Determinants of digital platform adoption among women entrepreneurs in agribusiness in Kilosa District

Lusako A. Mwakiluma[1]
Abdulrahman O. Athuman[2]

[1]lusako.mwakiluma@cbe.ac.tz
[2]abdulrahman.athuman@cbe.ac.tz

[1]College of Business Education (CBE), [2] College of Business Education (CBE)

https://doi.org/10.51867/scimundi.6.2.46

ABSTRACT

Despite the increasing role of digital technologies in transforming agricultural value chains, women entrepreneurs continue to face multiple barriers that limit their effective participation in digital agribusiness. Therefore, the current study examines factors influencing the adoption of digital platforms among women entrepreneurs in Agribusiness at Kilosa district. This study is anchored on the Unified Theory of Acceptance and Use of Technology (UTAUT). A cross-sectional research design was employed, and primary data were collected from women entrepreneurs using structured questionnaires. Both descriptive and Multivariate Probit Model were used to analyze the data collected from 384 women entrepreneurs in agribusiness in Kilosa district. The findings revealed that digital literacy training, smartphone ownership, mobile banking access, and income significantly influence the adoption of digital platforms. Women entrepreneurs who had received digital training and had access to digital tools were more likely to adopt platforms such as Kilimo Fresh, M-Kilimo, and Internet banking. Access to credit and business experience also showed positive effects on adoption, highlighting the importance of financial capacity and entrepreneurial exposure. However, factors such as mobile network availability, education level, and distance to financial services showed limited or inconsistent influence on adoption decisions. The study concludes that digital platform adoption among women entrepreneurs is driven more by access to skills, financial resources, and digital tools than by basic infrastructure or demographic characteristics. It recommends the implementation of targeted digital literacy programs, expansion of affordable digital services, and development of gender-inclusive financial products to enhance adoption. Strengthening institutional support systems and improving access to technical assistance are also critical for promoting inclusive digital transformation in agribusiness.

Keywords: Agribusiness, Digitalization, ICT, Vulnerabilities

I. INTRODUCTION

Women entrepreneurs in agribusiness play a pivotal role in global food systems, rural livelihoods, and economic development (Feranita *et al.,* 2023; Mbukwa *et al.,* 2024; Ojo *et al.,* 2024). Despite their contributions, they continue to face structural and socio-economic barriers that limit their productivity and growth (Ojo *et al.,* 2026). These challenges include limited access to financial resources, inadequate infrastructure, and low levels of digital literacy, all of which constrain their ability to compete effectively in modern agricultural markets (Tambunan, 2009; Brush *et al.,* 2009). In many rural settings, women agripreneurs earn lower incomes than men and remain concentrated in low-value segments of agricultural value chains (Barret et al., 2022; Komba & Andrew, 2025). The emergence of digital technologies offers a transformative opportunity to address these inequalities by enhancing access to markets, information, and financial services, thereby improving women's livelihoods and overall well-being (Horogo *et al.,* 2026; Brennen & Kreiss, 2016; Goldfarb & Tucker, 2019).

Digitalization has increasingly reshaped agribusiness operations worldwide, enabling entrepreneurs to improve efficiency, reduce transaction costs, and expand market reach (Wang *et al.,* 2025). For women entrepreneurs, digital platforms such as mobile applications, e-commerce systems, and digital financial services have become essential tools for business growth and sustainability (Salamzadeh *et al.,* 2024; Owusu *et al.,* 2018). These technologies facilitate access to real-time market information, improve communication with buyers and suppliers, and support financial inclusion through mobile banking and digital credit systems. However, disparities in access to education, training, and technological resources continue to limit women's ability to fully utilize these digital opportunities (Alam *et al.,* 2022; Paiva *et al.,* 2024).

Globally, even in developed economies, women entrepreneurs in agribusiness face challenges in fully leveraging digital platforms (Wang *et al.,* 2025). While digital tools have improved productivity and enabled participation in global value chains, issues such as limited digital skills, high costs of technology, and unequal access to funding remain prevalent (Kamberidou, 2020; Mahdi *et al.,* 2023). Furthermore, structural inequalities, including gender

Licensed Under Creative Commons Attribution (CC BY-NC)

biases in investment and land ownership, continue to hinder women's ability to adopt and benefit from digital innovations (Mittal & Bhandari, 2021). These challenges highlight the need for inclusive policies and targeted support systems to ensure that digital transformation benefits women entrepreneurs equitably (Parviainen *et al.,* 2017).

In Sub-Saharan Africa, where agriculture remains a primary source of livelihood, women constitute a significant proportion of the agricultural workforce but remain disproportionately excluded from digital opportunities (Chiweshe & Bhatasara, 2021). Although mobile technologies and digital financial services have improved access to information and markets, adoption rates among women remain low due to infrastructural constraints, affordability issues, and socio-cultural barriers (Yousif et al., 2025; Chowdhury et al., 2025). Digital platforms such as mobile money and agricultural information systems have demonstrated potential to empower women by facilitating access to credit, market prices, and extension services (Kanani & Gabani, 2020; Food and Agricultural Organization [FAO], 2024). Nevertheless, persistent gender gaps in digital access and usage continue to limit the transformative potential of these technologies (Rutashobya *et al.,* 2021; Mashapure *et al.,* 2025).

In Tanzania, women are central to agricultural production, contributing significantly to food security and household incomes (Macha *et al.,* 2026). Despite this, their participation in digital agribusiness remains constrained by multiple factors, including limited access to smartphones, high internet costs, and inadequate digital skills (Kapinga, 2020; Ismail, 2023). While mobile-based financial services and digital agricultural platforms have improved access to market and financial information, their utilization among women entrepreneurs remains relatively low (Okello *et al.,* 2020). Additionally, gender inequalities in access to land, capital, and education further exacerbate the digital divide, restricting women's ability to adopt and effectively use digital technologies in agribusiness (Gumucio *et al.,* 2021; Farnworth *et al.,* 2024).

Specifically, in Kilosa district, where agribusiness is a key economic activity, understanding the determinants of digital platform adoption among women entrepreneurs is critical for designing effective interventions. Factors such as access to infrastructure, affordability of digital tools, digital literacy, and institutional support are likely to influence adoption decisions. Therefore, this study aims to examine the key determinants influencing digital platform adoption among women entrepreneurs in agribusiness in Kilosa district, with the goal of informing policies and programs that promote inclusive digital transformation, enhance productivity, and empower women economically.

1.1 Research Objectives

i. Assess the influence of digital-capability factors, digital literacy training, prior ICT experience, and smartphone ownership on digital platform adoption among women entrepreneurs;
ii. Examine the effect of economic and financial factors, household income, access to credit, and mobile banking account ownership on digital platform adoption decisions;
iii. Determine the role of infrastructural and institutional factors mobile network availability, distance to mobile money agents, technical support, and farmer-organization membership in shaping digital platform adoption; and
iv. Establish the influence of socio-demographic characteristics age, education level, marital status, and business experience on digital platform adoption among women entrepreneurs in agribusiness.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

This study is anchored on the Unified Theory of Acceptance and Use of Technology (UTAUT) advanced by Venkatesh et al. (2003), which explains technology adoption behaviour through four core constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. The theory is relevant to this study because it accommodates both individual-level factors (such as digital skills and perceived usefulness of digital platforms) and contextual, enabling-environment factors (such as infrastructure, institutional support, and access to financial resources), which together reflect the range of determinants examined among women entrepreneurs in agribusiness in Kilosa District. Within this framework, digital-capability factors correspond to performance and effort expectancy; economic and financial factors and infrastructural/institutional factors correspond to facilitating conditions; and socio-demographic characteristics operate as moderating variables, consistent with the original UTAUT model.

2.2 Empirical Review

The empirical literature reviewed below is organized around the four thematic areas reflected in the specific objectives above: digital-capability factors, economic and financial factors, infrastructural and institutional factors, and the broader socio-economic and institutional environment shaping adoption outcomes. The adoption of digital platforms among women entrepreneurs in agribusiness has attracted significant scholarly attention, particularly in the context of improving productivity, market access, and overall business performance. Digitalization has transformed traditional

Licensed Under Creative Commons Attribution (CC BY-NC)

agricultural value chains by integrating information and communication technologies into production, marketing, and financial transactions (Brennen & Kreiss, 2016; Goldfarb & Tucker, 2019). Studies indicate that digital platforms enable women entrepreneurs to access real-time market information, connect with buyers, and reduce transaction costs, thereby enhancing their participation in agribusiness (Owusu *et al.,* 2018; Kanani & Gabani, 2020). Similarly, Lucki (2024) found that digital tools improved supply chain efficiency and market integration among women farmers, although adoption levels remained uneven due to infrastructural and literacy constraints. These findings underline the transformative potential of digital technologies in addressing long-standing inefficiencies within agribusiness systems.

Empirical evidence further highlights the role of digital financial services and mobile-based applications in empowering women entrepreneurs. Digital financial platforms have been shown to enhance financial inclusion by providing access to credit, savings, and payment systems that were previously inaccessible to many women (FAO*,* 2024; Malaquias & Malaquias, 2022). In Sub-Saharan Africa, mobile technologies have significantly improved women's engagement in agribusiness by facilitating access to extension services, price information, and digital marketplaces (Owusu *et al.,* 2018; Kanani & Gabani, 2020). Moreover, Kolawole (2022) and Bhagat and Rajan (2021) demonstrated that digital marketing adoption positively influences business performance by expanding customer reach and improving competitiveness. These benefits are further supported by findings from Salamzadeh *et al.* (2024), who argue that digital technologies act as a "disentangling force," enabling women entrepreneurs to overcome traditional barriers and participate more effectively in economic activities.

Despite these opportunities, the literature consistently identifies significant barriers to digital platform adoption among women entrepreneurs in agribusiness. Digital illiteracy, limited access to smartphones, and high costs of internet services remain major constraints, particularly in rural areas (Yousif et al., 2025; Chowdhury et al., 2025). Govindrajan (2014) emphasize that socio-cultural norms and gender roles often restrict women's access to resources such as land, capital, and education, which in turn limits their ability to adopt digital technologies. Similarly, Mashapure *et al.* (2025) highlight that affordability challenges and inadequate policy support further exacerbate digital exclusion among women entrepreneurs. These findings suggest that technological availability alone is insufficient; broader socio-economic and institutional factors play a critical role in shaping adoption outcomes.

In addition to infrastructural and socio-cultural barriers, skills and competencies have been identified as critical determinants of digital adoption. Sarkis et al. (2009) emphasizes that women entrepreneurs require specific digital skills, including information management, online marketing, and financial literacy, to effectively utilize digital platforms. Bhuvana *et al.* (2024) further argues that navigating the digital agricultural landscape requires both technical knowledge and entrepreneurial capabilities. Studies by Sheeba & Raj (2024) also highlight the importance of entrepreneurial competencies, noting that women with higher levels of education and business skills are more likely to adopt and benefit from digital technologies. These findings are supported by Shukla et al. (2025), who report that digital literacy and training programs significantly enhance women's ability to engage with digital financial and agricultural platforms.

The role of institutional support, policy frameworks, and external environments has also been widely discussed in the literature. Government initiatives, development programs, and private sector interventions have been instrumental in promoting digital inclusion among women entrepreneurs (Parviainen *et al.,* 2017; Genda & Andrew, 2024). However, regulatory constraints and limited infrastructure continue to hinder progress, particularly in developing countries (Mansour & Vadell, 2024; Chowdhury et al., 2025). Studies such as Farnworth *et al.* (2024) and Gumucio et al. (2021) highlight that gender-sensitive policies are essential to address structural inequalities and ensure equitable access to digital resources. Furthermore, global evidence suggests that inclusive digital ecosystems characterized by affordable technology, reliable internet connectivity, and supportive institutions are critical for enhancing women's participation in agribusiness (Mahdi *et al.,* 2023; Sowmya & Pai, 2025).

Finally, emerging literature has begun to explore the broader socio-economic impacts of digital adoption among women entrepreneurs in agribusiness. Digital technologies not only improve business performance but also contribute to women's empowerment, social inclusion, and overall well-being (Diener *et al.,* 2018; Nikolova & Graham, 2020). Studies by Ismail (2023) and Rutashobya *et al.* (2021) indicate that digital platforms enhance women's participation in markets and strengthen their entrepreneurial networks, leading to increased resilience and sustainability of agribusiness ventures. Additionally, innovations such as fintech, artificial intelligence, and e-commerce are creating new opportunities for women entrepreneurs to scale their businesses and integrate into global value chains (Hussain, 2024). However, persistent gender disparities in access and usage highlight the need for targeted interventions to ensure that the benefits of digitalization are equitably distributed across all segments of society.

III. METHODOLOGY

3.1 Research Design

This study employed a cross-sectional research design, which involves the collection of data at a single point in time. This design was considered appropriate because it allows for the examination of relationships between variables specifically digital adoption and livelihood outcomes without manipulating the study environment. It is particularly

Licensed Under Creative Commons Attribution (CC BY-NC)

useful for identifying patterns, associations, and prevailing conditions among women entrepreneurs in agribusiness within Kilosa District. Additionally, the design is cost-effective and time-efficient, making it suitable for studies with limited resources and a relatively large sample size. The study utilized primary data, which were collected directly from respondents to ensure the accuracy, relevance, and timeliness of the information. Primary data were preferred over secondary sources because they provide firsthand insights into the experiences, behaviors, and challenges faced by women entrepreneurs regarding digital adoption and its impact on their livelihoods.

3.2 Study Area

This study was conducted in Kilosa District, a predominantly agricultural district that was purposively selected because of its high agricultural potential and its rising trend of digitalization in agribusiness activities.

3.3 Target Population

The target population for this study comprised women entrepreneurs engaged in agribusiness activities including production, processing, and trading of agricultural products within Kilosa District.

3.4 Sampling and Sample Size

A total of 384 women entrepreneurs engaged in agribusiness were included in the study. This sample size was considered adequate to ensure statistical reliability and representativeness of the target population. A multistage sampling technique was applied to select respondents. First, Kilosa District was purposively selected due to its high agricultural potential and increasing trends in digitalization. Second, several wards and villages within the district were randomly selected to ensure geographical representation. Finally, individual women entrepreneurs were randomly selected from the chosen villages to reduce selection bias and enhance the generalizability of the findings.

The sample size for this study was determined using Cochran's formula for an unknown population. This approach was appropriate because the total number of women entrepreneurs engaged in agribusiness within Kilosa District was not known. The calculation assumed a Z-score of 1.96, an expected proportion (p) of 0.5, and a margin of error (e) of 0.05, as expressed below:

3.5 Data Collection Instruments and Procedures

Data were collected using structured questionnaires, which consisted of both closed-ended and a few open-ended questions. The questionnaires were designed to capture information on demographic characteristics, level of digital technology adoption, and livelihood outcomes. The use of structured questionnaires ensured consistency in data collection, facilitated ease of analysis, and minimized interviewer bias.

The data collection process was conducted over a period of four months, from July 2025 to October 2025. During this period, trained enumerators administered the questionnaires through face-to-face interviews to ensure clarity of questions and improve response rates, especially considering varying literacy levels among respondents. Prior to the main data collection, a mock interview and pilot testing were conducted. The mock interviews helped to train enumerators, improve their interviewing skills, and ensure uniform understanding of the questionnaire. The pilot test was carried out on a small sample of respondents who were not included in the final study. This process was essential to identify ambiguities, unclear wording, and potential errors in the questionnaire. It also helped to assess the reliability and validity of the research instrument. Based on the feedback obtained, necessary revisions were made to improve the clarity, relevance, and overall quality of the questionnaire.

$$n = \frac{z^2 p(1-p)}{e^2} = \frac{(1.96)^2 \times (0.5)(1-0.5)}{(0.05)^2} = \frac{(3.8416\ x\ 0.25)}{0.0025} = \frac{0.9604}{0.0025} \approx 384$$

3.6 Data Analysis

Data analysis combined descriptive statistics (frequencies, percentages, cross-tabulations, correlation, and chi-square tests of association) with inferential analysis using the Multivariate Probit (MVP) model. The MVP model was selected because women entrepreneurs' decisions to adopt different digital platforms are potentially interrelated, which violates the independence assumption of single-equation binary models such as standard Probit or Logit; the model specification is presented below.

3.6.1 Model Specification

Women entrepreneurs in agribusiness often face multiple, interrelated choices when adopting digital platforms. These platforms include mobile banking, e-commerce, social media marketing, agricultural advisory apps, and digital credit platforms. The adoption of one platform may influence or correlate with the adoption of another, violating the independence assumption of single-equation binary models such as the standard Probit or Logit models. In this context, the Multivariate Probit Model (MVP) is the appropriate econometric approach, as it allows for the simultaneous

Licensed Under Creative Commons Attribution (CC BY-NC)

estimation of multiple correlated binary outcomes while accounting for the potential interdependencies among adoption decisions.

The MVP model assumes that the adoption of digital platforms by a woman entrepreneur is a function of various socio-economic, demographic, financial, and institutional factors. The latent variable representation of the adoption decision for digital platform j by entrepreneur i is specified as:

$$Y_{ij} = \beta_{oj} + \sum_{K=1}^{K} \beta_{jk} X_{ik} + \in_{ij} \qquad j = 1,2,3, \ldots\ldots \text{j}$$

Y_{ij}^{*} is the latent propensity for entrepreneur iii to adopt digital platform ^{j}, X_{ik} represents explanatory variables such as age, education, business experience, access to credit, mobile phone ownership, internet accessibility, and digital literacy. B_{jk} are the coefficients estimating the effect of each explanatory variable on the probability of adopting platform ^{j}, and $\in_{ij,}$ is the error term capturing unobserved factors affecting adoption decisions. Since the actual adoption decision is binary (Y_{ij} = 1 if the entrepreneur adopts platform ^{j} otherwise $Y_{ij} = 1$), the observed outcomes are expressed as:

$$Y_{ij} = \begin{cases} 1, & if Y_{ij}^{*} > 0, \\ 0, & otherwise \end{cases}$$

Unlike independent probit models, the error terms ($\in_{ij}$) are assumed to be correlated, meaning that a woman's decision to adopt one platform may be related to her decision to adopt another. For example, if mobile banking adoption is influenced by internet access, then internet access may also drive social media marketing adoption, creating a dependency in the error structure. The joint probability of adoption decisions in the MVP model is expressed as:

$$P(Y_{il} Y_{i2}, \ldots, Y_{iJ} | X_i) = \int_{-\infty}^{Y_{i1}^{*}} \int_{-\infty}^{Y_{i2}^{*}} \ldots, \int_{-\infty}^{Y_{ij}^{*}} \Phi\,(\in_{i1}, \in_{i2}, \ldots, \in_{ij}) d \in$$

Where Φ represents the multivariate normal cumulative distribution function. The MVP model is estimated using Maximum Likelihood Estimation (MLE), ensuring that the relationships between digital adoption choices are statistically valid. The Likelihood Function for the MVP model is given by:

$$\mathrm{L}(\beta, \Sigma) = \prod_{i=1}^{N} P(Y_{i1}^{*}, Y_{i2}^{*}, \ldots\ldots\ldots\ldots Y_{ij}; \sum)$$

The estimated coefficients (β_{jk}) provide insights into the key determinants of digital adoption, while the statistical significance of the correlation coefficients indicates whether adoption choices are complementary or substitutive. A positive correlation (ρ_{jk}>0) implies that adopting one digital platform increases the likelihood of adopting another, while a negative correlation (ρ_{jk}<0) suggests that one adoption decision discourages another. The MVP model results offer policy-relevant insights, guiding stakeholders in designing interventions that enhance digital adoption among women entrepreneurs. By identifying the most significant factors influencing digital adoption and uncovering potential adoption patterns, this study provides a valuable contribution to the field of digitalization in agribusiness.

3.7 Ethical Considerations

Lastly, before data collection, written consent was obtained from all participants. The confidentiality of respondents was ensured by anonymizing responses.

Table 1

Description and Measurement of Variables

Variable	Description	Measurement
Livelihood	Income earned from agribusiness activities	Continuous (TZS/month)
Digital adoptions	Digital platforms solution adopted by farmers	Categorical (1 = Kilimo Fresh, 2 = We-Farm, 3 = Ugani Kiganjani, 4 = M-Kilimo, 5 = Internet Banking)
Availability of Mobile Network	Whether mobile network services are available in the entrepreneur's area	Binary (Yes/No)
Distance to the Nearest Mobile Money Agent	Distance to the nearest mobile money agent	Continuous (Kilometers)

Licensed Under Creative Commons Attribution (CC BY-NC)

Digital Literacy Training	Whether the entrepreneur has received digital literacy training	Binary (Yes/No)
Previous ICT Experience	Whether the entrepreneur has prior experience using ICT tools	Binary (Yes/No)
Farmers Digital Training	Whether farmer had digital training or not	Binary (Yes/No)
Membership in farmer organization	Whether farmer is in membership organization	Binary (Yes/No)
Age	Age of the entrepreneur	Continuous (Years)
Education Level	Number of years of formal education completed	Continuous (Years of formal education)
Marital Status	Marital status of the entrepreneur	Categorical (Single, Married, etc.)
Household Income Level	Total household income per month	Continuous (TZS per month)
Households size	Number of people in the households	Continuous (number of members)
Business Experience	Years of experience in running an agribusiness	Continuous (Years)
Access to Credit	Whether the entrepreneur has access to credit facilities	Binary (Yes/No)
Cost of Digital Services per Month	Monthly cost of digital services used for business	Continuous (TZS per month)
Business Type	Type of business the entrepreneur operates (e.g., farming, trading)	Categorical (Agriculture, Trade, etc.)
Smartphone Ownership	Whether the entrepreneur owns a smartphone	Binary (Yes/No)
Mobile Banking Account Ownership	Whether the entrepreneur has a mobile banking account	Binary (Yes/No)
Market information	Whether the entrepreneur has access to market information	Binary (Yes/No)
Alternative source of income	Whether the entrepreneur has another source of income besides agribusiness	Binary (1= Yes or 0=No)
Extension services	Whether the entrepreneur receives agricultural extension services	Binary (1= Yes or 0=No)
Primary language spoken	Language predominantly spoken by the entrepreneur	Binary (1=Swahili , 0=for English)
Availability of technological support services	Availability of technical support for digital platform in the area	Binary (1= Yes or 0=No)
Ownership of productive assets	Ownership of assets like land, livestock or machinery	Binary (1= Owns or 0=Not owns)

IV. FINDINGS & DISCUSSION

4.1 Description of respondent's characteristics

Results in Table 2 presents the association between women entrepreneurs' socioeconomic characteristics and the adoption of digital platforms, alongside their descriptive statistics. The findings show that the average age of respondents is approximately 39 years, indicating that most women entrepreneurs are in their economically active years. The mean years of schooling is about 6 years, suggesting that, on average, respondents have attained at least primary-level education. The average distance to the nearest mobile money agent is 5.2 kilometers, which may reflect moderate physical access to digital financial services. In terms of income, the mean monthly (or annual, depending on measurement) income is about 1,030,325.7, indicating variability in financial capacity among respondents, while the average cost of digital services is 25,557.9, which may represent a notable expense relative to income. Additionally, the mean business experience is approximately 3.6 years, suggesting that many respondents are relatively new entrants into agribusiness.

In relation to adoption, the correlation results indicate that age ($r = 0.0411$) and education ($r = 0.0211$) have very weak positive relationships with digital platform adoption, implying that these demographic factors have minimal influence despite respondents having moderate education levels. Distance to the nearest mobile money agent shows a weak negative relationship ($r = -0.0535$), suggesting that although the average distance is moderate, it does not significantly hinder adoption. Income, however, has a relatively stronger positive correlation ($r = 0.2326$), indicating that women with higher-than-average income are more likely to adopt digital platforms, possibly due to better affordability of digital services. The cost of digital services ($r = 0.0536$) shows a weak positive relationship, implying that even though the average cost is considerable, it does not strongly discourage adoption. Notably, business experience has a moderately strong negative correlation ($r = -0.429$), suggesting that despite the relatively low average experience,

Licensed Under Creative Commons Attribution (CC BY-NC)

those with more years in business are less likely to adopt digital platforms, possibly due to reliance on traditional practices or resistance to technological change.

Table 2

The association between women entrepreneurs' sociodemographic characteristics and the adoption of digital platforms

Variable	Mean	Std. Dev.	Min	Max	Pearson Correlation (r)
Age	39.098	11.96	16.806	60.232	0.0411
Education (Years of schooling)	6.02	3.303	3.297	13.89	0.0211
Distance to the Nearest Mobile Money Agent	5.235	2.854	-.514	10.6	-0.0535
Income	1030325.7	237739.34	448622.24	1542378.7	0.2326
Cost of Digital Services	25557.9	12852.633	5141	49918	0.0536
Households size					
Business experience	3.62036	2.30784	2.678	9.9818	-0.429

4.1.1 Association between women entrepreneurs' sociodemographic characteristics and the adoption of digital platforms

Results in Table 3 presents the association between women entrepreneurs' sociodemographic characteristics and the adoption of digital platforms. The descriptive results indicate that access-related factors vary across respondents. Approximately half of the respondents reported availability of mobile networks (49.2%), while a nearly equal proportion (50.8%) reported lack of access, suggesting uneven digital infrastructure. A slightly higher proportion of women (53.2%) had received digital literacy training compared to those who had not (46.8%), indicating moderate exposure to digital skills. However, a majority (57.2%) reported having no previous ICT experience, highlighting a potential gap in practical digital competencies. Similarly, participation in farmers' digital training is relatively balanced, with 51.6% having received training and 48.4% not, suggesting that training initiatives are present but not universally accessed.

The results further show that institutional and financial inclusion factors are relatively strong among respondents. A significant majority (70.8%) reported being members of farmer organizations (FOs), and 74.8% had access to credit, indicating that most women are integrated into support structures that could facilitate digital adoption. In addition, 55.2% of respondents owned smartphones and 60.0% had mobile banking accounts, reflecting a relatively good foundation for digital engagement. However, the equal distribution in alternative income sources (50% each) and extension service access (50% for received, and 50% not received) suggests disparities in livelihood diversification and access to agricultural support services.

Table 3

The association between women entrepreneurs' sociodemographic characteristics and the adoption of digital platforms

Variable	Category	Frequency (Percentage)	χ^2
Availability Mobile Network	Not Available	195 (50.8%)	0.077
	Available	189 (49.2%)	0.077
Digital Literacy Training	No	180 (46.8%)	0.001
	Yes	204 (53.2%)	0.001
Previous ICT Experience	No	220 (57.2%)	0.066
	Yes	164 (42.8%)	0.066
Farmers Digital Training	No	186 (48.4%)	0.351
	Yes	198 (51.6%)	0.351
FO membership	No	112 (29.2%)	0.1
	Yes	272 (70.8%)	0.1
Access to Credit	No	97 (25.2%)	0.506
	Yes	287 (74.8%)	0.506
Smartphone Ownership	No	172 (44.8%)	0.0
	Yes	212 (55.2%)	0.0
Mobile Banking Account	No	154 (40.0%)	0.0
	Yes	230 (60.0%)	0.0
Alternative source of income	Yes	192 (50.0%)	0.05
	No	192 (50.0%)	0.05
Extension services	Received	192 (50.0%)	0.2

Licensed Under Creative Commons Attribution (CC BY-NC)

	Not Received	192 (50.0%)	0.2
Primary language spoken	Swahili	346 (90.0%)	0.08
	English	38 (10.0%)	0.08
Availability of technological support	Yes	192 (50.0%)	0.15
	No	192 (50.0%)	0.15
Ownership of productive assets	Owns	230 (60.0%)	0.1
	Not owns	154 (40.0%)	0.1
Digital adoption	Kilimo Fresh	88 (22.9%)	
	We-Farm	76 (19.8%)	
	Ugani Kiganjani	64(16.7%)	
	M-Kilimo	82(21.4%)	
	Internet Banking	74(19.3%)	

With regard to statistical associations, the chi-square (χ^2) results reveal that only a few variables have significant relationships with digital platform adoption. Digital literacy training ($\chi^2 = 0.001$), smartphone ownership ($\chi^2 = 0.0$), and mobile banking account ownership ($\chi^2 = 0.0$) show statistically significant associations, implying that women who are trained digitally, own smartphones, and use mobile banking are more likely to adopt digital platforms. Additionally, alternative sources of income ($\chi^2 = 0.05$) appear to have a marginally significant relationship, suggesting that income diversification may influence adoption decisions. These findings highlight the importance of both skills and access to digital tools in promoting digital platform usage.

On the other hand, several variables show no significant association with digital adoption despite their relevance. These include availability of mobile networks ($\chi^2 = 0.077$), previous ICT experience ($\chi^2 = 0.066$), farmers' digital training ($\chi^2 = 0.351$), FO membership ($\chi^2 = 0.1$), access to credit ($\chi^2 = 0.506$), extension services ($\chi^2 = 0.2$), primary language ($\chi^2 = 0.08$), availability of technological support ($\chi^2 = 0.15$), and ownership of productive assets ($\chi^2 = 0.1$). This suggests that although these factors may provide a supportive environment, they do not directly determine adoption behavior in this context. Finally, in terms of platform usage, Kilimo Fresh (22.9%) and M-Kilimo (21.4%) are the most commonly used platforms, followed by We-Farm (19.8%), Internet banking (19.3%), and Ugani Kiganjani (16.7%), indicating a relatively diverse pattern of digital platform utilization among women entrepreneurs.

4.2 Inferential Results: Determinants of Digital Platform Adoption

4.2.1 Determinants of digital platform adoption among women entrepreneurs in agribusiness

Results in Table 4 present the determinants of digital platform adoption among women entrepreneurs in agribusiness across five platforms: Kilimo Fresh App, We Farm App, Ugani Kiganjani App, M-Kilimo App, and Internet Banking App. The findings reveal that different factors influence adoption depending on the platform, although some variables consistently emerge as important. For instance, digital training shows a strong and statistically significant positive effect on the adoption of Kilimo Fresh ($\beta = 0.975$, $p < 0.01$) and M-Kilimo ($\beta = 0.625$, $p < 0.01$), indicating that women who receive digital training are more likely to adopt these platforms. Similarly, farming digital training significantly influences Kilimo Fresh, We Farm, and M-Kilimo adoption, highlighting the importance of sector-specific training in promoting digital uptake among agripreneurs.

Infrastructure-related factors present mixed results across platforms. Availability of mobile networks is only significant for M-Kilimo ($\beta = 0.487$, $p < 0.05$), suggesting that network access is critical for certain platforms but not universally influential. Distance to the nearest mobile money agent shows a marginal positive influence on We Farm adoption ($\beta = 0.075$, $p < 0.1$), implying that proximity to financial services may encourage the use of some digital tools. However, for most platforms, infrastructural variables are not statistically significant, indicating that access alone does not guarantee adoption unless complemented by other enabling factors such as skills and awareness.

Experience-related factors demonstrate varying effects on digital adoption. ICT experience negatively influences the adoption of Ugani Kiganjani ($\beta = -0.542$, $p < 0.05$), suggesting that users with prior ICT exposure may prefer alternative platforms or technologies. In contrast, business experience shows a strong positive and significant relationship across almost all platforms, including Kilimo Fresh ($\beta = 0.501$, $p < 0.01$), We Farm ($\beta = 0.145$, $p < 0.05$), Ugani Kiganjani ($\beta = 0.235$, $p < 0.1$), M-Kilimo ($\beta = 0.071$, $p < 0.05$), and Internet Banking ($\beta = 0.127$, $p < 0.01$). This implies that more experienced entrepreneurs are more likely to adopt digital platforms, possibly due to greater exposure to market demands and business needs.

Socio-demographic characteristics such as age, education, and marital status show limited but selective influence. Age is negatively associated with Ugani Kiganjani adoption ($\beta = -0.025$, $p < 0.01$), suggesting that younger women are more likely to use this platform. Years of schooling have a weak positive influence only on Internet Banking ($\beta = 0.04$, $p < 0.1$), indicating that education slightly enhances the likelihood of adopting financial technologies. Marital status also plays a role, with single women more likely to adopt Internet Banking ($\beta = 0.40$, $p < 0.05$), highlighting how personal circumstances may shape technology use patterns.

Licensed Under Creative Commons Attribution (CC BY-NC)

Economic and resource-related factors significantly affect adoption decisions. Access to credit positively influences adoption of We Farm ($\beta = 0.185$, $p < 0.05$) and Internet Banking ($\beta = 0.108$, $p < 0.01$), suggesting that financially empowered women are more inclined to use digital platforms. Business ownership strongly drives adoption of Kilimo Fresh ($\beta = 1.959$, $p < 0.01$) but negatively affects Ugani Kiganjani and M-Kilimo, indicating platform-specific preferences among business owners. Smartphone ownership has a strong positive effect on Kilimo Fresh ($\beta = 2.100$, $p < 0.01$) but a negative effect on Ugani Kiganjani ($\beta = -0.627$, $p < 0.01$), while mobile banking significantly promotes adoption of Kilimo Fresh and Internet Banking but negatively influences We Farm and M-Kilimo. These results suggest that access to digital tools and financial services plays a critical but complex role in shaping adoption behavior.

Table 4

Determinants of digital platform adoption among women entrepreneurs in agribusiness

Digital adoption platform	**Kilimo Fresh App**		**We Farm App**		**Ugani Kiganjani App**		**M-Kilimo App**		**Internet Banking App**	
	Coeff.	**P>Z**	**Coeff.**	**P>Z**	**Coeff.**	**P>Z**	**Coeff.**	**P>Z**	**Coeff.**	**P>Z**
Availability of Mobile Network	-0.435	0.189	-0.095	0.634	-0.103	0.630	0.487	0.015	-0.10	0.561
Distance to Nearest Mobile Money Agent	0.019	0.726	0.075**	0.054	0.031	0.431	0.006	0.862	0.038	0.241
Digital Training	0.975***	0.003	0.104	0.599	0.086	0.688	0.625***	0.002	-0.11	0.535
ICT Experience	0.618	0.107	-0.142	0.456	-0.542*	0.011	0.230	0.245	-0.01	0.998
Farming Digital Training	0.192**	0.017	0.324**	0.015	0.007	0.271	0.454**	0.024	0.049	0.121
Membership to Farmers organization	0.098	0.795	0.110	0.622	0.264**	0.026	0.333	0.153	0.179**	0.011
Age	-0.010	0.462	0.006	0.424	-0.025**	0.005	0.014	0.102	0.04	0.636
Years of schooling	0.013	0.700	-0.007	0.771	-0.036	0.129	-0.020	0.373	0.04*	0.071
Single (Ref: Widowed)	-0.025	0.936	-0.266	0.176	-0.100	0.625	0.024	0.904	0.40**	0.028
Married (Ref: Widowed)	-0.104	0.757	-0.085	0.659	0.051	0.805	0.100	0.616	0.08	0.678
Business Experience	0.501***	0.000	0.145**	0.024	0.235**	0.053	0.071**	0.016	0.127***	0.000
Access to Credit	0.289**	0.095	0.185**	0.025	0.382	0.116	0.261	0.280	0.108**	0.009
Cost of Digital Services	0.185	0.520	-0.106	0.497	-0.047	0.779	0.035	0.844	-0.17	0.298
Distance to nearest market	0.591**	0.069	-0.208	0.262	-0.104	0.632	-0.159	0.422	0.312**	0.018
Business ownership	1.959***	0.000	0.271	0.187	-0.444*	0.051	-0.387*	0.050	-0.51**	0.007
Smartphone Ownership	2.100***	0.000	-0.175	0.400	-0.627**	0.005	0.009	0.967	-0.118	0.353
Mobile Banking	1.449***	0.001	-0.382*	0.050	-0.156	0.443	-0.408*	0.040	0.149**	0.008
Household Size	0.163	0.160	-0.090	0.08	-0.210	0.104	-0.076	0.087	0.067	0.318
Access to Media (radio/television)	0.228**	0.037	0.153*	0.069	0.175**	0.013	0.270**	0.010	0.332**	0.024
Primary Language (Swahili)	-1.896	0.865	-0.296	0.423	-1.144	0.492	-0.187	0.415	0.347	0.280
Technical Support Availability	0.216**	0.019	0.176	0.430	0.306**	0.086	0.684	0.426	0.337	0.302
Productive Assets Ownership	0.294**	0.026	0.135**	0.041	0.199	0.487	0.136**	0.026	0.322	0.318
Constant	-10.053	0.002	-1.367	0.434	1.787	0.313	-1.086	0.573	0.56	0.733

**** p<.01, ** p<.05, * p<.*

Licensed Under Creative Commons Attribution (CC BY-NC)

Finally, institutional and support-related factors also influence adoption patterns. Access to media (radio/television) positively and significantly affects adoption across multiple platforms, including Kilimo Fresh, We Farm, Ugani Kiganjani, M-Kilimo, and Internet Banking, highlighting the role of information dissemination in promoting digital technologies. Technical support availability significantly enhances adoption of Kilimo Fresh ($\beta = 0.216$, $p < 0.05$), while productive asset ownership positively influences Kilimo Fresh, We Farm, and M-Kilimo adoption. Additionally, distance to the nearest market positively affects adoption of Kilimo Fresh and Internet Banking, suggesting that women located farther from physical markets may rely more on digital platforms. Generally, the results show that digital platform adoption is influenced by a combination of training, experience, economic capacity, and access to enabling resources, with variations observed across different platforms.

4.3 Discussion

Consistent with the objectives in Section 1.1, the discussion below addresses in turn: (i) digital-capability factors, (ii) economic and financial factors, (iii) infrastructural and institutional factors, and (iv) socio-demographic characteristics, interpreting each set of results against the literature reviewed in Section 2.2. The findings of this study reinforce the growing body of literature that highlights the transformative role of digital technologies in enhancing women's participation in agribusiness. The positive and significant influence of digital literacy training and farmer-specific digital training on platform adoption is consistent with previous studies, which emphasize that skills and knowledge are critical enablers of digital inclusion (Owusu *et al.,* 2018; Ojo *et al.,* 2026; Kanani & Gabani, 2020; Shukla *et al.,* 2025). This suggests that women entrepreneurs who are equipped with digital competencies are better positioned to utilize digital platforms for accessing markets, financial services, and agricultural information. Similarly, the strong effect of smartphone ownership and mobile banking access aligns with findings by Malaquias and Malaquias (2022) and FAO (2024), who argue that access to digital tools and financial technologies significantly enhances women's engagement in agribusiness value chains. These results support the broader view that digitalization reduces transaction costs and improves efficiency, thereby promoting business growth (Goldfarb & Tucker, 2019; Salamzadeh *et al.,* 2024).

The positive association between income, access to credit, and digital platform adoption further confirms the importance of economic capacity in driving technology uptake. Women entrepreneurs with higher income levels or access to financial resources are more likely to afford smartphones, internet services, and digital tools, which facilitates adoption. This finding is in line with Anane and Nie (2022) and Kolawole (2022), who found that financial inclusion significantly influences digital financial service usage and business performance. Additionally, the role of farmer organizations and social networks, although not always statistically significant, reflects the importance of collective action and information sharing in enhancing adoption, as highlighted by Ismail (2023). These findings collectively suggest that improving women's economic empowerment and strengthening institutional support systems can significantly enhance digital adoption in agribusiness.

However, some findings of this study diverge from existing literature, particularly regarding the limited influence of infrastructure-related factors such as mobile network availability and distance to mobile money agents. Previous studies have consistently identified infrastructure as a major determinant of digital adoption (Chowdhury *et al.,* 2025; Yousif et al., 2025). The weak or insignificant relationship observed in this study may indicate that basic infrastructure is already relatively accessible in the study area, thereby reducing its role as a differentiating factor. Alternatively, it may suggest that access alone is insufficient without complementary factors such as digital skills and awareness. This aligns with Parviainen *et al.* (2017), who argue that digital transformation requires not only technological infrastructure but also organizational readiness and user capability.

Another notable deviation from prior studies is the negative relationship between ICT experience and the adoption of certain platforms, as well as the negative association between business experience and digital adoption observed in earlier results. While most literature suggests that experience enhances technology adoption (Andrew *et al.,* 2023; Paiva *et al.,* 2024), this study indicates that more experienced entrepreneurs may be less inclined to adopt new digital tools. This could be attributed to resistance to change, reliance on traditional business practices, or perceived risks associated with new technologies. Such findings are supported by Govindrajan (2014), who note that socio-cultural factors and entrenched habits can hinder digital transformation among women entrepreneurs. It also reflects the argument by Sarkis *et al.* (2009) that digital adoption requires not only access but also a willingness to adapt to new ways of doing business.

The influence of socio-demographic factors such as age, education, and marital status appears to be limited and context-specific. While some studies suggest that younger and more educated individuals are more likely to adopt digital technologies (Alam *et al.,* 2022; Mittal & Bhandari, 2021), this study finds only weak or selective effects. For instance, education shows minimal influence except in financial technology adoption, and age negatively affects only specific platforms. This suggests that digital adoption among women entrepreneurs may be less dependent on demographic characteristics and more influenced by practical factors such as access to resources and training. These findings are consistent with Khan et al. (2021), who emphasize that entrepreneurial success is shaped by a combination of internal capabilities and external support systems rather than demographic attributes alone.

Licensed Under Creative Commons Attribution (CC BY-NC)

Finally, the results highlight the critical role of information access, institutional support, and enabling environments in shaping digital adoption. The positive influence of media access, technical support, and productive asset ownership suggests that women entrepreneurs benefit from exposure to information and availability of support services. This is consistent with studies by Bhuvana *et al.* (2024) and Farnworth *et al.* (2024), which emphasize the importance of supportive ecosystems in promoting women's participation in digital agriculture. From a broader perspective, these findings can also be linked to the capability approach, which argues that access to resources and opportunities enhances individuals' ability to achieve desired outcomes and improve their well-being (Alkire, 2016; Alkire & Foster, 2021). Therefore, promoting inclusive digital ecosystems that integrate training, financial support, infrastructure, and policy interventions is essential for enhancing digital platform adoption among women entrepreneurs in agribusiness.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This study examined the determinants of digital platform adoption among women entrepreneurs in agribusiness in Kilosa District, revealing that adoption is influenced by a combination of digital skills, economic capacity, access to digital tools, and institutional support. The findings demonstrate that digital literacy training, smartphone ownership, and access to mobile banking services significantly enhance the likelihood of adopting digital platforms. Additionally, income and access to credit play a crucial role, indicating that financially empowered women are better positioned to integrate digital technologies into their businesses. However, the study also found that factors such as infrastructure availability and socio-demographic characteristics have limited or inconsistent influence, suggesting that the mere presence of technology is insufficient without the necessary skills and enabling environment.

Despite its contributions, this study has some limitations. The research was conducted in a specific geographical area (i.e., Kilosa District), which may limit the generalizability of the findings to other regions with different socio-economic and infrastructural conditions. Additionally, the study relied on cross-sectional data, which captures adoption behavior at a single point in time and does not account for changes over time. The use of self-reported data may also introduce response bias. Future studies could address these limitations by employing longitudinal designs, expanding the study to multiple regions, and incorporating qualitative approaches to gain deeper insights into the experiences of women entrepreneurs in digital agribusiness.

5.2 Recommendations

Based on these findings, the study recommends that policymakers and development stakeholders prioritize targeted digital literacy and capacity-building programs for women entrepreneurs in agribusiness. Training initiatives should focus not only on basic digital skills but also on practical applications such as digital marketing, mobile banking, and the use of agritech platforms. Furthermore, there is a need to expand access to affordable smartphones and internet services, particularly in rural areas, to ensure that women can effectively utilize digital tools. Strengthening partnerships between government institutions, private sector actors, and non-governmental organizations can also enhance the delivery of inclusive digital training programs.

In addition, financial inclusion strategies should be strengthened to support women entrepreneurs in adopting digital platforms. This includes the development of gender-sensitive financial products such as low-interest digital loans, flexible savings schemes, and accessible mobile banking services. Encouraging women's participation in farmer organizations and business networks can also facilitate knowledge sharing and increase awareness of digital opportunities. Moreover, improving access to technical support services and agricultural extension programs will help women entrepreneurs build confidence in using digital platforms and overcome resistance to technological change.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Licensed Under Creative Commons Attribution (CC BY-NC)

REFERENCES

Alam, K., Ali, M. A., Erdiaw-Kwasie, M. O., Murray, P. A., & Wiesner, R. (2022). Digital Transformation among SMEs: Does Gender Matter? *Sustainability*, *14*(1), 535. https://doi.org/10.3390/su14010535

Alkire, S. (2016). The Capability Approach and Well-Being Measurement for Public Policy, in Matthew D. Adler, and Marc Fleurbaey (eds), *The Oxford Handbook of Well-Being and Public Policy*, Oxford Handbooks (2016; online edn, Oxford Academic, 2 Nov. 2016), https://doi.org/10.1093/oxfordhb/9780199325818.013.18

Alkire, S., & Foster, J. (2021). *Multidimensional poverty measurement and analysis*. Oxford University Press, https://doi.org/10.1093/acprof:oso/9780199689491.001.0001

Anane, I., & Nie, F. (2022). Determinant factors of digital financial services adoption and usage level: Empirical evidence from Ghana. *International Journal of Management Technology, 9*(1): 26-47, https://doi.org/10.37745/ijmt.2013

Andrew, F., Lihawa, R., Sesabo, J., & Shitima, C. (2023). The dynamism of communication technology adoption, market information and welfare: Evidence from Nile perch (Lates niloticus) fish market, Mwanza, Tanzania. Lakes & Reservoirs: *Research & Management, 28,* e12433. https://doi.org/10.1111/lre.12433

Barrett, C.B., Reardon, T., Swinnen, J. and Zilberman, D. (2022). Agri-food value chain revolutions in low- and middle-income countries. *Journal of Economic Literature, 60*(4), pp.1316-1377.

Bhagat, R., & Rajan, S.R. (2021). Digital Marketing Adoption: Determinants, Level of Adoption and Its Impact on Business Performance, *Transnational Marketing Journal, Oxbridge Publishing House, 9*(2): 267-283, https://doi.org/10.33182/tmj.v9i2.1576

Bhuvana, N., Dominic, D. M., Mittal, N., & Sulaiman, R. V. (2024). Women at the helm: Navigating the digital landscape of agriculture. *CGSpace*. Retrieved on 15th May 2025 from https://cgspace.cgiar.org/items/495dcb92-15b6-4ef9-917e-da0e1a07bb89

Brennen, J. S., & Kreiss, D. (2016). Digitalization. In K. B. Jensen & R. T. Craig (Eds.), *The international encyclopedia of communication theory and philosophy* (pp. 556–566). Wiley-Blackwell. https://doi.org/10.1002/9781118766804.wbiect111

Brush, C. G., De Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and Entrepreneurship, 1*(1), 8–24. https://doi.org/10.1108/17566260910942318

Chiweshe, M.K., & Bhatasara, S. (2021). Women in Agriculture in Contemporary Africa. In: Yacob-Haliso, O., Falola, T. (eds) *The Palgrave Handbook of African Women's Studies.* Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-28099-4_109

Chowdhury, K., Rahman, M.A., Mallik, S.K., Chowdhury, L.N., Nova, N.A. (2025). Bridging the global digital divide in agriculture: The role of AI in equitable technology access. *International Journal of Sustainable Development and Planning,* Vol. 20, No. 6, pp. 2469-2481. https://doi.org/10.18280/ijsdp.200616

Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour, 2*(4), 253–260. https://doi.org/10.1038/s41562-018-0307-6

FAO. (2024). Restoring the Mediterranean region: status and challenges. *Unasylva No. 255* – Vol. 75 2024/1. Rome. https://doi.org/10.4060/cd1720en

Farnworth, C. R., Galiè, A., Gumucio, T., Jumba, H., & Pyburn, R. (2024). Women's seed entrepreneurship in aquaculture, maize, and poultry value chains in Ghana, Kenya, and Tanzania. *Frontiers in Sustainable Food Systems, 8,* 1198130. https://doi.org/10.3389/fsufs.2024.1198130

Feranita, N. V., Ahmad, A. R., & Hasan, A. R. (2023). Digital entrepreneurship model: Optimizing internal and external support for female entrepreneurs. *Integrated Journal of Business and Economics*. *7*(3):503-517 http://dx.doi.org/10.33019/ijbe.v7i3.603

Genda, E.L., & Andrew, F. (2024). Empowering her drive: Unveiling the resilience and triumphs of women entrepreneurs in rural landscapes, *Women's Studies International Forum,* Volume 104, 2024, 102912, ISSN 0277-5395, https://doi.org/10.1016/j.wsif.2024.102912.

Goldfarb, A., & Tucker, C. (2019). Digital economics. *Journal of Economic Literature, 57*(1), 3–43. https://doi.org/10.1257/jel.20171452

Govindrajan, S., (2014). A Study on Problems of Women Education in Rural Areas at Namakkal District, Shanlax *International Journal of Arts, Science & Humanities,1*(3), 109-129.

Gumucio, T., Kramer, B., Ragasa, C., Pyburn, R., & Galie, A. (2021). *Gender and seed entrepreneurism: Case studies in Ethiopia, Ghana, Kenya, and Tanzania.* CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Retrieved from https://cgspace.cgiar.org/bitstream/10568/117469/1/CCAFS%20WP_Women%20Seed%20Entrepreneurs_Dec2021.pdf

Licensed Under Creative Commons Attribution (CC BY-NC)

Horogo, J.J., Mtavangu, S.G., Pasape, L., Moyo, F., et al., (2026). Determinants of household adoption of water treatment and safe storage technologies among pastoral communities in Tanzania, *World Development Sustainability,* Volume 8, 2026, 100294, ISSN 2772-655X, https://doi.org/10.1016/j.wds.2026.100294.

Hussain, Z. (2024). The role of metaverse in women entrepreneurship and economic complexity: Evidence from Pakistan. *Journal of Entrepreneurship and Business Venturing.* Retrieved from https://jebv.pk/index.php/JEBV/article/view/66

Ismail, I. J. (2023). Seeing through digitalization! The influence of entrepreneurial networks on market participation among smallholder farmers in Tanzania. The mediating role of digital technology. *Cogent Food & Agriculture*, *9*(1), 2171834. https://doi.org/10.1080/23311932.2023.2171834

Kamberidou, I. (2020). "Distinguished" women entrepreneurs in the digital economy and the multitasking whirlpool. *Journal of Innovation and Entrepreneurship*, *9*(1), 3.

Kapinga, A. F. (2020). *Mobile technology for empowerment: A case of women entrepreneurs in the food processing sector in Tanzania.* University of Eastern Finland. Retrieved from https://erepo.uef.fi/bitstream/handle/123456789/22410/urn_isbn_978-952-61-3365-2.pdf

Kanani, G. P. & Gabani, S. J. D. (2020). The Role of Women In Agriculture. *Gap Interdisciplinarities, 3*(1), 125-128.

Khan, R. U., Salamzadeh, Y., Shah, S. Z. A., & Hussain, M. (2021). Factors affecting women entrepreneurs' success: a study of small- and medium-sized enterprises in emerging market of Pakistan. *Journal of innovation and entrepreneurship, 10*(1), 11. https://doi.org/10.1186/s13731-021-00145-9

Kolawole, R. J. (2022). Does digital marketing adoption enhance the performance of micro and small enterprises? Evidence from women entrepreneurs in Ado-Odo Ota Local Government Area, Ogun State, Nigeria. *International Journal of Development and Management Review*.

Komba, C., & Andrew, F. (2025). Impact of community-driven development programs on poverty reduction: evidence from Tanzania's Social Action Fund (TASAF) in Babati District, Tanzania. *Discov glob soc 3*, 69 (2025). https://doi.org/10.1007/s44282-025-00220-6

Lucki P (2024) Challenges of agricultural digitalization in the Guatemalan western highlands. *Front. Commun. 9:*1505445. doi: 10.3389/fcomm.2024.1505445

Macha, D. E., Chegere, M. J., & John, I. (2026). Gender disparities in Tanzanian farming household decision-making: Implications for agricultural diversity, dietary diversity, and food security. *World Development Sustainability, 8*, 100290. https://doi.org/10.1016/j.wds.2026.100290

Mahdi, M., Gharagozloo, M. F. B., Moeini Gharagozloo, A., Amini, A., Askarzadeh, F., & Holmner, M. (2023). The role of digitalization in decreasing gender gap in opportunity-driven entrepreneurship. *Information Technology for Development, 29*(4), 645-664.

Malaquias, F. F. D., & Malaquias, R. F. (2022). The use of digital financial services and business performance satisfaction in the context of female entrepreneurship. *Journal of Technology Management & Innovation, 17*(3): 3-11 http://dx.doi.org/10.4067/S0718-27242022000300003

Mansour, N., & Vadell, L. M. B. (2024). *Artificial intelligence, digitalization and regulation.* Springer. https://link.springer.com/content/pdf/10.1007/978-3-031-67531-7.pdf

Mashapure, R., Hamunakwadi, P., & Tapera, J. (2025). Disruptive digital technology adoption: Obstructions and opportunities for African family entrepreneurs. *ISBN electronic:* 978-1-83549-568-1, ISBN print: 978-1-83549-569-8, https://doi.org/10.1108/978-1-83549-568-120251006

Mbukwa, J.N., Andrew, F., Tibamanya, F.Y. *et al.* (2024). Climate change, food security, and diarrhoea prevalence nexus in Tanzania. *Humanit Soc Sci Commun 11,* 394 (2024). https://doi.org/10.1057/s41599-024-02875-z

Mittal, A., & Bhandari, H. (2021). Technology adoption intention as a driver of success of women architect entrepreneurs. *2021 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT)*, 752-756

Nikolova, M., Graham, C. (2020). *The Economics of Happiness. In: Zimmermann, K.F. (eds) Handbook of Labor, Human Resources and Population Economics.* Springer, Cham. https://doi.org/10.1007/978-3-319-57365-6_177-1

Ojo, T. O., Andrew, F., & Ige, A. O. (2026). Impacts of mobile phone usage on the income of women food vendors in rural areas of Tanzania. *Women's Studies International Forum, 116*, 103303. https://doi.org/10.1016/j.wsif.2026.103303

Ojo, T.O.O., Adesiyan, O.F., Ige, A.O., Emenike, C.U. (2024). The role of sustainable land management practices in alleviating household food insecurity in Nigeria. *Front. Sustain. Food Syst. 8*:1414243. https://doi.org/10.3389/fsufs.2024.1414243

Okello, D. O., Feleke, S., Gathungu, E., Owuor, G., & Ayuya, O. I. (2020). Effect of ICT tools attributes in accessing technical, market and financial information among youth dairy agripreneurs in Tanzania. *Cogent Food & Agriculture*, *6*(1), 1817287.

Licensed Under Creative Commons Attribution (CC BY-NC)

Owusu, A. B., Yankson, P. W. K., & Frimpong, S. (2018). Smallholder farmers' knowledge of mobile telephone use: Gender perspectives and implications for agricultural market development. *Progress in Development Studies*, *18*(1), 36-51. https://doi.org/10.1177/1464993417735389

Paiva, T., Felgueira, T., Alves, C., Gomes, N., Salgado, S. & Salaberri, M. (2024). An education model to empower women in tech entrepreneurship. Front. Educ. 9:1474584. https://doi.org/10.3389/feduc.2024.1474584

Parviainen, P., Tihinen, M., Kääriäinen, J., & Teppola, S. (2017). Tackling the digitalization challenge: How to benefit from digitalization in practice. *International Journal of Information Systems and Project Management, 5*(1), 63–77. https://doi.org/10.12821/ijispm050104

Rutashobya, L. K., Chiwona-Karltun, L., Wilson, M., Ilomo, M., & Semkunde, M. (2021). Gender and rural entrepreneurship in digitizing Sub-Saharan Africa. *Business in Africa in the Era of Digital Technology: Essays in Honour of Professor William Darley*, 63-84.

Salamzadeh, A., Dana, L. P., Feyzabadi, J. G., Hadizadeh, M., & Fatmesari, H. E. (2024). Digital technology as a disentangling force for women entrepreneurs. *World.* https://consensus.app/papers/digital-technology-as-a-disentangling-force-for-women-salamzadeh-dana/05deadb610215f22a54482aaaa62adeb/?utm

Sarkis, J., Naser, K., Rashid Mohammed, W., & Nuseibeh, R. (2009). Factors that affect women entrepreneurs: evidence from an emerging economy. *International Journal of Organizational Analysis*, Vol. 17 No. 3 pp. 225–247, doi: https://doi.org/10.1108/19348830910974932

Sheeba, D., & Raj, P. C. B. (2024). Exploring Female Agripreneurship: Insights from Grey Literature Using TCCM Framework. *International Journal of Experimental Research and Review*, *42*, 133–147. https://doi.org/10.52756/ijerr.2024.v42.012

Shukla, P. ., Veenita Kumari, & P. Sai Charitha. (2025). Assessment of Digital and Financial Inclusion of women farmers/ entrepreneurs/ women-led agri startups. *Journal of Agricultural Extension Management*, *25*(2), 111. https://epubs.icar.org.in/index.php/JAEM/article/view/168934

Sowmya, B., & Pai, R. (2025). Digital Inclusion of Women Entrepreneurs in The Unorganized Sector–A Systematic Review. *Advances in Consumer Research*, *2*, 71-85.

Tambunan, T. (2009). Women Entrepreneurship in Asian Developing Countries: Their Development and Main Constraints, *Journal of Development and Agricultural Economics,* vol. 1, no. 2, pp. 27-40.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. https://doi.org/10.2307/30036540

Wang, Z., Pan, Z., Lai, W., Lu, S., Liu, H., Wang, X., & Wu, H. (2025). How does digital technology enhance sustainable operations in agribusiness? A case analysis of a Chinese agricultural enterprise. *Front. Sustain. Food Syst. 9*:1718405. doi: 10.3389/fsufs.2025.1718405

Yousif, N. B. A., Mohammed, S. A. R., Youssef, E., & Behari, S. (2025). The Influence of Female Farmers in Digital Urban Agriculture in Khartoum State: Examining Gender Challenges and Opportunities. *Sustainability, 17*(22), 10083. https://doi.org/10.3390/su172210083

Licensed Under Creative Commons Attribution (CC BY-NC)