute positively to economic participation and inclusivity among various demographics. Thompson and Miller (2021) emphasized the pivotal role of digital financial solutions in fostering economic growth, while Adebayo et al. (2022) highlighted their transformative impact on financial inclusion. Furthermore, these results align with the principles of the Financial Asymmetry Theory, which underscores information imbalances between savers and financial institutions (Stiglitz & Weiss, 1981), emphasizing that clear and accessible financial information are critical factors driving the adoption and effectiveness of digital financial solutions.

### Multiple Linear Regression Tests

The study further sought to establish the overall effect of all four independent variables (digital lending and digital savings) on the dependent variable (financial inclusion). This analysis was done using multiple linear regressions, and the results are presented in Table 4.

**Table 4: Multiple Linear Regression Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.732 <sup>a</sup>	.537	.525	.43927	.537	46.305	2	160	.000

a. Predictors: (Constant), digital payments, digital lending, digital savings, and digital insurance

Table 4 shows that the goodness of fit for the regression between all the independent variables (digital payments, digital lending, digital savings, and digital insurance) and financial inclusion of women-owned enterprises in Narok County was satisfactory. An  $R^2$  of 0.537 indicates that the four independent variables combined explain 53.7% of the financial inclusion of women-owned enterprises in Narok County. These findings align with those of Garcia and Moroz (2020) and Ndungu and Kinyua (2022), who noted that a high level of digital financial literacy significantly improves financial

inclusion. Conversely, these findings differ from Kim (2022), who reported no significant impact of digital financial services on financial inclusion in rural areas.

## **CONCLUSION AND RECOMMENDATIONS**

### **5.1 Conclusion**

In view of the study findings, the following conclusions were drawn along the research objectives. First, the study concluded that digital lending positively influences financial inclusion among women-owned enterprises in Narok County, a finding that is consistent with previous research and supported by Financial Inclusion Theory. Respondents perceived digital lending services as easily accessible, reliable, and flexible, thereby contributing to their effectiveness. Nonetheless, there is a need for continuous efforts to improve affordability and accessibility to ensure broader financial inclusion.

### **5.2 Recommendations**

In view of the conclusions, the study recommends several initiatives to enhance the impact of digital financial services on financial inclusion among women-owned enterprises in Narok County. The study emphasizes the need to strengthen digital lending services by promoting transparency in lending practices, ensuring fair interest rates, and expanding outreach to underserved communities. Organizing workshops and seminars can help educate women entrepreneurs about the advantages of digital lending and improve their understanding of repayment mechanisms. This practical approach not only enhances access to capital but also builds trust in formal financial institutions, thereby supporting sustained business growth.

The real-world implications of these recommendations are significant. By implementing these practical measures, policymakers and financial institutions can create a more inclusive financial ecosystem that addresses the specific challenges faced by women entrepreneurs. Enhancing digital financial services not only promotes economic empowerment and sustainable business growth but also contributes to overall economic development in Narok County.

### **5.3 Areas for Further Research**

This study suggests several promising avenues for future research aimed at deepening our understanding of digital financial services and their impact on women-owned enterprises in Narok County. The researchers can explore additional variables such as financial behavior and knowledge to gain insights into how these factors influence the adoption and effectiveness of digital financial services among women entrepreneurs. Diversifying the study sample to include different sectors and regions would provide a broader perspective on the applicability of findings across various contexts.

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