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# **Financial Inclusion and Informality: Empirical Evidence in Ghana**

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> Abstract: This study examines the nexus between financial inclusion and informality in Ghana, leveraging data from the Ghana Living Standards Survey (GLSS7) and employing logistic regression techniques to determine demographic, social, economic and spatial factors that influence financial inclusion in the informal sector. The findings reveal significant gender disparities, with women being more likely to be financially inclusive than men. Regional variations indicate that financial inclusion is not uniformly distributed across the country, with some regions being more inclusive than others due to localised economic activities and access to financial services. The rural-urban divide plays a significant role in financial inclusion with urban areas being more inclusive than rural areas due to better access to financial services in the urban areas. Age, marital status, and level of education tend to strongly influence financial inclusion. The study emphasises the importance of leveraging technology, such as mobile banking and fintech solutions, to extend financial services to underserved areas and bridge the rural-urban divide. Policy suggestions include developing genderspecific financial products, implementing targeted financial education programs, and adopting regionalised strategies to address disparities.

*Keywords:* Financial Inclusion, Informality, logistic regression, Ghana. *JEL:* C51, G21, G23, G44, G53

## 1. INTRODUCTION

Financial inclusion to drive growth has been at the centre stage of policy discourse of most developing countries in recent times, necessitating policies and regulations in the financial sector aimed at improving access and usage of

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financial services to achieve comprehensive financial inclusiveness (Sarma & Pais, 2011). Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs such as transactions, payments, savings, credits and insurance which are delivered responsibly and sustainably (Dev, 2006).

Although financial inclusion is reported to be generally low in developing countries, it saw significant improvement from 2011 to 2014. The level and rate of improvement among countries in sub-Saharan Africa varied from one country to another (Asuming et al., 2019). Several factors accounted for this improvement ranging from demography, social, economic and spatial in the informal sector of respective countries. The rise of financial inclusion policies has birthed many financial institutions and innovations globally including self-help groups, microfinance institutions, low-cost accounts, general credit cards and no-frills accounts (Gupta et al., 2012; Sarma & Pais, 2011). However, in spite of these financial innovations, a vast majority of people, particularly in sub-Saharan Africa are still financially excluded including Ghana.

The delivery of financial services at affordable costs to the underserved in low-income segments of society is crucial as most of them are found in the informal sector. Those who are employed in the informal economy are usually underpaid, vulnerable and discriminated against and these tend to affect their financial inclusion efforts relative to the formal sector employment.

Even though policymakers in Ghana are not oblivious to the existence of a large number of people in the informal financial sector, their policies tend to drift away from activities which would impact the informal sector (Alhassan et al., 2019). Within the larger financial markets, the relative importance of financial inclusion and its implications on financial market development, monetary policy, and the entire system's efficiency are all prioritised over informal intermediaries, with the former receiving the most attention. However, Golub and Hayat (2015) observe that employment creation for vulnerable social groups in the informal sector offers an opportunity to achieve economic outcomes in developing countries. Although the level of productivity in informality is well documented, the question of whether financial inclusion may explain the disparities in informality remains unanswered in research, particularly in Ghana. Reports indicate a low level of financial inclusion among the majority of the lower to middle-income population in Ghana. Estimates show that only two out of five adults are included in the formal financial sector of Ghana, and this is mediated by factors such as age, literacy levels, wealth class, distance to financial institutions, lack of documentation, lack of trust for formal financial institutions, money poverty and social networks (Akudugu, 2013). Given this high rate of financial exclusion, the connection to the informal sector has often been highlighted with the emergence of mobile money as a major move towards financial inclusion for the informal sector (Amoah et al., 2020). With this brief appraisal of financial inclusion and the informal sector, this study focuses on Ghana to establish the relationship that exists between the two main variables and the dynamics therein. The study therefore aims to examine the nexus between financial inclusion and informality in Ghana with a specific focus on factors that influence financial inclusion in Ghana's informal sector.

This study provides empirical evidence on the relationship between financial inclusion and informality in Ghana. The study adds to the scope of knowledge on stock market participation through the lens of financial education and financial inclusion by documenting the level of involvement of individuals in the stock market who may be financially included but not educated. The study also contributes to policy by providing useful insights to policy-makers responsible for financial market regulation to ensure that appropriate and effective policies based on country characteristics are put in place to ensure adequate awareness and maximum participation from users of financial products. Finally, the study contributes to practice by providing managers of banks and other financial institutions with information on their importance towards contributing to financial inclusion and thus help them in designing financial products that meet the needs of the informal sector.

In addition to the introductory section, the rest of the study is organised into four sections, section two deals with literature review which focuses on empirical and theoretical review. Section three treats the methodology of the study by presenting the research design, the population, data collection and model specification as well as the data analysis techniques. Section five outlines the results and discussions of the study as it presents the interpretation of the findings in line with the literature. Section six of the study provides the conclusion and recommendation of the study.

#### 2. LITERATURE REVIEW

Lahura and Vargas (2021) examined the empirical relationship between informality and several indices of economic progress and financial inclusion. A panel data of 152 nations from 1991 to 2017 was employed and the panel cointegration approach was used for the estimations for the full sample of countries, developed countries, developing countries, and Latin American countries. The study found that there is a negative long-run relationship between informality and several financial inclusion indices. In addition, the various financial inclusion indicators are associated with lower levels of informality with the dataset. In particular, the study found that financial growth, as measured by "financial credit" and "bank credit", reduces informality in emerging nations, whereas financial inclusion, as assessed by "number of bank accounts", reduces informality. Additionally, evidence of double causality between informality and financial development is found for both developing countries and the entire sample of countries when the latter is measured as a "bank deposit". For Latin American countries, evidence of double causality is found when financial inclusion is measured as "number of ATMs". These findings imply that increasing loans to the private sector and increasing the number of bank accounts in developing nations have both contributed to the reduction of informality in the long run.

Akudugu (2013) also used a logit model to examine the determinants of financial inclusion in West Africa with a specific focus on Ghana. The data used in the analyses came from 1000 individual adults across Ghana and included people across different wealth classes, occupations, geographical locations, genders and generations. The factors that influence an individual's ability to participate in the formal financial market were identified and estimated. The findings indicate that only two out of every five adults in Ghana are involved in the official financial sector. Significant determinants of financial inclusion in Ghana include the age of individuals, their literacy levels, their wealth class, the distance between them and financial institutions, lack of documentation, lack of trust in formal financial institutions, money poverty, and social networks as reflected in family relationships. The policy implication of this is that governments in West Africa, particularly Ghana, and their development partners must build a comprehensive financial framework that attempts to minimise the negative factors of financial inclusion while maintaining the favourable ones over the long term.

Alhassan et al., (2019) used data from Global Findex 2014 to examine whether the use of formal financial intermediaries reduces cash preference and the use of informal financial intermediaries. The study used the ownership of a bank account as a general proxy for formal financial intermediation and tested several proxy variables for formal financial intermediation. Other proxies for formal financial intermediation included variables such as savings, borrowing, mobile money accounts, receipt of wages, receipt of government poverty relief transfers, and receipt of agricultural produce payments through the bank. Gender, Income and Educational level were considered control variables. The finding indicates that the significant drivers of financial inclusion include age, literacy level, wealth class, distance from financial institutions, lack of documentation, lack of trust in formal financial institutions, money poverty, and social networks. Acharya et. al (2007) also supported it. In addition, the finding reveals that using formal financial intermediaries positively correlates with the use of informal financial intermediation and that mobile money usage is seen as a good alternative for financial inclusion with its uptake defying the scale and depth of poverty.

Farazi (2014) examined the use of finance and financing patterns of informal firms to highlight the differences between the use of finance by formal and informal firms. The World Bank Informal Enterprise Survey dataset was used for the study which interviewed formal, private, and non-agricultural firms which fall in the unregistered business category. The data entails more than 2500 firms from 13 countries in sub-Saharan Africa (SSA) and Latin America and the Caribbean (LAC) regions. The study found that few business owners have regular occupations and keep their informal businesses as the main source of income. In addition, informal enterprises rarely use loans or bank accounts for business, and most finance their operations and investments through sources other than financial institutions. The study also discovered that most enterprises would prefer to register but do not do so because of the tax burden but cite greater access to finance as the main benefit of registering. Formal sector firms are more likely to have bank accounts and loans compared to informal enterprises. Registered firms use bank funding more frequently and rely less on internal finances, family and friends, and moneylenders. The size of the enterprise, the owner's education, and whether the owner works in the formal sector are all connected with financial inclusion. Microfirms utilise

bank accounts less than small businesses and rely on microfinance organisations for working capital funding. The use of bank accounts for working capital is positively associated with owners' education and formal employment and negatively associated with internal finances, family, and moneylender financing.

Adopting a problem-solving stance, Sharma, Bose, Shekhar, and Pathania (2019) examined the strategy for the financial inclusion of informal economy workers in India. The study observed that increased access to basic financial services has not been driven by the penetration of the network of branches of banks in India. The study surveyed 500 people including local bank branches, residents and static workers in the informal sector within 10 localities in the National Capital Region (NCR) in a qualitative approach. This survey highlighted the need to engage with the community to better understand the implementation problems. The survey identifies a unique type of informal sector worker that is highly static in both operations and location and requires a division. Since existing regulations keep talking about designated zones instead of identifying the essential tenets of this category of the workforce, this results in contradicting positions. For example, instead of providing authorised zones, the local government maintains designating the static workforce as encroachers. This attracts law enforcement agencies that engage in rent-seeking, raising the costs and risks of doing business with marginalised service providers.

King (2012) investigated informality and barriers to financial services in Nigeria. Holding the assertion that four-fifths of the adult population does not have access to formal financial services in Nigeria, their study examined the characteristics of 'unbanked' households in Nigeria. The study also investigated the extent and determinants of supply and demand-side barriers and explored the specific role played by informality in financial exclusion. Individual-level data were obtained from the 2008 Finscope study of Nigeria, which asked individuals across different states about their use of various financial products, with consideration to individual characteristics. A total of 560 people were surveyed in each of the 36 states and the FCT of Abuja for the Nigerian dataset. The findings indicate that there is evidence that the unbanked fourfifths have poorer incomes, less educational opportunities, are less likely to own a mobile phone, and have lower levels of financial sector knowledge while their legal papers are not in their names as compared to the rest of the population. The study suggests that addressing informality directly represents a chance for financial inclusion policies to be implemented.

Ajide (2021) also examined the possible relationship between financial inclusion and the shadow economy in selected African countries. The study used the panel data estimation technique and Toda and Yamamoto causality approach for selected African counties over the period of 2005–2015, sourced from the World Bank Development Indicators, the International Monetary Fund, the International Financial Statistics Database, and International Country Risk Guide.

The results show that financial inclusion reduces the size of the shadow economy. The causality results show that there is a unidirectional causality moving from financial inclusion to the shadow economy. The results further reveal that a country with a lower level of corruption and a higher level of growth can benefit more in reducing the size of the shadow economy through financial inclusion. The study suggests that financial inclusion may be useful in influencing the size of the shadow economy in Africa.

Using data from the Global Financial Inclusion Database of the World Bank, Soumaré et al. (2016) attempted to identify and analyse the determinants of financial inclusion in Central and West Africa, two of the least financially inclusive regions of the African continent. The data reveal that individual variables such as gender, education, age, income, home location, employment status, marital status, household size, and level of trust in financial institutions are the most important determinants of access to formal finance in the two regions. Central Africa and West Africa, on the other hand, differ from the rest of Africa in several crucial drivers of access to finance. Particularly important individual features of access to formal accounts in both regions and Africa include being educated, being of working age, being a resident of a city and being employed full-time. Being male and/or married, on the other hand, is a favourable predictor of financial inclusion in Central Africa, whereas income is a major predictor of financial inclusion in West Africa. Furthermore, in West Africa, household size has a negative impact on account ownership, whereas it has no effect in Central Africa. In terms of policy recommendations, governments and their partners in these regions should adopt or strengthen regulatory laws to better protect financial services and consumers, increase population access to education, ease access to finance for vulnerable groups

and continue their efforts to increase the number of permanent and stable jobs created, with a particular focus on gender and marital status in Central Africa, and income as well as household size in West Africa.

Park and Mercado (2015) also examined financial inclusion and informality in Asia and the Pacific, with a focus on poverty and income inequality. Their study observes that financial inclusion is a critical element for inclusive growth as economic agents can make longer-term consumption and investment decisions, participate in productive activities, and cope with unexpected short-term shocks. A new financial inclusion index was developed by the researchers to analyse the impact of various macroeconomic and countryspecific factors on the degree of financial inclusion in 37 chosen developing Asian nations. The findings indicate that per capita income, the rule of law, and demographic variables, all have a major impact on financial inclusion in emerging Asia, particularly in India. Furthermore, the study discovered that financial inclusion has a considerable impact on poverty reduction, and there is evidence that it has a positive impact on income inequality as well (Acharya, 2008). Hence, policymakers should design and implement programs that would increase access to financial services, resulting in poverty reduction and greater income equality in the country.

From the foregoing discussions, it is evident that empirical studies on the relationship between financial inclusion and informality have yielded many diverse conclusions depending on the methodology employed and the case study with all producing similar results. Moreover, most studies have focused on panels of different countries with panel estimation approaches. In view of this, the current study focuses specifically on Ghana by employing linear logistic regression estimation techniques on a cross-sectional dataset from the Ghana Living Standards Survey round seven (GLSS 7) to understand the link between financial inclusion and informality.

#### 3. METHODOLOGY AND DATA

#### 3.1. Theoretical framework

This study used the loanable funds model to illustrate how financial intermediaries balance the supply and demand for loans in the market.

$$S = I + (G - T) + (X - M)$$

Where: S = Savings I = Investment G = Government spending T = Taxes X = Exports M = Imports

In the context of the informal economy, savings and investment behaviour can be influenced by the availability of microfinance and mobile money services.

# 3.2. Estimation model

The study adopted the logistic estimation model by Rodriguez, 2007 for the data analysis. We assumed a linear additive relationship for the utility difference, which was denoted by **yi.** This variable is referred to as a latent variable because it is not directly observed but inferred from other variables.

$$y_i = \beta X_i + \varepsilon_i \tag{1}$$

Where;

yi is the response variable.

Xi is a set of explanatory variables that include all factors that determine whether an individual is financially inclusive or not.

 $\beta$  is the coefficient of the explanatory variables.

Ei is the error term, which for this analysis was assumed to be normally distributed.

It was also observed that yi = 1 if and only if the latent variable yi > 0 and, yi = 0 if otherwise. This meant that a person would be classified as financially inclusive if and only if the underlying response was greater than zero.

A matrix of measured indicators xi should be dependent on the probability Yi. A linear relationship between Yi and the variables was assumed, for example, to be the simplest solution.

$$Y_i = X_i \beta \tag{2}$$

where  $\beta$  is a scalar representing the coefficients of regression.

Assuming sophisticated constraints were enforced, there was no way to ensure that projected values would fall within an acceptable range in Equation 2. This is because the likelihood of  $\underline{Y}_i$  on the left must be between 0 and 1, but the linear predictor  $X_i$  on the right can represent any real value, there is no guarantee that the predicted values will fall inside the desired range unless complex constraints are imposed.

A simple solution was to describe the conversion as a linear model of the variables and convert the likelihood to eliminate the range constraints. There were two steps involved here.

Foremost, we converted  $Y_i$  to odds.

$$Odds_i = \frac{Y}{1 - Y} \tag{3}$$

Equation 3 means the ratio is advantageous to the unfavourable group where "Y" is the favoured group and "1-Y" is the unfavored group.

The second step was to employ logarithmic functions to equation 3 which constituted the logit model or log-odds.

$$Logit(Y) = \log(0(Y)) = Log \frac{Y}{1-Y}$$
(4)

The transformation to a log function was done to transform the dichotomous Y to a sort of continuous form. The density function associated with equation 4 was very close to a standard normal distribution and that of equation 2.

Assuming the log odds that give Y=1 are represented by

$$\ln\left[\frac{P}{1-P}\right] = \beta_1 + \beta_2 X_{ki} + \dots + \beta_k X_{ki} = e^z$$
(5)

Then solving for the probability that y=1 we have:

$$e^z = \frac{p}{1-p} \tag{6}$$

$$p = (1 - p)e^{z} = e^{z} - pe^{z}$$
(7)

$$p + (1 - e^z) = e^z$$
 (8)

$$p = \frac{e^z}{1 + e^z} \tag{9}$$

Equation 9, therefore, gives the probability that y=1 and it is called the cumulative logistic distribution function. From equation 5, even though the log is linear in X, the probability itself is not, the probability approaches 0 at a slower rate as the value of X gets smaller and smaller. Similarly, it approaches 1 at a slower rate as the value of X gets larger and larger.

## 3.3. Margins

According to Anderson & Newell (2003), in most cases, marginal effects cannot be derived solely from estimated parameters because they are inherently nonlinear of variable estimations and independent variable values. A binary decision model's anticipated probability is given by

$$\Sigma (Y|X) = F(\beta'X) \tag{10}$$

Where F represents the cumulative logistic distribution, y represents a dichotomous dependent factor, x is a matrix of control factors, and  $\beta$  is a vector of projected variables.

Taking the marginal change in the expected probability gives

$$\frac{\partial E(Y/X)}{\partial x} = f(\beta'X)\beta \tag{11}$$

A scale factor that transforms pure factor estimations into marginal effects can be seen in the density function  $f(\beta' X)$ . Marginal effects are defined as the change in predicted probability related to percentage variation in the continuous independent parameters in this model.

## 3.4. Source of Data

The study used round seven of the Ghana Living Standard Survey (GLSS 7) that was collected between 2016 and 2017. The GLSS 7 survey sampled 14,009 households and 59,864 individuals. Many socio-economic characteristics, including age, gender, family size, educational achievement as well as access to financial resources like bank accounts and credit cards have been provided on individuals and households in the dataset.

# 4. **RESULTS AND DISCUSSION**

# 4.1. Description of Variables

Table 1 provides a thorough summary of the socio-economic characteristics that can influence a person's financial inclusion status.

Variable	Type of Variable	Description of Variable
Age	Categorical variable	The age of the individual was measured in years and was categorised into 3 groups; 15-44 years,
		45-60 years and 61 years plus
Gender	Binary	The gender of the individual was coded as 1 if male and 0 if otherwise.
Region	Categorical	The region was categorised into 10 regions in Ghana (Greater Accra, Northern, Central, Upper East, Upper West, Eastern, Western, Volta, Ashanti, and Brong Ahafo.
Location	Binary	The place of residence of the individual was coded as 1 if urban, 0 if otherwise.
Marital Status	Categorical	The Variable was coded into six categories; Married, Never Married, Divorced, Widowed, Consensual Union, and Separated.
Educational Attainment Level	Categorical	The highest level of education attained by the individual was captured in the form of four categorical dummies- No formal education, Post-secondary education, Primary education, and Secondary education,
Risk Behaviour	Binary	Individuals' perceptions of risk were captured by the variables- Risk-averse people were marked as 1 and those who enjoyed taking risks were coded as 0.

# 4.2. Discussion of Results

## 4.2.1. Descriptive Statistics

#### Table 2: Summary Statistics of Variables

Variables		Frequency	Percentage (%)
Financial Inclusion	Include	474	72.98
	Exclude	1,280	27.02
Sex of Individual:	Female	272	15.51
	Male	1,482	84.49
Age of the Individual	15-44	1,353	77.14
	45-60	301	17.16
	61+	100	5.60
Location of Household:	Urban	1,064	60.66
	Rural	690	39.34
Risk Behaviour	Risk Averse	1,276	73.80
	Risk Lover	453	26.20

Variables		Frequency	Percentage (%)
Educational Level: No education		42	2.79
Post-Secondary		129	8.57
	Primary	263	17.46
secondary education		1,072	71.18
Marital Status:	Married	802	45.72
	Consensual Union	302	17.22
	Separated	85	4.85
	Divorced	90	5.13
	Widowed	74	4.22
Single (never married)		401	22.86
Age:	15-45	1,353	77.14
-	45-60	301	17.16
	61-max	100	5.70
Region:	Ashanti	363	20.70
_	Brong Ahafo	131	7.47
	Central	199	11.35
	Eastern Greater Accra	149	8.49
Northern		274	15.62
	Upper East	120	6.84
	Upper West	102	5.82
	Volta	77	4.39
	Western	172	9.81
		167	9.52

Source: Author's computation from GLSS7 dataset

The survey data in Table 2 reveals that 77% of the people surveyed are under the age of 45, 17.16% are between the ages of 45 and 60, and 5.60% are over the age of 60 years. Educational levels are as follows: secondary education-71.18%, primary education-17.46%, and post-secondary education-8.57% while 2.79% have no educational background.

In terms of risk-taking characteristics, 73.8% of those surveyed are riskaverse, while 26.20% are risk-loving. Concerning gender, 15.51% of the participants are female, while 84.49% are male. In terms of location, 60.66% of the population sampled lives in urban regions and 39.34% in rural areas, respectively. In regards to marital status, most (45.72%) of them are wedded and the minority are widowed (4.22%); 22.86% of the population is unmarried; 5.13% of the population is divorced; 4.22% of the population is separated, and 17.22% is in a consensual union.

On the regional dimension, the Ashanti region had the highest percentage of its population sampled (20.70%), followed by Greater Accra (15.62%) and

Central (11.35%). Only 4.39% of the Upper West's population was sampled, followed by the Upper East's 5.82%.

## 4.2.2. Regression Results

Inclusion in Ghana				
	(1)	(2)		
Variables	Logit	Margins		
Age				
45-60 years	-0.0292	-0.005		
	(0.171)	(0.032)		
61 years and above	0.632**	0.131**		
	(0.281)	(0.062)		
Region				
Ashanti	0.353*	0.057*		
	(0.204)	(0.033)		
Brong Ahafo	0.401	0.065		
	(0.278)	(0.047)		
Central	1.274***	0.248***		
	(0.228)	(0.043)		
Eastern	0.891***	0.163***		
	(0.245)	(0.045)		
Northern	0.122	0.019		
	(0.340)	(0.053)		
Upper East	0.865**	0.157**		
	(0.352)	(0.07)		
Upper West	-0.0153	-0.002		
	(0.433)	(0.063)		
Volta	0.911***	0.167***		
	(0.247)	(0.046)		
Western	0.576**	0.098**		
	(0.258)	(0.045)		
Sex				
Male	-0.935***	-0.197***		
	(0.188)	(0.041)		
Location				
Urban	0.470***	0.086***		
	(0.137)	(0.025)		
Marital Status				
Consensual Union	-0.301*	-0.056*		
	(0.179)	(0.032)		
	· · · · ·	· · ·		

Table 3: Marginal Effect of Logit Model of Informal Sector's Financial Inclusion in Ghana

	(1)	(2)
Divorced	-0.334	-0.062
	(0.297)	(0.052)
Never married	-0.0498	-0.01
	(0.159)	(0.031)
Separated	-0.234	-0.044
	(0.298)	(0.054)
Widowed	-0.956**	-0.154**
	(0.407)	(0.052)
Education		
No education	-1.663***	-0.302***
	(0.453)	(0.065)
Primary	-1.121***	-0.226***
	(0.249)	(0.051)
Secondary	-0.739***	-0.158***
	(0.202)	(0.046)
Risk behavior		
Risk Averse	-0.270*	-0.05*
	(0.143)	(0.026)
Constant	-0.0829	
	(0.332)	
Observations	1,486	1,486
Prob>Chi2	0.0000	0.0000

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 *Source:* By Author from research data

At a 0.1% significant level, the study shows that the sex of the worker has a substantial impact on the elements that determine financial inclusion in the informal sector. The informal sector's financial inclusion is harmed when a person's gender is taken into consideration. Women are more likely than men to participate in the informal financial sector, according to this data set. From the results, the odds of being financially inclusive are about 0.197 times greater for females than for males, it can also be interpreted as the odds that a female will be financially inclusive in the informal sector increases by 19.7% compared to males, holding all other variables constant.

A statistically significant relationship was observed between financial inclusion in Ghana's informal sector and six of the nine regions sampled with

Greater Accra as the reference variable. These regions were Central, Eastern, Western, Upper East, Ashanti, and Volta. All regions except the Upper West were shown to have a favourable effect on financial inclusion in the informal sector. Relative to the Greater Accra region, the odds that an individual residing in Ashanti, Volta, Western, Eastern, Central, Upper East, Northern, Brong Ahafo will be financially inclusive in the informal sector increased by 0.57%, 16.7%, 0.98%, 16.3%, 0.25%, 15.7%, 0.53%, 0.65% respectively holding all other variables constant. With Upper West, however, the odds that an individual resides there were reduced by 0.2% compared to those residing in the Greater Accra region.

Only two marital status classifications (Consensual Union and Widowed) were found to be significant at the 0.1% and 0.5% significant levels in determining whether an individual is financially inclusive in the informal sector in this study. All other marital status categories were determined to be insignificant. However, in contrast to individuals who were married, all marital statuses defined in this study (divorced, consensual union, never married, separated, and widowed) showed a negative link with their propensity to be financially inclusive in the informal sector. The odds of being financially inclusive were about 0.056, 0.062, 0.01, 0.044, and 0.154 times less for consensual union, divorced, never married, separated, and widowed respectively than for those who were married.

An individual's location has a statistically significant impact on their likelihood of being financially included in the informal sector. As compared to individuals in rural areas, the positive coefficient indicated that city people engaged in more financially inclusive practices in the informal sector. This outcome could be explained by the fact that, in comparison to city people, rural dwellers do not have access to as many financial services. The odds that an individual in the urban locality will be financially inclusive were 0.086 times greater than individuals in the rural locality.

This study found a negative association between individuals in the 45-to-61-year age group and financial inclusion in the informal sector after examining the relationship between financial inclusion in the informal sector and age. However, the study discovered a positive relationship among those aged 61 and up. Individuals in the age group of 61 to the maximum age had a statistically significant variable of 5%. Individuals in the 61 to maximum age

group had a higher likelihood of being financially integrated into the informal sector than those in the 15-44 age group. In comparison to individuals in the 15-44 age group, people in the 46-60 age group had a lower likelihood of being financially inclusive. Compared to those in the 15-44 age group the odds that an individual in the 60+ age group would be financially inclusive increased by 13.1% while that of the 45-60 age group was reduced by 0.5% holding all other variables constant.

With risk lover as the reference variable, an individual's risk behaviour had a negative impact on the likelihood of being financially inclusive in the informal sector. Keeping all other variables constant the odds that a risk-averse individual became financially self-sufficient decreased by 5% compared to individuals who were risk lovers. The variable was statistically significant.

With a statistically significant level for all educational attainment categories, this study discovered a negative relationship between educational attainment level (No education, primary, secondary) and the likelihood that an individual in the informal sector was financially inclusive with post-secondary education as the reference variable; and the probability that an individual in the informal sector was financially inclusive. The odds that an individual with no education, or primary education, or secondary education was financially inclusive were 0.302, 0.226, and 0.158 times respectively less than individuals with post-secondary educational attainment levels.

# 5. CONCLUSION

The exploration of financial inclusion within Ghana's informal sector provides a nuanced understanding of how demographic, socioeconomic, and regional factors converge to influence access to financial services. This study, leveraging data from the Ghana Living Standards Survey (GLSS7) and employing a logit model, offers a comprehensive analysis of the determinants of financial inclusion, shedding light on the intricate dynamics at play. The findings reveal a complex landscape shaped by gender dynamics, regional disparities, urban-rural divides, and various demographic factors, each playing a pivotal role in determining financial inclusion levels. The findings underscore the importance of adopting a multifaceted approach to enhance financial inclusion, one that takes into consideration the diverse needs and challenges of the population. Gender emerged as a significant determinant, with women in the informal sector more likely to be financially included than men. This indicates progress towards gender inclusivity in financial access but also points to the need for continued efforts to address gender-specific barriers. Regional differences suggest that localised strategies are essential, as what works in one region may not be applicable in another due to varying economic activities and access to financial services. The urban-rural divide further accentuates the need for innovative solutions to extend financial services to underserved areas.

Moreover, the study highlights the critical role of age, marital status, and education level in financial inclusion. These demographic factors influence individuals' access to and utilisation of financial services, underscoring the need for targeted financial education and customised financial products. Financial inclusion in Ghana's informal sector is a complex issue that requires coordinated efforts from policymakers, financial institutions, and other stakeholders. By addressing the specific needs of diverse groups within the informal economy, Ghana can make significant strides towards achieving inclusive economic growth and reducing poverty.

### 5.2. Policy Suggestions

Based on the conclusions the study recommends that financial institutions should develop and offer financial products and services that cater for the specific needs of different demographic groups within the informal sector, focusing on gender inclusivity and addressing the unique challenges faced by women in particular. Additionally, Policymakers and financial institutions should collaborate to implement financial literacy education programs aimed at increasing financial literacy among informal sector workers. These programs should be designed to address the varying levels of education and financial knowledge, particularly focusing on younger persons and those with lower educational attainment. More importantly, leveraging technology to reach the underserved by adopting mobile banking and other Fintech solutions to extend financial services to rural and neglected areas. These technological innovations can help overcome geographical barriers and improve access to financial services for individuals in remote locations.

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