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The Determinants of Financial Inclusion among Women Entrepreneurs in Iringa Municipality, Tanzania

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Abstract: : *This study set out to explore the determinants of financial inclusion among women entrepreneurs in Iringa Municipality, Tanzania, with particular attention to the roles of mobile money services, education, and marital status. Using a quantitative research design, survey data were collected from 113 women entrepreneurs and analyzed through descriptive statistics, reliability and validity tests, correlation analysis, and multiple regression techniques. The results showed that both mobile money services and education played a significant positive role in enhancing financial inclusion, with mobile money standing out as the strongest driver. In contrast, marital status was found to have a negative but statistically insignificant influence. The correlation analysis further confirmed meaningful relationships between the independent variables and women entrepreneurs' access to financial services. These findings suggest that mobile money and education have been vital in enabling women to engage with formal financial systems, though cultural and structural challenges—such as household dynamics and limited uptake of formal products—continue to shape their experiences. The study concludes that strengthening financial literacy, developing gender-sensitive financial products, and tackling socio-cultural barriers are essential steps to expand women's financial inclusion. In doing so, it calls for policy reforms, capacity-building efforts, and further research to ensure that women entrepreneurs can fully participate in and benefit from formal financial systems.*

Keywords— Financial Inclusion, Women Entrepreneurs, Digital Financial Services, Mobile Money, Access to Credit.

1. 1 Background and Literature Survey

Financial inclusion is a cornerstone of sustainable economic growth, playing a pivotal role in shaping the financial landscape of countries around the world [1]. It empowers individuals by enhancing financial security, enabling wealth building, and promoting entrepreneurship [2]. For women, financial inclusion contributes to social and economic empowerment [3]. Initiatives like government programs and FinTech solutions are addressing barriers to inclusion, such as lack of documentation and financial literacy [2]. The United Nations recognizes financial inclusion as a key tool for economic empowerment and sustainable development [4, 5]. While challenges like sustainability and data privacy exist, the future of financial inclusion looks promising with advancements in FinTech and financial education [2]. Overall, promoting inclusive financial systems is essential for individual empowerment and economic strengthening [4].

Financial inclusion in Africa has seen significant growth, particularly through mobile money platforms like M-Pesa in Kenya [6]. However, gender disparities persist, with men more likely to use digital financial services than women [7]. Women face unique barriers to digital financial inclusion, including high costs, lack of money, and limited access to mobile phones [8]. Despite these challenges, digital financial inclusion is positively associated with women's labor force participation, more so than traditional financial channels [8]. The landscape of financial services in Africa is heterogeneous, characterized by low financial inclusion, limited financial literacy, and gender discrimination in account ownership [9]. While mobile money innovations show promise for fostering more inclusive financial systems, there are concerns that they may favor providers over low-income users, potentially undermining their potential for substantive gender equality [6].

Financial inclusion in Tanzania has made progress but faces significant challenges, particularly for women entrepreneurs. While over 60% of Tanzanian adults have access to formal financial services as of 2021, gender disparities persist [10]. Women entrepreneurs encounter both formal and informal barriers, including limited access to credit, high transaction costs, and socio-cultural norms [11]. Factors such as gender, education, age, and income significantly influence financial inclusion, with men, educated individuals, older adults, and higher-income earners more likely to be financially included [12](Lotto, 2018). Despite the growth in financial services following liberalization in 1990, access to formal banking remains low, with only 14% of adults having access as of 2013 [13]. Challenges hindering financial inclusion include costs, lack of robust technology, limited awareness, and regulatory requirements [13].

Determinants of financial inclusion have emerged as a promising tool for enhancing financial inclusion, particularly for women in developing countries. However, despite their potential, significant gender disparities persist in mobile money services [14, 15]. Women face unique challenges in accessing and utilizing mobile money service, including limited access to mobile networks, lower levels of wealth and

education, and geographic constraints [15, 16]. In Sub-Saharan Africa, women are more likely to use informal financial services, while men engage more frequently with mobile money services for activities such as sending money and buying airtime [7]. To address these disparities, a gender-sensitive approach to financial inclusion is crucial [17]. Strategies to overcome barriers include improving infrastructure, enhancing digital literacy, and tailoring services to women's specific needs [14]. By addressing these challenges, determinant of financial inclusion can play a pivotal role in empowering women and fostering economic development.

Mobile money platforms have significantly expanded financial inclusion in Tanzania, but gender disparities persist. Women are less likely to own formal savings accounts and mobile money accounts compared to men, with gaps of 21.3% and 9.4% respectively [10]. These disparities are attributed to lower levels of education, income, and women's dependence on men [10]. While digital financial services (DFS) have the potential to reduce inequalities, their adoption remains low and unequal, influenced by wealth, education, and location [15]. Factors promoting determinant of financial inclusion include mobile money services, level of education and marital status, while cost effects negatively impact determinants [18]. Challenges to mobile money usage in rural areas include poor network coverage, lack of knowledge, high transaction fees, and insufficient float [19]. Innovative strategies are needed to overcome these obstacles and promote financial inclusion across both rural and urban sectors [19].

Moreover, infrastructure challenges, such as unreliable network connectivity in remote areas, further impede mobile money services. Without targeted interventions to address these barriers, the potential of mobile money services to drive financial inclusion and empower women entrepreneurs in Tanzania will remain underutilized [20]. Strengthening digital literacy programs, designing gender-sensitive mobile money services products, and improving the affordability of services are critical steps in ensuring that women entrepreneurs can fully benefit from the opportunities mobile money services offers [21].Despite their potential, barriers such as limited digital literacy, socio-cultural constraints, and inadequate infrastructure hinder the effective of determinant of financial inclusion by women entrepreneurs.

The limitation of the above studies is that they have primarily focused on financial inclusion trends and barriers but have not sufficiently explored tailored strategies for enhancing determinants of financial inclusion among women entrepreneurs in Tanzania. In accumulation, the role of digital infrastructure and policy interventions in bridging these gender gaps remains underexplored, limiting the effectiveness of financial inclusion initiatives. Also the existing literature tends to focus on broad financial inclusion metrics rather than assessing determinants of financial inclusion`s specific effects on women-led businesses. Addressing these gaps is crucial for developing targeted interventions that promote equitable access to financial services, ensuring sustainable economic participation for women entrepreneurs.

1.2 Statement of the Problem

Financial inclusion should serve as a powerful tool for empowering women entrepreneurs in Tanzania, enabling them to access credit, savings, insurance, and other formal financial services to grow their businesses [22]. Women entrepreneurs in Iringa Municipality would have equal and unrestricted access to financial resources, supported by gender-sensitive policies, financial literacy programs, and inclusive banking infrastructure [23]. This would enable them to expand their enterprises, improve household incomes, and contribute significantly to local economic development.

Financial inclusion remains a critical challenge for women entrepreneurs in Tanzania, particularly in Iringa Municipality, despite various policy interventions and financial sector reforms. While the country has made progress in expanding formal financial services, with commercial bank branches increasing by 18% between 2020 and 2023 [24], women entrepreneurs continue to face significant barriers to accessing and utilizing these services effectively.

Despite Tanzania's progress in financial sector development, women entrepreneurs in Iringa Municipality continue to face significant barriers to financial inclusion, including limited access to formal financial services (forcing reliance on informal networks), low financial literacy (hindering their ability to navigate banking systems), restrictive socio-cultural norms (limiting independent financial decision-making), and stringent collateral requirements that disproportionately affect women who typically lack titled property [25, 26]. These challenges are compounded by geographic disparities, with rural women experiencing greater exclusion due to inadequate banking infrastructure (FSDT, 2022).

These barriers have severe significances, including stunted business growth due to women entrepreneurs' inability to access capital for expansion, perpetuation of intergenerational poverty cycles as limited financial resources constrain investments in family education and healthcare, persistent gender inequality in economic participation that reinforces women's financial dependence on male relatives, and significant missed economic opportunities for Iringa Municipality as undercapitalized women-led businesses fail to reach their full potential . Together, these consequences undermine both individual livelihoods and broader regional economic development.

Without targeted interventions to improve women's access to financial services, enhance financial literacy, and reform discriminatory lending practices, Iringa Municipality risks perpetuating economic gender disparities that ultimately constrain regional growth and poverty reduction efforts. This study therefore investigates the specific determinants of financial exclusion facing women entrepreneurs in Iringa to

inform more effective, gender-responsive financial inclusion strategies.

1.3 General Objective and Specific Objectives

1.3.1 General Objective.

To examine the determinants of financial inclusion among women entrepreneurs in Iringa Municipality.

1.3.2 Specific Objectives

i. To examine the effect of mobile money services on financial inclusion among women entrepreneurs in Iringa Municipality.

ii. To determine the effect of level of education on financial inclusion among women entrepreneurs in Iringa Municipality.

iii. To determine the effect of marital status on financial inclusion among women entrepreneurs in Iringa Municipality.

1.4 Hypotheses

i. H0: Mobile money services do not significantly affect financial inclusion among women entrepreneurs.

H1: Mobile money services significantly affect financial inclusion among women entrepreneurs.

ii. H0: Level of education do not significantly affect financial inclusion among women entrepreneurs.

H1: Level of education significantly affect financial inclusion among women entrepreneurs.

iii. H0: Marital status do not significantly affect financial inclusion among women entrepreneurs.

H1: Marital status significantly affect financial inclusion among women entrepreneurs.

This study is significant as it contributes to knowledge and practice on the determinants of financial inclusion among women entrepreneurs in Iringa Municipality, with implications for the community, industry, and policymakers. By examining how financial inclusion empowers women through improved access to financial resources, the study demonstrates its potential to enhance business growth, livelihoods, and economic independence. For the industry, the findings emphasize the role of financial inclusion in bridging gaps for underserved populations, aligning with national and international efforts to reduce poverty and promote economic equality. Moreover, the study offers evidence-based insights for policymakers and regulators to strengthen digital financial service frameworks and redesign policies that foster inclusive entrepreneurship, thereby advancing women's participation in economic development.

2.0 Methodology

This study employed a quantitative research approach to investigate the relationships between variables related to determinants of financial inclusion among women entrepreneurs in Iringa Municipality, Tanzania. The quantitative approach was chosen because it allowed for the systematic examination of measurable variables across a large sample, enabling the identification of trends, patterns, and statistical relationships [27]. By collecting numerical data, this approach facilitated the testing of hypotheses and the generalization of findings to the broader population of women entrepreneurs in similar contexts.

A quantitative approach was particularly effective for analyzing the relationships between independent variables (e.g., mobile money services, level of education, marital status) and dependent variables (e.g., financial inclusion, business growth, number of women beneficiaries). This aligned with the study's objective of understanding how determinants influenced financial inclusion and economic outcomes for women entrepreneurs [28].

The study targeted a large sample of women entrepreneurs, which was a key strength of quantitative research. By collecting data from a significant number of respondents, the findings were generalized to the broader population of women entrepreneurs in Iringa Municipality and similar settings [29]. This was particularly important for informing policy and practice, as it provided evidence-based insights that were representative of the population.

The quantitative research approach was appropriate for this study due to its ability to systematically examine relationships between variables, test hypotheses, and generalize findings to a larger population. By employing structured surveys and statistical analysis, the study provided robust, evidence-based insights into the determinants of financial inclusion among women entrepreneurs in Iringa Municipality. These findings contributed to both academic knowledge and practical interventions aimed at enhancing financial inclusion and women's economic empowerment in Tanzania and beyond.

2.1 Study Population

The target population was "the entire aggregation of the respondents that meet the designated set of criteria" [30].The study population consisted of 340240 women entrepreneurs operating in Iringa Municipality, Tanzania. The local government offices of Iringa Municipal Council assisted in identifying women entrepreneurs registered with relevant authorities. These women are engaged in various economic activities, including small-scale trade, agriculture, retail, and service provision. The focus on women entrepreneurs is deliberate, as they represent a critical yet often underserved segment of the population in terms of access to financial services and economic opportunities

2.2 Sampling Technique

In this study focusing on women entrepreneurs in Iringa Municipality, a simple random sampling technique was utilized to ensure each individual had an equal opportunity of selection, thereby minimizing selection bias and enhancing the representativeness of the sample. The process was involved to

obtain a comprehensive list of all 100 women entrepreneurs from Iringa Municipal authority, specifically the municipal business registry and women's entrepreneur associations. Implementing simple random sampling in this context is appropriate due to the manageable population size and the availability of a complete sampling frame. This approach facilitated the collection of unbiased data, allowing for accurate statistical inferences about the broader population of women entrepreneurs in Iringa Municipality.

2.3 Sample Size

According to [31], sampling is the process of selecting a subset of individuals or elements from a larger population to represent the characteristics of the entire population. It is a crucial aspect of research methodology, particularly when dealing with large populations where it is impractical or impossible to study every individual. The expected sample size was obtained from the following formula, given by [31]. When dealing with a population as small as 340240 sample frame, a finite population correction (FPC) is often applied. This adjusts the sample size downward, as you don't need as large a sample when you're sampling a significant proportion of a smaller population.

The formula is:

$$n = \frac{N}{(1+N(e^2))}$$

Where:

n = Sample Size

N= Population =340,240

From Iringa municipal registrar 2024 (N = 340,240)

e = Sampling Error which is 10% of the population

$$n = \frac{340240}{(1 + 340240(0.1^2))} = 99.9 \approx 100$$

The researcher collected 100 responses from women entrepreneurs in Iringa Municipality.

The data was analyzed using computer software, Statistical Package for Social Sciences (SPSS) version 20 so as to extract and analyze findings of the study, since because SPSS has got descriptive statistics and inferential statistics, where descriptive analysis is presented by using statistical tools mainly frequencies, percentages, mean and standard deviation to summarize the responses and inferential analysis is conducted by using correlation and multivariate regression to show the relationship and the significance between dependent and independent variables. A multiple regression model was employed to assess the impact of different digital financial services on financial inclusion. The regression equation was structured as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 - \beta_3 X_3 + \varepsilon$$
$$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0$$

Where:

Y = Number of women users
X_1 = Mobile Money Services
X_2 = Level of Education
X_3 = Marital Status
β_0= Intercept

$\beta_1, \beta_2, \beta_3$= Coefficients measuring the effect of each independent variable on dependent variable.

ε= Error term

3.0 Findings and Discussion

This chapter presents and discusses the results obtained from the analysis of the collected data in line with the study's objectives. The chapter begins with a presentation of output of liability and validity analysis as well as descriptive statistics, correlation and multiple regression analysis showing relationship between variables. The results are interpreted and discussed in relation to existing literature and theoretical perspectives to provide deeper insights into the findings. This integrated approach ensures that the discussion not only reports the statistical outcomes but also explains their implications in the context of the study.

3.1 Validity Test

Validity refers to the extent to which an instrument accurately measures what it is intended to measure. In research, ensuring validity is essential to guarantee that the results truly reflect the concepts being studied rather than being influenced by errors or irrelevant factors. This study employed validity testing to confirm that the research instruments were appropriate, relevant, and representative of the study objectives.

KMO is the measure of sampling adequacy, which varies between 0 and 1. The Bartlett`s Test of sphericity is the test for the null hypothesis. These tests provide the minimum standard to proceed for factor analysis. Kaiser (1974) recommends accepting values greater than 0.5 as acceptable (values below this should lead you to either collect more data or rethink which variable to include). Furthermore, values between 0.5 and 0.7 mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.733
Bartlett's Test of Sphericity	Approx. Chi-Square	166.575

Df	6
Sig.	.000

The table 1; shows that Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy value was 0.733, which is above the recommended threshold of 0.70. According to Kaiser's (1974) classification, a KMO value between 0.70 and 0.79 is considered "good," indicating that the sample is adequate for factor analysis. This means that the correlations among variables are sufficiently compact, and factor analysis is likely to yield reliable factors.

Bartlett's Test of Sphericity produced an approximate Chi-Square value of 166.575 with 6 degrees of freedom, and the significance level (Sig.) was 0.000 ($p < 0.05$). This result confirms that the correlation matrix is not an identity matrix, meaning there are significant relationships among the variables. Therefore, factor analysis is appropriate for the data set.

3.2 Reliability Test Results

Reliability testing assesses the internal consistency of a measurement instrument, ensuring that the items used to measure a particular construct produce consistent and stable results. In SPSS, one of the most commonly used statistics for this purpose is Cronbach's Alpha (α), which evaluates how closely related a set of items are as a group. A higher alpha value (generally above 0.70) indicates good reliability, suggesting that the items measure the same underlying concept. This makes Cronbach's Alpha a vital step in survey-based research, as it confirms that the measurement tool is dependable for further statistical analysis.

Table 2: Reliability Statistics

Cronbach's Alpha[a]	N of Items
0.881	4

The results in Table 2 show that the instrument yielded a Cronbach's Alpha of 0.881 for the four items used to measure the construct. According to commonly accepted thresholds [32], a Cronbach's Alpha value above 0.70 indicates acceptable reliability, while values above 0.80 reflect high reliability. Therefore, the obtained alpha of 0.881 suggests excellent internal consistency, meaning the items are highly correlated and consistently measure the same underlying concept. This level of reliability implies that respondents' answers are stable and dependable, making the instrument suitable for further statistical analyses such as correlation or regression. Moreover, the high alpha value minimizes measurement error, thus enhancing the validity of subsequent findings.

3.3 Descriptive Statistics

Descriptive statistics provide a summary of the demographic and study-related characteristics of respondents, offering an overview of the dataset before engaging in further analysis. This section presents the distribution of respondents across key demographic variables such as age, business experience, type of business, and employment status. It also describes the central tendencies and variations of responses to study variables, including indicators of financial inclusion and its determinants. By analyzing frequencies, percentages, means, and standard deviations, the descriptive statistics highlight general patterns and trends in the data, forming a basis for interpreting subsequent inferential analysis and drawing meaningful insights into the research problem.

3.3.1 Age

Age is an important demographic factor that influences entrepreneurial participation and access to financial services. Younger entrepreneurs may demonstrate higher adaptability to digital platforms and innovative business practices, while older entrepreneurs may rely more on traditional approaches to business and finance. Analyzing the age distribution of respondents provides insights into the generational dynamics of women entrepreneurs and how age may shape financial inclusion outcomes. Fig 1 below shows the result.

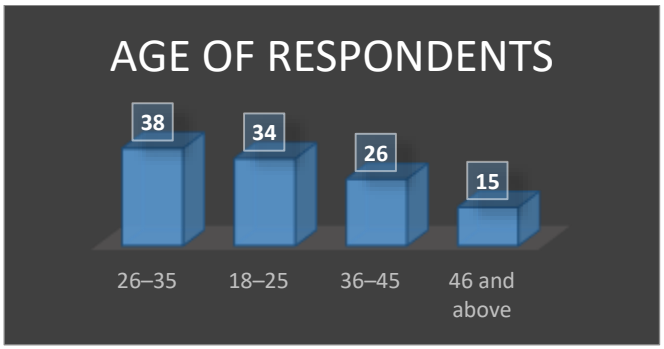

Figure 1; Age of respondents

The findings indicate that the majority of respondents (33.6%) fall within the age group of 26–35 years, followed closely by 30.1% in the 18–25 years category. Respondents aged 36–45 years account for 23.0%, while only 13.3% are aged 46 years and above. This distribution suggests that the majority of women entrepreneurs in the study are young adults, which may reflect the growing participation of younger women in entrepreneurial activities. The implication of this finding is that financial inclusion strategies should be tailored to the needs of younger entrepreneurs, particularly in providing

access to digital financial services and financial literacy programs, as this group represents the future sustainability of women-led businesses in Tanzania.

3.3.2. Business Experience of Respondents

Business experience is a critical factor influencing the performance and sustainability of entrepreneurial activities. Women with more years of business engagement are likely to have developed stronger financial management skills, wider networks, and greater access to credit opportunities, while those with limited experience may face challenges in resource mobilization and business growth. Examining the respondents' business experience helps to contextualize their capacity for financial inclusion and resilience within the entrepreneurial environment. Fig 2 below shows the result

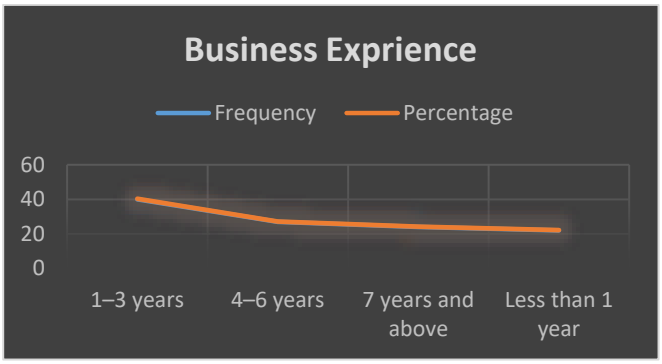

Figure 2; Business experience of the respondents

Most respondents (35.4%) had between 1–3 years of business experience, followed by 23.9% with 4–6 years of experience. About 21.2% had been in business for more than seven years, while 19.5% were relatively new entrepreneurs with less than one year of experience. This suggests that the sample consists of both emerging and established entrepreneurs, providing diverse insights into financial inclusion. The implication of this distribution is that while many women are still in the early stages of their entrepreneurial journey and may face challenges in accessing financial services due to limited track records, the presence of more experienced business owners enhances the study's capacity to capture varying levels of financial needs, risk perceptions, and utilization of financial services. This diversity enriches the analysis and strengthens the relevance of findings for policy and practice.

3.3.3 Type of the Business of Respondents

The type of business operated by women entrepreneurs provides critical insights into the nature of their economic activities and how these may influence their access to financial services. Different business types require varying levels of capital, carry distinct risks, and present unique opportunities for growth, which in turn affect the demand and usage of financial products such as credit, savings, and insurance. Examining the distribution of businesses among respondents is therefore essential in understanding the financial inclusion dynamics within the entrepreneurial landscape. Figure 3 shows below.

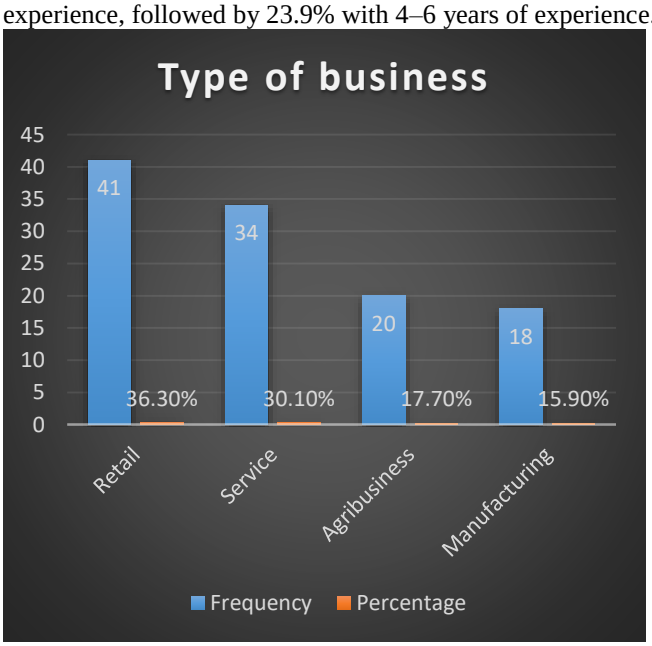

Figure 3; Type of business Engaged

The data reveal that the retail sector dominates among respondents, accounting for 36.3% of businesses, followed by

the service sector (30.1%). Agribusiness and manufacturing were relatively less common, representing 17.7% and 15.9%, respectively. This implies that most women entrepreneurs are concentrated in small-scale trade and service-related enterprises, which are typically more accessible in resource-constrained environments. The implication of this distribution is that financial inclusion strategies targeting women entrepreneurs should be tailored to the specific needs of retail and service-oriented businesses, such as microloans, flexible savings options, and mobile payment solutions, which are more suitable for small-scale operations. Additionally, policies aimed at diversifying women's participation into agribusiness and manufacturing could enhance economic resilience and broaden the impact of financial inclusion initiatives.

3.3.4 Employment Status

Employment status provides insight into whether women entrepreneurs operate their businesses full-time, part-time, or alongside other employment. This information is crucial for understanding the level of commitment, time availability, and reliance on business income, all of which can influence financial needs, access to financial services, and entrepreneurial performance. Analyzing employment status helps identify patterns that may affect financial inclusion, such as the ability to save, access credit, or invest in business growth. Figure 4, below shows the result.

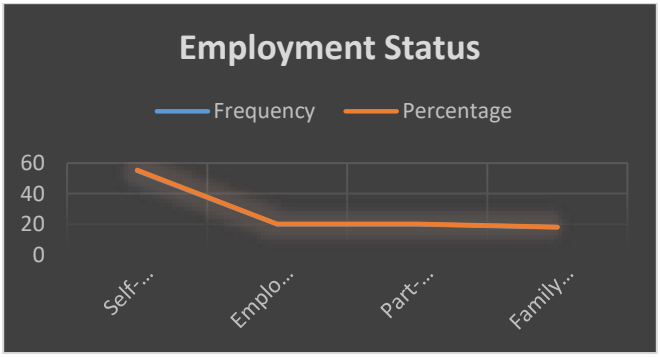

Figure 4: Employment status of the respondents

Nearly half of the respondents (48.7%) reported being self-employed, while 17.7% identified as employers and another 17.7% as part-time workers. A smaller proportion (15.9%) worked within family businesses. These findings highlight the significant role of self-employment as a pathway for women entrepreneurs to participate in income-generating activities, though fewer have transitioned into becoming employers. The high proportion of self-employed respondents suggests that most women entrepreneurs rely on their own initiatives for income generation, which may limit their access to formal financial services and business growth opportunities. This underscores the need for targeted financial inclusion strategies, capacity-building programs, and support mechanisms that empower self-employed women to scale their businesses, transition into employer roles, and effectively utilize financial products for business expansion and sustainability.

3.4 Correlation Analysis

Correlation analysis is used to examine the strength and direction of the linear relationships between pairs of variables in the study. By calculating correlation coefficients, the analysis helps determine whether and how strongly variables are associated with one another. This is crucial for understanding the interdependencies among key factors and for assessing the validity of assumptions prior to more advanced analyses such as regression. In this study, Pearson's correlation coefficients were computed, and significance levels were indicated to identify statistically meaningful relationships between the variables.

Table 3: Correlations

		Number of Women Entrepreneurs	Mobile Money Services	Level of Education	Marital Status
Number of Women Entrepreneurs	Pearson Correlation	1	.716**	.140	-.122
	Sig. (2-tailed)		.000	.138	.197
	N	113	113	113	113
Mobile Money Services	Pearson Correlation	.716**	1	-.035	-.094
	Sig. (2-tailed)	.000		.710	.324
	N	113	113	113	113
Level of Education	Pearson Correlation	.140	-.035	1	.014
	Sig. (2-tailed)	.138	.710		.885
	N	113	113	113	113
Marital Status	Pearson Correlation	-.122	-.094	.014	1

Sig. (2-tailed)	.197	.324	.885	
N	113	113	113	113

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3 presents Pearson's correlation coefficients among the key study variables: Number of Women Entrepreneurs, Mobile Money Services, Level of Education, and Marital Status.

The Number of Women Entrepreneurs shows a significant positive correlation with Mobile Money Services ($r = .716$, $p < 0.01$), but weak and non-significant correlations with Level of Education ($r = .140$, $p > 0.05$) and Marital Status ($r = –.122$, $p > 0.05$). This suggests that women's entrepreneurship is strongly associated with the use of mobile money services, while education and marital status appear to have little or no effect.

3.4.1 Mobile Money Services (.716**)

The strong positive correlation indicates that women entrepreneurs are more likely to use mobile money services compared to non-entrepreneurs. This reflects the central role that digital financial platforms play in supporting business activities, such as receiving payments, accessing savings, and managing transactions. The implication is that mobile money serves as a vital enabler of women's entrepreneurship by providing financial inclusion and reducing dependence on traditional banking. Policies should therefore focus on improving access, affordability, and digital literacy to maximize the benefits of mobile money for women in business.

3.4.2Level of Education (.140)

The weak positive but non-significant correlation suggests that educational attainment has little direct influence on whether women engage in entrepreneurship in this context. This could mean that entrepreneurship is more driven by necessity and opportunity rather than formal education levels. Alternatively, it may indicate that women across various educational backgrounds turn to entrepreneurship for income generation. The implication is that interventions to support women entrepreneurs should not exclusively target education levels but instead provide practical training and mentorship across the board.

3.4.3 Marital Status (–.122)

The weak negative and non-significant correlation suggests that marital status is not a decisive factor in determining women's entrepreneurial participation. While cultural and family dynamics may still influence entrepreneurial decisions, this result implies that being married or unmarried does not strongly restrict women from engaging in business. Programs aimed at enhancing women's entrepreneurship may therefore be designed inclusively, without assuming major constraints based on marital status, while still recognizing potential social responsibilities women may face.

These findings highlight the transformative role of mobile money services in promoting women's entrepreneurship, highlighting the need to strengthen digital financial ecosystems. On the other hand, education and marital status appear less influential, suggesting that entrepreneurship is shaped more by access to financial tools than by social or demographic factors. Policymakers and development practitioners should therefore prioritize expanding digital financial infrastructure and training, while complementing these with inclusive entrepreneurial support programs that cut across different educational and marital backgrounds.

4.0 Multiple Regression Analysis

Multiple regression analysis was conducted to examine how multiple independent variables (Mobile money services, Level of education and Marital status) are related to the dependent variable (Number of women entrepreneurs) whereby 113 observations were used. According to [33], multiple regression analysis is an analysis that involves one dependent variable and two or more independent variables. This method not only identifies the direction (positive or negative) and strength of these relationships but also allows researchers to predict outcomes and assess the combined influence of multiple predictors. In research, multiple regression is particularly useful for testing theoretical models, identifying key determinants of an outcome, and informing evidence-based decision-making.

4.1 Regression model

A multiple regression analysis was conducted to examine the influence of marital status, level of education, and mobile money services on the number of women entrepreneurs.

$$\boldsymbol{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 - \beta_3 X_3 + \varepsilon}$$

$$\boldsymbol{\beta_1 > 0, \beta_2 > 0, \beta_3 > 0}$$

Where:

Y = Number of women users
X_1 = Mobile Money Services
X_2 = Level of Education
X_3 = Marital Status
β_0= Intercept

$\beta_1, \beta_2, \beta_3$= Coefficients measuring the effect of each independent variable on dependent variable.

ε= Error term

Table5 :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
	.759[a]	.576	.564	1.84933	.576	49.346	3	109	.000

a. Predictors: (Constant), Marital Status, Level of Education, Mobile Money Services

b. Dependent Variable: Number of Women Entrepreneurs

The model was statistically significant, $F = 49.346$, $p < 0.001$, indicating that the set of predictors (Mobile Money Services, Level of Education, and Marital Status) reliably explained variations in the number of women entrepreneurs. The model accounted for 57.6% of the variance in the dependent variable ($R^2 = 0.576$, Adjusted $R^2 = 0.564$), which represents a substantial explanatory power in social science research.

The correlation coefficient ($R = 0.759$) suggests a strong overall relationship between the independent variables and the number of women entrepreneurs, confirming that the predictors jointly make an important contribution to understanding women's entrepreneurial participation.

4.2 Anova

Table 5 :ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	506.297	3	168.766	49.346	.000[b]
Residual	372.783	109	3.420		
Total	879.080	112			

a. Dependent Variable: Number of Women Entrepreneurs

b. Predictors: (Constant), Marital Status, Level of Education, Mobile Money Services

The ANOVA results in Table 5 show that the regression model significantly predicts the number of women entrepreneurs, $F = 49.35$, $p < .001$. The model's regression sum of squares (SS = 506.30) accounts for a substantial proportion of the total variance (SS = 879.08), indicating that the predictors—marital status, level of education, and mobile Money services—collectively have a statistically significant impact on women's entrepreneurial participation. The residual sum of squares (SS = 372.78) reflects the portion of variance not explained by the model.

Table 6 :Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-1.259	2.874		-.438	.662
Level of Education	.328	.083	.287	3.950	.000
Mobile Money Services	.725	.094	.563	7.719	.000
Marital Status	-.054	.062	-.055	-.870	.386

a. Dependent Variable: Number of Women Entrepreneurs

T**he estimated linear model was**

$$Y = -1.259 + 0.725X_1 + 0.328X_2 - 0.054X_3$$
$$t = -0.438 + 7.719 + 3.950 - 0.870$$

Table 6 presents the coefficients for the multiple regression model predicting the number of women entrepreneurs. The constant term (B = –1.259, p = .662) is not statistically significant, suggesting that when all predictors are held at zero, the baseline number of women entrepreneurs is not meaningfully different from zero.

Among the predictors, Level of Education and Mobile Money Services emerged as significant positive predictors, while Marital Status showed a weak, non-significant negative effect.

Mobile Money Services (B = 0.725, t = 7.719, p < .001)

Mobile Money Services demonstrated the strongest effect in the model, with a large and statistically significant positive relationship with the number of women entrepreneurs. This indicates that greater access to and use of mobile money services is associated with higher participation of women in entrepreneurship. Mobile money platforms enable entrepreneurs to manage transactions, receive payments, save, and even access microcredit, making them indispensable tools for women in business.

This finding aligns with studies such as Jack & Suri (2014) and Donovan (2019), which highlight the transformative role of mobile money in supporting entrepreneurial activities, particularly in contexts where formal banking access is limited. The implication is that expanding mobile money infrastructure and training women entrepreneurs in digital financial literacy can significantly boost entrepreneurial growth and sustainability.

Level of Education (B = 0.328, t = 3.950, p < .001)

Education level was also a significant and positive predictor of women's entrepreneurship. The results suggest that women with higher education levels are more likely to engage in entrepreneurship, likely due to better financial

Literacy, stronger managerial skills, and greater awareness of business opportunities.

This result reinforces prior evidence (e.g., Minniti & Naudé, 2010) showing that education enhances entrepreneurial capacity and reduces business failure risks. However, it also highlights the need for targeted interventions that provide not just formal education but also vocational training and entrepreneurship-specific knowledge to empower women entrepreneurs at different educational levels.

Marital Status (B = –0.054, t = –0.870, p = .386)

Marital status exhibited a negative but statistically non-significant effect on women's entrepreneurship. This suggests that, in this study, being married or unmarried does not play a decisive role in determining entrepreneurial participation once other factors (education and mobile money) are controlled.

While some studies (e.g., Kessy, 2021; Mukasa, 2020) have noted that marital roles and household responsibilities can constrain women's business activities, the current findings imply that such effects are not strong enough to independently predict women's entrepreneurship in the sampled context. This highlights the possibility that economic and technological factors, such as access to digital financial services, may be more influential than social-demographic factors like marital status.

The regression results confirm that Mobile Money Services and Level of Education are critical drivers of women's entrepreneurship, while Marital Status plays only a marginal role. These findings emphasize the importance of expanding digital financial inclusion and investing in education to foster women's entrepreneurial growth. Policies that integrate mobile money innovations with tailored training programs can empower more women to successfully enter and sustain entrepreneurship**.**

4.2 Findings based on the Specific Objectives

The study was about to examine the determinants of financial inclusion among women entrepreneurs in Iringa Municipality. As a prelude to the analysis, three specific objectives were developed. The findings for each objectives are presented below.

4.2.1 **To examine the effect of mobile money services on financial inclusion among women entrepreneurs in Iringa Municipality**

The regression results indicate that mobile money services have a statistically significant positive effect on the entrepreneurial participation of women in Iringa Municipality (B = 0.725, β = 0.563, p < .001). This implies that increased usage of mobile money services is associated with a higher number of women entrepreneurs. The finding supports the argument that digital financial platforms are powerful enablers of women's economic engagement by facilitating access to savings, payments, and microcredit [34].

A possible explanation for this strong positive relationship is that mobile money services reduce barriers traditionally associated with formal banking, such as distance, documentation requirements, and collateral demands. By offering quick, secure, and accessible transaction options, mobile money enables women to manage business finances more effectively, expand their customer base, and reduce reliance on cash-only systems. This aligns with studies that highlight the role of mobile money in promoting entrepreneurship and financial inclusion in Sub-Saharan Africa [35].

The regression results also reveal that education level has a positive and statistically significant effect on the number of women entrepreneurs (B = 0.328, β = 0.287, p < .001). This finding suggests that higher educational attainment contributes to women's entrepreneurial participation by equipping them with essential skills such as financial literacy, business management, and market awareness. Education enhances the ability of women to recognize opportunities,

understand financial products, and navigate regulatory systems, thereby fostering more sustainable business practices. This resonates with existing evidence that education plays a critical role in reducing entrepreneurial failure rates and promoting innovation [36].

By contrast, marital status does not have a statistically significant influence on women's entrepreneurship (B = –0.054, β = –0.055, p = .386). Although the coefficient is negative, the lack of statistical significance suggests that being married or unmarried does not substantially determine whether women engage in entrepreneurial activities when other factors are taken into account. While household responsibilities and cultural norms may shape entrepreneurial choices in some contexts (Kessy, 2021), this study's findings imply that economic and technological factors such as education and mobile money access play a far greater role in driving women's entrepreneurial engagement.

The results highlight the centrality of mobile money services and education as key enablers of women's entrepreneurship in Iringa Municipality. The findings highpoint the importance of policies that expand digital financial infrastructure, strengthen mobile money integration with formal banking systems, and invest in education and capacity-building programs tailored for women entrepreneurs. By contrast, demographic factors such as marital status appear less critical, suggesting that interventions should prioritize removing structural and financial barriers over focusing solely on social categories.

4.2.2 To determine the effect of level of education on financial inclusion among women entrepreneurs in Iringa Municipality

The regression results reveal that level of education has a statistically significant positive effect on the entrepreneurial participation of women in Iringa Municipality (B = 0.328, β = 0.287, p < .001). This indicates that as women entrepreneurs attain higher levels of education, their likelihood of engaging in entrepreneurial activities increases. This finding is consistent with much of the literature, which associates education with improved financial literacy, enhanced decision-making, and stronger business performance [36].

One possible explanation for this positive relationship is that higher educational attainment equips women with the analytical and managerial skills needed to identify business opportunities, manage resources effectively, and navigate financial systems. Educated women may also be better positioned to access and utilize financial services, which in turn strengthens their participation in entrepreneurial ventures. In this sense, education acts as both a human capital investment and a driver of financial inclusion.

Moreover, education may also increase women's exposure to professional networks, mentorship opportunities, and market information—all of which are essential for entrepreneurial growth. These advantages enable educated women to innovate, expand their enterprises, and sustain long-term business operations.

The moderate standardized coefficient (β = 0.287) suggests that while education is not the single most dominant factor in the model, it plays a significant role in shaping entrepreneurial participation alongside other predictors such as mobile money services. This resonates with prior research highlighting that education alone is not sufficient; rather, its effectiveness is maximized when combined with access to finance, enabling institutions, and supportive market structures [37].

These results highlight an important policy implication: strategies to enhance women's financial inclusion through entrepreneurship should not only focus on broadening access to education but also strengthen the link between educational attainment and entrepreneurial practice. This can be achieved by integrating entrepreneurship courses into formal curricula, providing business incubation support for graduates, and ensuring that educated women perceive entrepreneurship as a viable and rewarding career path.

4.2.3 To determine the effect of marital status on financial inclusion among women entrepreneurs in Iringa Municipality.

The regression analysis demonstrates that marital status has a negative but statistically non-significant effect on the entrepreneurial participation of women in Iringa Municipality (B = –0.054, β = –0.055, p = .386). This suggests that while the direction of the relationship implies that certain marital circumstances—such as being married—may be associated with slightly lower entrepreneurial engagement, the effect is too small and statistically insignificant to be considered a meaningful determinant in this model.

The small standardized coefficient (β = –0.055) further indicates that marital status is one of the least influential variables in the regression, particularly when compared to mobile money services and education, both of which emerged as strong and significant predictors. This finding implies that socio-demographic factors such as marital status may play a relatively minor role in shaping women's entrepreneurial participation in Iringa when economic and technological enablers are accounted for.

This result is partly consistent with studies showing that while marriage and household responsibilities can create constraints for women entrepreneurs [38], these effects are not universal or deterministic. In contexts where women gain access to digital financial tools or educational resources, the limiting influence of marital status may be mitigated. In other words, economic empowerment factors such as mobile money adoption and education may outweigh the socio-cultural constraints associated with marriage.

Another possible interpretation is that marital status influences entrepreneurship indirectly rather than directly. For example, married women may balance entrepreneurial activities with domestic responsibilities, but the degree of constraint depends on household dynamics, spousal support, and socio-economic status. Single or widowed women, meanwhile, might pursue entrepreneurship more actively out of necessity. However, in aggregate, these differences do not appear strong enough to generate a significant statistical effect in the present study.

4.3 Summary of Hypothesis Testing

Findings of the study revealed that all explanatory variables had significant effect on financial inclusion as shown in the table 7.

Table 7: Summary of Hypothesis Testing

Hypothesis	Variable	Accepted / Rejected	Significance (p-value)
H1	Mobile Money Services	Accepted	0.000 ($p < 0.05$)
H1	Level of Education	Accepted	0.000 ($p < 0.05$)
H1	Marital Status	Rejected	0.000 ($p < 0.05$)

5.0 Conclusion and Recommendations

The findings of this study indicate that financial inclusion among women entrepreneurs in Iringa Municipality is significantly influenced by mobile money services and level of education, while marital status does not have a meaningful impact. The results showed that greater access to mobile money services and higher educational attainment are associated with increased participation in entrepreneurial activities, highlighting their role as key enablers of women's financial inclusion. Mobile money platforms likely facilitate business transactions, savings, and access to credit, while education equips women with the skills and knowledge necessary to engage effectively in entrepreneurial activities. In contrast, marital status exhibited a small, non-significant negative effect, suggesting that household or spousal dynamics have a limited influence on women's entrepreneurial engagement in this context.

Based on the findings, this study recommends strengthening financial inclusion for women entrepreneurs in Iringa Municipality by linking mobile money services with formal banking systems and expanding offerings to include credit, savings, and micro-insurance tailored for women. Training programs should be introduced to enhance digital financial literacy and enable women to leverage these tools for business growth. While education is expected to empower women, the study revealed systemic barriers that limit its effect, highlighting the need for financial literacy and entrepreneurship training, simplified banking processes, and gender-sensitive financial products. Marital status was found to negatively influence financial inclusion due to cultural norms restricting women's financial autonomy, thus requiring policies and awareness campaigns that promote gender equality and joint financial decision-making. More broadly, institutional reforms by regulators and financial institutions should reduce collateral requirements, design flexible lending terms, and implement supportive policies that empower women entrepreneurs. Collaborative efforts among government, NGOs, and business associations are vital to ensure women's effective integration into the financial system, thereby enhancing their role in economic growth and development.

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