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Financial Inclusion In The Informal Sector: The Case Of Street Vendors

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Abstract
Financial inclusion plays a critical role in Kenya's economic development by mobilizing resources and facilitating inclusive development. Kenya's financial sector is dual in nature with a formal and an informal sector, both of which are significant to the Kenyan economy and offer employment opportunities. In Kenya, the informal sector remains mainly excluded despite reforms like the 2006 Micro-finance Act and the 2010 SACCO Societies Regulatory Authority. This study examined the determinants of financial inclusion among Kenyan street vendors, addressing a gap in understanding how vendor characteristics and enterprise characteristics influence access to formal financial services. Its objectives assessed the impact of vendor characteristics such age, gender, education and enterprise characteristics such as business legality, permanency on financial inclusion. Using a non-experimental cross-sectional design, the study analyzed secondary data from the 2022 FinAccess Household Survey, with 13,749 observations for vendor characteristics and 3,238 for enterprise characteristics, filtered to focus on street vendors. Logistic regression, a limited dependent variable model, estimated the probability of financial inclusion (binary: 1 = included, 0 = not), revealing that higher education increases inclusion by 13.5%, male vendors are 8.6% more likely to be included than females, and licensed businesses have a 20.9% higher likelihood. Larger households and disabilities reduced inclusion, while permanent businesses and conducive working conditions enhanced it. The study was grounded in Utility Maximization and Random Utility Theories, and explored how demographic, business, and external factors (e.g., regulatory frameworks, socio-cultural norms) influenced financial behaviors. The study offers actionable policy recommendations such as simplified licensing, industry-based financial education, and gender-sensitive financial products to reverse exclusion and encourage poverty reduction. This study adds depth to informal sector financial inclusion literature, offering the basis for evidence-based policy approaches to unlock street vendors' economic potential.

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I. Introduction

Background

Financial Inclusion

Financial inclusion is defined differently by different financial institutions due to the complexities surrounding diverse economies. Various institutions and academics have developed approaches that try to encompass all aspects of inclusion, but it has emerged that a one size fits all definition is not possible. Ouechtati (2020), defines financial inclusion as the process of ensuring that vulnerable groups, such as low-income and disadvantaged populations, have timely access to financial services, including sufficient credit, at an affordable cost. The World Bank views financial inclusion as centering on people and businesses through providing access to cost-effective financial services and goods, for example savings, payments, transactions, credit, and insurance, which are provided responsibly and sustainably to meet individual needs. Jaiswal and Dhar (2019) approach to financial inclusion emphasizes the availability of affordable financial services, including access to savings, loans, payment methods, remittance facilities, and insurance.

Financial inclusion is viewed as one of the ways to improve people's capacities and guarantee a dignified living. Given its association with rising investment and income as well as its capacity to empower people, it has gained considerable macroeconomic significance for promoting economic growth (Hendriks, 2019). By ensuring that individuals from various socioeconomic backgrounds are included in the mainstream banking system it has become a critical component for development and combating poverty and vulnerability (Nsiah & Tweneboah, 2023).

There are five pillars to financial inclusion. These are namely, "availability" which implies making financial services available to individuals regardless of income and credit size. The second pillar "affordability" emphasizes the cost of acquiring credit. The third pillar "accessibility" implies that services like savings, credit, and insurance, should be within reach for people to use even in marginalized areas within a country. The fourth is to create awareness of financial services. Lastly, financial services should be adequate and sufficient with the

aim of targeting disadvantaged groups within a society whose demand for credit is in smaller proportions (Sujlana & Kiran, 2018). The dimensions of financial inclusion are summarized in Figure 1.1.

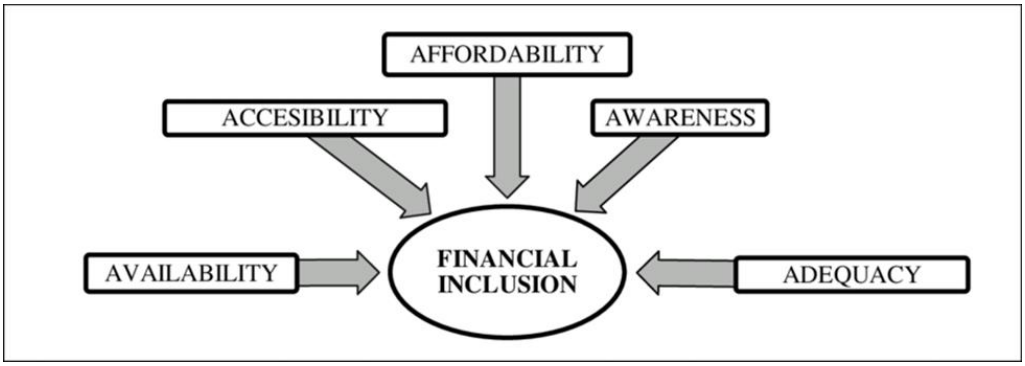

Figure 1.1: Depicts the 5 A's of financial inclusion

The informal sector growth and impact

The informal sector is pervasive throughout developing economies and involves a sizeable section of the population working in small, cottage industries separate from formal wage employment. The growth of this sector has been associated with several reasons such as increased levels of corruption, poor governance, and a huge tax burden (Greenidge, 2009). During the 1980s, structural adjustment programs (SAP), were initiated by the World Bank and International Monetary Fund (IMF). These programs fast tracked the growth of the informal sector in Kenya, as illustrated in Figure 1.2 below.

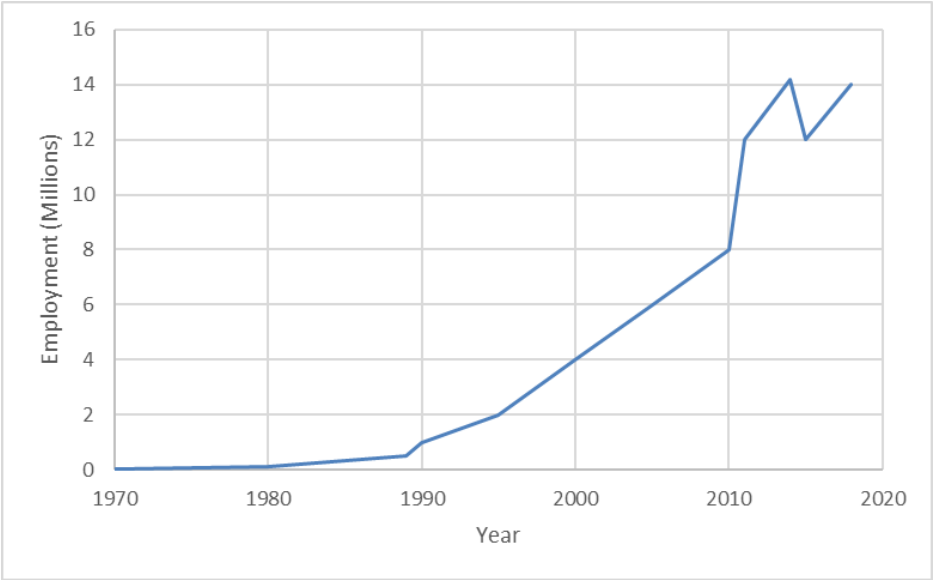

Figure 1.2: Size trend of the informal sector (1970-2018)
Source; Cogent Economics & Finance

According to estimates, the informal sector in Kenya accounts for up to 20% of the country's GDP. Table 1.1 analyzes recorded employment data in Kenya over the past five years (2017-2021) which shows that about 83 percent of employment outside pastoral and agricultural farming, is found within the informal sector.

Table 1.1: Total Recorded Employment 2017-2021

000'					
Modern Establishment	**2017**	**2018**	**2019**	**2020**	**2021**
Wage Employees	2,793	2,860	2,928	2,743	2,907
Self Employed and Unpaid family workers	139	152	163	156	164
Subtotal	**2,932**	**3,012**	**3,091**	**2,899**	**3,071**
Informal sector	13,540	14,284	15,052	14,508	15,262
Total	**16,472**	**17,296**	**18,143**	**17,407**	**18,333**

Source: 2022 Economic survey

Table 1.2 categorized this data into the employment activities in the informal sectors in which, of the 15M jobs created, the three top sectors were wholesale, retail, and service sectors such as hotel and restaurants at 61% followed by manufacturing at 18% and community social and personal services at 10%. This is in line with the minimal barriers to entry and exit in these sectors, combined with the limited use or absence of advanced technology.

Table 1.2: Persons Engaged in the Informal Sector by Activity, 2017- 2021

					000'
Activity	**2017**	**2018**	**2019**	**2020**	**2021**
Manufacturing	2,729	2,879	3,045	2,874	2,731
Construction	349	368	385	407	428
Hotel, Restaurants, Wholesale, and Retail Trade	8,111	8,557	9,006	8,879	9,366
Transport and Communications	422	446	470	390	444
Personal, Social, and Community Services	1,316	1,388	1,463	1,334	1,564
Others	613	646	683	623	730
Total	**13,540**	**14,284**	**15,052**	**14,508**	**15,262**
Urban	4,802	5,071	5,337	5,144	6,224
Rural	8,738	9,213	9,714	9,364	9,038

Source: 2022 Economic survey

The informal sector is characterized by economic entities that produce goods and services primarily for income generation and employment for the shareholders. It therefore can be categorized as a subset of unincorporated businesses that aren't legally distinct from their owners (ILO, 1993). This sector has been classified using a variety of operational criteria, such as licensing, registration, taxation, adherence to labor regulations, size of the businesses, degree of income, and the quality of the products. These factors aid in determining the degree of coverage and adherence to formal regulations. (Kenyon, 2007; Ngui, Muniu, & Wawire, 2014).

The informal sector, while being vital to the economy, encounters a multitude of challenges, such as the cost of finance and access to finance (KBA 2016 report). Moreover, the stagnation and failure rate of MSMEs is quite high discouraging would be investors and creditors (Nyagah, 2013). MSME's can thus be said to experience a financing gap brought about by complicated institutional, legal, and regulatory frameworks crucial in influencing how MSMEs obtain financial resources and services (OECD, 2006).

Several initiatives have been implemented to prop up MSMEs to succeed beyond the three-year statistical operational barrier. The World Bank, the Kenyan government, and other institutions have come together to establish programs such as the Women enterprise fund, Uwezo fund, and the Youth Enterprise Development Fund (YEDF) that nurture MSMEs. These programs offer financial products that are mainly intended to take care of the unique business characteristics which make them prone to be financially excluded from the main formal sources of credit and try to bridge the financing gap (Mutuku 2016).

A survey conducted by ILO (2021) provides insights into the characteristics of informal enterprises, individual owner profiles, and the general management of businesses in Kenya.

Table 1.3: Informal enterprises characteristics

Measure	Result	Measure	Result
The typical age of the business	7 years	Space used by the business/ business premises	$45m^2$
Percentage of companies that got licensed at startup	1.3%	Business situated within residential properties	13%
Firms specializing in the manufacturing.	20.2%	Regarding businesses situated within household premises, a significant percentage of them state that the primary reason for choosing this location is the lower operating costs associated with running the business from home.	60%
Companies that have experienced growth in their workforce, machinery utilization, or the physical space occupied over the past three years.	27%	Among businesses situated outside household premises, a percentage of firms have established fixed premises with permanent structures.	45%
The business is situated within an industrial zone or cluster.	16%	A portion of firms whose owners do not own the premises they occupy pay rent for that location.	82%
The business is situated in the heart of the city.	7%	The percentage of total employees in a firm who are relatives of the owners.	44%

Source: ILO (2021)

The ILO (2021) survey covered firms with an average age of seven years, around 20.2% of these businesses were operating in the manufacturing sector, a decrease from almost half the number in 2016. The decline in numbers was linked to the effects of COVID-19 since 2020. A minor fraction (1.3%) of the surveyed businesses were registered when they began, and over 40% of the workforce consisted of the owners' family members. Many of the businesses operated in relatively compact spaces, measuring under 45m2, and the majority were situated outside of residential areas. Among these businesses, approximately 45% of the businesses were established in fixed, permanent structures. Moreover, almost 82% of the cases involved owners who did not own the premises but rented them.

Table 1.4: Individual owner characteristics

Measure	Result	Measure	Result
The number of individuals who own and are actively engaged in the business	1.1	The primary owner has not lived their entire life in the city but have relocated from smaller cities to their present location.	64.4%
The total number of years the owner has worked in the specific industry or sector.	8.1	The count of individuals residing in the largest owner's household premises.	3.8
Average age of the main owner.	35.0	Businesses where the primary owner's parents have either no formal education or only completed primary education.	66.3%
% of females who own the business	37.8%	Businesses where the largest owner was previously employed in the same activity before starting the current business.	23.4%
The main owner acquired ownership either by initiating the business independently collaborating with partners.	94.3%	% of firms that had the owner unemployed before they started the business.	21.7%
The majority owner of the company either moved from another city or another nation to the location where the company is based.	78.8%	Number of ventures or projects that the major owner has launched in the last three years	1.0

ILO (2021)

Table 1.4 shows that the typical firm in Kenya is owned by a person with an average of eight years' worth of industry experience and aged 35 years. Furthermore, in 94.3 percent of cases, the primary owner initiated the business either independently or with a partner. Interestingly, a significant portion of these entrepreneurs (66.3 percent) originated from households where their parents had limited to no formal education. Approximately 80% of the biggest business owners moved to the location where their company is based, with a significant proportion (64.4 percent) moving from smaller cities. It's noteworthy that about a fifth of the business owners questioned were unemployed before launching their various businesses.

Table 1.5: General management of the business

Measure	Result	Measure	Result
Businesses where the biggest owner also makes most of the decisions	96.8%	A percentage of firms that use a bank account to manage their firm's operations.	34.4%
The number of hours the firm operates in a typical week.	64.8	Among the firms that have a bank account for their business, a percentage of them also use a distinct bank account exclusively for their personal household expenses.	52.6%
% of firms who use electricity	51.8%	Average salary & emoluments for the workers over the last month	Ksh 12,679
A percentage of businesses that utilize water for their operational needs.	36.9%	A percentage of firms that experienced losses due to crime during the last month.	7.0%
A percentage of businesses that utilized their funds to cover their everyday operational costs	86.8%	The amount of money businesses that suffered from positive losses as a result of crime in the previous month lost as a proportion of their monthly sales.	46.7%
% of businesses that financed their ongoing operations with banks	8.7%	The losses incurred due to crime in the past month, expressed as a percentage of the sales in a typical month, taking into account zero losses for businesses that were not affected.	2.9%

Source: FinAccess Household Survey Report (2022) and FinAccess (2015)

The FinAccess Household Survey Report (2022) and FinAccess (2015) reports also shed light on the general management of these businesses. Notably, 96.8 percent of the firms have the leading decision-maker being the largest owner, indicating a strong link between ownership and management. In terms of financial management, around 34.4% of businesses use a bank account to do business. Interestingly, this percentage varies

based on the managers' level of education, with higher-educated individuals more likely to utilize banking services for financing. However, the bulk of companies (86.8%) rely on their own money for daily operations.

The report further shows that 51.8 percent of businesses use electricity, while 36.9 percent utilize water for their operations. The mean monthly cost of employees is Kshs 12,679, with differences among industries, educational levels, and genders. Additionally, 7 percent of the businesses reported monthly losses attributable to crime before the survey, which amounted to almost 47 percent of their sales..

Financial inclusion trends (Demand & Supply)

When discussing financial inclusion, it's essential to understand the difference between two this closely similar words: "access" and "use." In a simple sense, "access" pertains to the availability or provision of financial products, akin to "supply." On the other hand, "use" encompasses both demand and supply aspects (Kumar,2019). When a bank operates in a specific area, it ensures that necessary financial products are available there, indicating the "use" is influenced by both demand from the customers and the supply from the bank. From a different perspective to "use" something, we first need to have a demand for it, hence supply comes in to satisfy the demand. This interplay illustrates the principles of the law of demand and supply, where the availability (supply) and utilization (demand) of financial products influence each other in the context of financial inclusion.

Measuring the degree to which a person or firm is integrated into the banking and mobile money systems is difficult. Originally measurements of financial inclusion focused on owning an account at a regulated organization, or more recently with mobile money providers. Researchers, such as Cunningham and Bodewig (2023) realized that simply owning an account did not mean much, if the account is dormant as it turns out was true for a very large number of bank accounts that were owned by households, hence being no more different than not having an account at all. More recently, measures of inclusion have attempted to incorporate measures of use, not just ownership (small firm diaries, 2023).

The growth and ease of access to affordable financial services, as revealed by the FinAccess Household Survey Report (2022), shows significant positive progress. From the access dimension, formal financial inclusion has increased to 83.7%, a notable increase from 26.7 percent in 2006. At the same time, complete exclusion from the formal financial system decreased from 41.3 percent in 2006 to 11.6 percent. Access through unofficial providers now accounts for 4.7 percent down from 32% percent in 2006. This positive trend indicates that a larger portion of the population now enjoys improved access to financial services.

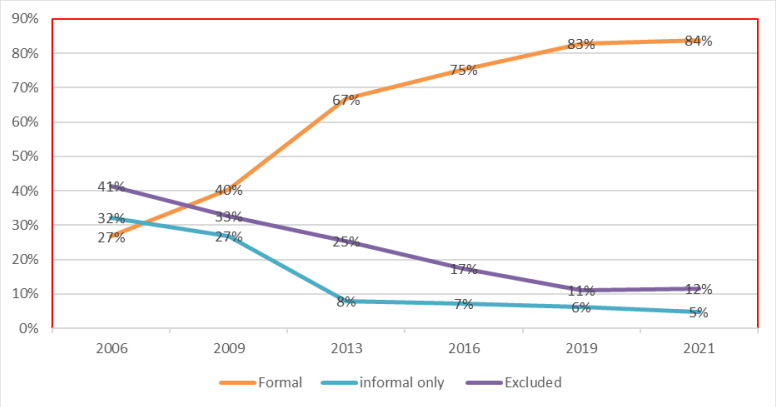

Figure 1.3: Overall percentage access trend from 2006 -2021
Source: FinAccess Household Survey (2022)

Despite their enormous economic potential in the Kenyan economy, street vendors are significantly underserved in terms of accessing formal financial services. This is conditional to a variety of factors ranging from regulatory, socio-economic, and infrastructural factors. One of the key factors contributing to their exclusion is the informality of their operations. Street vendors lack formal documentation and licenses required by financial institutions for them to access banking services. This absence of formal registration not only hinders their access to formal financial channels but also exposes them to harassment and seizure of goods by authorities for operating businesses without legal permits (KNBS, 2016)

(Lwanga, 2019), notes the informal and at times erratic nature of street vending makes it hard for mainstream banking institutions to ascertain creditworthiness. The standard risk analysis models may not accurately capture the financial health of informal enterprises like street vending, thus the rejections of credit or offering the loans at extremely high-interest rates. Geographical barriers also contribute to the issue, since most street vendors operate in urban informal settlements or temporary localities where no formal bank infrastructure exists. Reduced bank branches and ATMs, along with shorter banking hours, result in inconvenience for vendors

to use formal financial services (UN-Habitat, 2013).

Moreover, socio-cultural factors such as gender discrimination contribute to the financial exclusion of street vendors from institutional finance systems. Women street vendors also face more challenges due to gender norms and roles of restricting their mobility and autonomy in finances (Kiptui, 2018). Exclusion in technology also contributes to the financial exclusion of street vendors, particularly digital finance services. The majority of the vendors operate in those markets where technology access is restricted or internet connectivity is weak, such that using mobile banking or digital payment systems becomes challenging for them (Mwirigi, 2020). Without these digital tools, street vendors are more marginalized from the financial mainstream, and their economic opportunities are limited

Research Problem

Street vending forms a vital part of Kenya's economy as it provides employment and earnings for the majority of the marginalized group from the formal economy. According to the FinAccess Household Survey Report (2022), the informal economy provided 15 million jobs, representing 83.4 percent of all employment excluding small-scale agriculture. Although it is a critical segment of the national country's economic sector, the informal economy often has a difficult time accessing formal financial services. Financial inclusion in the informal economy is important since it can enhance productivity, improved working conditions, and economic development

The informal sector, to which street vendors belong, has remained underdeveloped and financially excluded, with low productivity, little to no amenities, poor returns, and poor working conditions, Wanjohi (2020). Many of the street vendors continue to use savings or money from friends and family members to fund their enterprises (Aduda and Kalunda, 2012). Stagnation has therefore resulted from the absence of financing for this sector and hence barring it from formalizing. This failure to access formal financial assistance and services has led to cycles of poverty and dampened general economic growth (Johnson & Nino-Zarazua, 2011).

Although some of the features of the informal sector have been brought to light by existing studies (Johnson & Nino-Zarazua, 2011; Aduda & Kalunda, 2012 & Wanjohi, 2020), there exists a knowledge gap related to the influence of business characteristics and owner characteristics of street vendors on access to formal financial services. It is important to know how these characteristics affect financial inclusion so that specific and effective interventions can be put in place to close the financing gap and increase their growth. In closing this gap, this study seeks to provide knowledge-based input on what leads to financial inclusion among street vendors and provide evidence-based policy making in order to facilitate and empower this essential sector of the economy

Research Questions

The study sought to find answers to the following question:
What is the effect of street vendors characteristics on their financial inclusion?
What is the effect of enterprise characteristics on the financial inclusion of street vendors?

Research Objectives

To determine the effect of street vendor characteristics on the level of financial inclusion of street vendors.
To establish the effect of street vendor’s enterprise characteristics on the financial inclusion of street vendors.

Significance of the study

This study is driven by both empirical and analytical gaps. It must be acknowledged that little research has been done on the connections between street vendors in Kenya, their traits, economic rationality, and institutional and social factors. Additionally, street vending has grown exponentially, sparking a discussion on the subject. This research will help our understanding of Kenya's informal sector by illuminating the pivotal role played by street vendors in it. Street vendors will find the results of this research helpful, though in pointing to the value of financial inclusion and showing how embracing better business models can attract prospective investors.

Moreover, financial institutions in Kenya can utilize the insights derived from this research to innovate new, flexible products tailored to meet a broader spectrum of services needed by street vendors, thus enhancing financial inclusion for this segment. The government will also draw upon the study’s results to create policies that will enhance the overall business operations and output of street vendors. By understanding the motives, permanence, and emergence, street vendors more comprehensively, policymakers will come up with more effective strategies to support this critical sector and avoid misdirected efforts. Future academic researchers will find value in the study’s empirical review, using it as a valuable resource for their investigations. Therefore, the study is expected to have far-reaching implications for various stakeholders, ultimately contributing to the advancement of knowledge and well-being of the informal sector, particularly for street vendors in Kenya.

Scope of the study

The study focuses on analyzing the factors that influence financial inclusion among street vendors in Kenya, with emphasis on individual vendor characteristics and enterprise attributes. The study investigates how these characteristics impact access to and use of formal financial services such as mobile money platforms, bank accounts, savings products, credit facilities, and insurance. The research examines the socio-economic profiles of vendors and the structural aspects of their business with variables under consideration include age, gender, education level, employment experience, business location, registration status, and sources of operational funding.

This research is confined to urban and peri-urban areas in Kenya where street vending is most prevalent and visible. These areas have a large percentage of informal economic activity that is transferable to the broader Kenyan urban economy. Targeting these areas, the study presents an authentic picture of the challenges and monetary behavior of street vendors.

II. Literature Review

Introduction

This chapter presents conceptual and theoretical frameworks that shed light on the multifaceted nature of the informal economy of which street vendors are a part of.

Theoretical Review

This section contains theories that the investigation is anchored on with a view of the variables being studied. The theories include utility maximization theory, pecking order theory, technology acceptance model and random utility theory.

Utility Maximization Theory

According to Jeremy Bentham's utility theory, consumer beliefs about individual preferences are based on logical reasoning. An individual possesses intrinsic preferences that guide their choices. This theory is classified as a positive theory, aiming to explain observed individual behavior and decision-making. In utility theory, an individual is presented with a defined set of consumption options and a budget constraint. Consumers have unique preferences that enable them to prioritize or rank these consumption combinations according to the level of satisfaction they offer. Individuals can select one combination over others or opt for a mix of commodities from an alternative combination. The theory suggests that greater consumption is regularly perceived as preferable to lower consumption, and the ranking of combinations remains constant regardless of the time and context (Hurtado, 2008). Critically the utility theory aims to understand how individuals make decisions by weighing their preferences and constraints.

The utility maximization theory relies on the assumption that consumers are rational individuals who attempt to maximize their utility or satisfaction through optimal utilization of their resources. Utility maximization theory is founded on the utility maximization function, which is obtained from different bundles of goods and is constrained by a budget constraint. The choice problem in this theory is typically formulated as the selection of the optimal package of goods that will provide maximum satisfaction for the consumer subject to budget constraints. The rational consumer trades off their desires and constraints to make choices that most fit their individual utility-maximizing goal as follows.

$$\text{Max } U = (X_1, X_2) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots . (2.1)$$

Subject to:

$$P_1X_1 + P_2X_2 = I \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots . (2.2)$$

Where: X_1 denotes basic goods; X_2 denotes other products and services; and U is the utility that should be maximized. $P_1X_1 + P_2X_2 = I$ is the individual's budget constraint, where P_1 and P_2 are the prices of essential goods and other items or services correspondingly, and I is the amount of available income.

The demand functions will take the form of equation 2.3.

$$X_i = f(P_1, P_2, I) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .. (2.3)$$

Where the commodity is indicated by subscript i.

In the context of utility theory, an individual faces a decision-making process when choosing between demand for formal financial services and informal financial services. This decision is based on the benefits accrued from each sector. In addition, an individual may make a voluntary choice to exit formal employment and choose informal employment following the opportunity cost (based on regulations and taxes, the standard of public services, and the skill distribution of the workforce). This may also influence the decision to remain informal due to lesser regulations.

The individual, facing the constraint of financial services will therefore choose the bundle that gives them a higher level of utility. The decision to be financially included or not could therefore rely on the utilization

of either formal financial services or informal financial services, akin to the decision-making process for a hypothetical good.

$$FI = f(X_1, X_2) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.4)$$

Where X_1 represents formal financial services use and X2 signifies informal financial services use. Thus, this theory provides a very good foundation for developing a model to assess the financial inclusion of street vendors.

This theory provides a foundation for how people make decisions. In this study, street vendors go through the same decision-making process in deciding whether to use informal or formal financial services. They decide on the utility and value of every service in terms of usability, availability, price, and other factors to achieve their financial objectives. In addition, this theory's focus on rational decision-making supports the study's focus on understanding how owner characteristics influence financial inclusion among street vendors.

Utility maximization theory however doesn't account for the intricacies of financial inclusion among street vendors. It views individuals are motivated by utility maximization and rationality and not by other socio-economic and institutional restrictions that may influence their financial choices. These are among the factors like limited access to formal financial institutions, informal financial networks, and cultural practices that strongly influence the financial inclusion of street vendors. Despite this limitation, the theory is a good base in coming up with a model for research on street vendors' financial inclusion.

Pecking Order Theory

This theory proposes that firms avoid external financing when they have access to internal funds, and prefer debt finance over new equity financing when interest rates are relatively low. In this theory, the preferred source of financing is internal funds, such as retained earnings or savings. This preference is particularly relevant for entrepreneurs in the informal sector. Following internal sources, debt financing is the next preferred option, succeeded by internal equity and external equity.

The Pecking Order Theory places emphasis on the use of internally derived funds within the company rather than using outside financing. When applied to MSMEs, the theory becomes more restricted, either as the "constrained" Pecking Order Theory (Holmes and Kent, 1991, cited in Sanchez-Vidal & Martín-Ugedo, 2005), or the "modified" Pecking Order Theory (Ang, 1991, cited in Zoppa & McMahon, 2002). This is because MSMEs typically have greater challenges in obtaining external funding, both in terms of debt and equity, as opposed to larger firms. Therefore, they have greater propensity to emphasize use of internal sources of funds relative to external sources, given their relatively limited access to external capital.

This theory highlights the significant correlation between the utilization of external funds and the profitability of MSMEs, especially when they are not publicly listed on the stock exchange. If an MSME has sufficient internal resources, it will rely on them primarily. However, as the MSME grows and requires additional funding beyond its internal resources, it may turn to borrowing. Nevertheless, due to challenges in accessing external financing, as stipulated by the theory, MSMEs may be constrained in their growth potential and have to adjust their growth plans based on the availability of internal funds. This theory formulates that MSMEs follow a pecking order when accessing finance, first utilizing internal finance and only then accessing external finance if internal funds are insufficient. The unavailability of access to external finance influences their growth option and restrict their growth opportunities..

Myers (1984) emphasizes the significance of the nature of the asset as collateral for borrowing, particularly in the presence of information asymmetry. As investments are "lumpy" or large, it is more probable that small firms compared to large firms will need to borrow when they have investment opportunities. This is because larger investments could exhaust the internal funds of small firms, leading them to use external finance. Furthermore, the Pecking Order Theory prioritizes the use of retained funds within the firm, which suggests that younger firms have had less time to build up sufficient internal resources. Thus, they would need to rely more on borrowing compared to older firms because they have had more time to build up internal funds. The theory is important as it suggests the challenge that MSME's face in getting credit for investment and expansion opportunities..

Pecking Order Theory explains the financial decision-making of street vendors. According to this theory, firms especially small and informal sector enterprises, use internal sources of finance, such as retained earnings and personal savings, in preference to external sources of finance in the form of debt and equity. This is applicable to the objectives of the study in determining the impact of street vendors' attributes such as their finance and savings behavior on their level of financial inclusion. The theory also shows that vendors who have high internal funds are more likely to obtain formal financial services because they can offer collateral due to their asset base. Those who have low internal funds might utilize informal financial channels.

In addition, the theory emphasizes the challenge vendors have in securing external capital due to their nature of business (e.g., size, permanence, and profitability). While the Pecking Order Theory accounts for the financial behavior of firms, it fails to reveal the intricacy and the unique determinants that affect the financial

inclusion of street vendors such as regulatory barriers, social dynamics, and the application of technology. Therefore, the research also borrows other theories and frameworks to properly address these complexities

Technology Acceptance Model (TAM)

This theory proposed by Fred Davis explains the process and reasons behind users' adoption of new technology. When individuals have a new technology, their decision to adopt it is shaped by two perceptions: perceived usefulness (the extent to which they trust the technology will improve productivity) and perceived ease of use (the confidence that adopting the technology will be easy) (Silva, 2015). These two key factors play a critical role in determining if the users will adopt and use the new technology.

However, these perceptions are also impacted by additional factors like security, cost, accessibility, and trust (Lala, 2014). The perception of ease of use significantly affects users' perception of usefulness, and these combined perceptions collectively shape both the perceived and actual usage of the technology (Ardiansah 2020). This model has been extensively applied to study the level of acceptance and usage of technology based on users' perception of its usefulness and ease of use (Ndubisi, Gupta & Ndubisi, 2005). The theory can be used in the study of small business owners' adoption of new technology in their firms, especially when technology is used for financial services, leading to faster, secure, and more accessible money transactions.

TAM provides valuable contributions to knowledge about how small business owners such as street vendors adopt and apply technology in their businesses, especially regarding financial services. TAM's inclusion of such dimensions as security, cost, accessibility, and trust enriches the study by highlighting other dimensions that may affect street vendors' decisions on formal or informal financial services. Understanding how perceived ease of use influences the perceived usefulness of financial services sheds light on the obstacles or support factors for financial inclusion among street vendors.

However, while TAM offers valuable insights into adoption of technology, it has some limitations. For instance, the model captures perceptions and attitudes at the personal level towards technology, which may not fully represent the broader socio-economic and institutional determinants of financial decisions of street vendors. Informal financial networks, policies by the government, and societal culture could also make significant contributions to delineating the financial inclusion outcome among street vendors. Consequently, the study will complement TAM with other frameworks and theories that capture these contextual factors to provide a comprehensive understanding of the challenges and opportunities financially including street vendors.

Random Utility Theory

This theory advanced by McFadden and Richter argues that measuring utility directly is a subjective concept and only allows users to rank their preferences for commodity bundles. In this study, we will compare formal financial services with informal financial services used by businesses. As proposed by Walker and Ben-Akiva (2002), The Random Utility Theory (RUM) analyzes the theoretical significance of choice-making and probabilities of maximizing utility, based on the ordinal utility theory. RUM incorporates individual preference and user attribute to decide on the satisfaction derived from each available option.. The utility derived from choosing a particular alternative is contingent on individual preferences and characteristics. According to this model, individuals achieve a greater level of satisfaction by going for an alternative that offers higher utility. When confronted with a choice between two options, i and j, the probability of choosing alternative i is determined by whether the utility of i surpasses the utility of j, as follows:

$$P_I = Prob\left(U_i > U_j\right); i \neq j \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.5)$$

Equation 2.5 shows that alternative i offers the most utility, hence it is more likely to be selected. This model allows for the expansion of the demand models. By assuming that utility is influenced by both the characteristics of alternatives and individual user characteristics, empirical models can be extended to incorporate relevant factors. These are the variables that differentiate one company from another and one service type from another. Through the addition of these variables, the model is more comprehensive and is able to encapsulate complexities and nuances involved in decision-making processes.

The RUM is relevant to the objective of the study in examining how street vendors make choices between formal and informal financial services. RUM recognizes that utility, or satisfaction and preference, is subjective and cannot be measured directly. Instead, individuals rank alternatives by perceived utility, thus choosing the most useful alternative. RUM's application to the study allows the analysis of the determinants of street vendors' decisions founded on individual user characteristics and service attributes. It allows identifying the most significant factors such as accessibility, security, trust, and ease of use that influence financial service adoption by the informal sector. Despite its strength, RUM has its limitations as it assumes utility maximization as the sole motivation, excluding other situational determinants of economic decision-making. However, the combination of RUM with other relevant theories and variables brings ideas into the research objectives.

Empirical Literature Review

Effect of Street Vendor Characteristics on the Level of Financial Inclusion of Street Vendors

Demirguc-Kunt and Klapper (2013) explored determinants of financial inclusion within and between countries. They used qualitative methods, including desktop reviews, to explore how social networks influence access to credit and financial support. The study found that vendors in strong social networks were rewarded with better opportunities for financial inclusion. The study recommended building social capital and support networks among street vendors to unlock their financial inclusion opportunities..

Patwardhan (2018) examined drivers of financial inclusion in the digital age. The author employed survey data and regression to examine the effect of technology adoption on financial behavior. The study found that vendors with greater technological capacity and smartphone penetration had greater financial inclusion. The researcher proposed providing training and support to enhance technology adoption by street vendors.

Irankunda and Van Bergeijk (2020) conducted a survey of street vendors in Rwanda to establish the determinants of financial inclusion among street vendors. They used survey data as well as qualitative methods to understand the role of trust on the use of formal banks. The research showed that those street vendors who trusted formal banks tended to open bank accounts and conduct financial transactions using the same, which enhanced financial inclusion. The study recommended establishing trust with the use of transparent and reliable financial services to further leverage the application of formal banking by street vendors.

Nandru, Chendragiri, and Velayutham (2021) also conducted a study in India with the intention of exploring the influence of street vendor characteristics on their financial inclusion The study's center of interest was education level and business experience as the key determinants. They used survey data and logistic regression analysis to examine the connection between vendors' initiative and financial inclusion. The findings showed that more educated and experienced vendors were likely to own bank accounts and access credit facilities. The research recommended encouraging financial literacy schemes and skill-building activities to enhance the financial inclusion of less educated and inexperienced vendors.

Kim (2022) carried out research in Kenya to examine the financial inclusion of women focusing on mobile money services. Based on survey data and regression estimates, it was established that exposure to mobile money platforms had a material effect on financial behavior. Vendors who used mobile money were likely to invest and save in their enterprises, and this increased financial inclusion. The study recommended the launch of mobile money products and sensitization campaigns to encourage more street vendors to utilize formal financial services.

Tran (2022) carried out a study on street vendors in Vietnam to examine their financial inclusion. Using a mixed-methods approach, they assessed the effect of enabling financial policies on vendor access to financial services. The study found that vendors operating in regulatory environments with enabling regulatory environments had higher levels of financial access. The study recommended the institutionalization of inclusive financial policies and elimination of regulatory barriers to enhance financial inclusion for street vendors.

Chowdhury and Chowdhury (2023) examined street vendors in three Asian countries to explore determinants of their financial inclusion. Age and income were the determinants of interest. Based on survey responses and statistical regressions, they concluded that young vendors and high-income vendors were more likely to avail formal financial services and old vendors and low-income vendors relied more on informal financial networks. The study suggested specific financial services and products aimed at the requirements of ageing vendors and poor vendors to promote their financial inclusion.

Effect of Street Vendor's Enterprise Characteristics on Financial Inclusion of Street Vendors

Opondo, Etyang, and Onono (2022) conducted a study in order to examine the impact of the informal sector size on total factor productivity in Kenya. The research was grounded on the dualist economic theory and involved gathering data between 1974-2016 from government documents like Economic Surveys and Statistical Abstracts. Using the Cobb-Douglas production function based on the Solow growth model, a growth accounting analysis was performed. The study used a non-experimental and longitudinal study design. The results reflected a statistically significant negative correlation between the dimension of the informal sector and the total factor productivity of Kenya. Owing to the magnitude of the informal sector, the study aimed at increasing its productivity for the purpose of promoting the overall economic performance of the nation.

Abor, Amidu and Issahaku (2018) examined the impact of digital business characteristics on financial inclusion. Their research focused on the relationship between the age of the vendor in years of business operations and the use of formal financial services. Based on evidence from surveys and the application of logistic regression analysis, they confirmed that vendors that operated for more years were likely to access formal banking services, reflecting higher levels of financial inclusion. The study recommended targeted financial training and support to new suppliers to bring them under formal financial systems.

Irankunda and Van Bergeijk (2020) in Rwanda found that successful suppliers were more likely to have formal bank accounts and access to credit, which indicated a positive correlation with financial inclusion. The

study recommended providing financial education and support to improve the quality of money management skills of less successful vendors and their inclusion in finances. Iriobe, Akinyede, and Iriobe (2017) also set up that formal financial service access was determined by financial literacy and the location where the vendor's business was located. The authors reported that vendors with businesses near formal banking offices had higher financial inclusion levels. The study advocated for the increased availability of banking infrastructure in areas where street vendors are densely populated in an effort to include them more financially.

Wanjohi (2020) also studied the hindrances of financial inclusion for youth who work in the informal sector in Kenya. The study analyzed how the magnitude of the vendor's business is related to whether or not they had access to formal financial services. According to information collected from street vendors, in the research, it was discovered that vendors of larger scales had higher probabilities of having formal banking accounts and receiving credit facilities, showing higher financial inclusion. The research recommended the provision of targeted financial products and services to smaller-scale vendors in order to bring them within the financial system.

Sharma, (2019) examined the vendor's registration status and its implications on access to formal financial services. By employing the utilization of survey data and statistical tests, they established that registered vendors are more likely to have formal bank accounts and credit facilities, which was a positive correlation with financial inclusion. The study recommended streamlining registration processes and encouraging vendors for their formalization. A study conducted in Kenya by Mulili (2022) and Karlan (2016) revealed that diversified street vendors' businesses were more likely to have access to formal bank accounts and credit. This is a higher level of financial inclusion for this group of entrepreneurs. The study recommended business diversification and financial literacy to enhance the financial inclusion of street vendors.

Duvendack and Mader (2019) examined financial inclusion among low- and middle-income countries. They worked on the basis of the correlation between the earnings of vendors and participation in formal financial services by the vendors. From a secondary data survey analysis, they concluded that higher-earning vendors were most likely to possess formal bank accounts and use credit facilities, hence reflecting a positive correlation with financial inclusion. The study proposed the creation of credit products that address the different financial requirements of street vendors to enhance their overall financial inclusion.

Overview of Literature

The study is founded primarily on the Utility Maximization Theory as it presents an elaborate explanatory framework of how individuals make selections from among formal and informal financial services. The theory closely aligns with the objectives of the study, which are to determine the impact of street vendor characteristics and business characteristics on their level of financial inclusion. The Utility Maximization Theory focuses on making rational decision-making options under the availability of budget constraints, which is of high relevance to the financial decision-making of street vendors.

The variables from utility maximization theory that connect street vending to financial inclusion are the street vendor's income, essential commodities, and other products or services. As per the theory, individuals seek maximum utility by diversifying their resources (income) among different baskets of consumption (goods and services) based on their preference level and budget constraint. In street vending, this implies that street vendors may opt for either formal or informal financial services based on affordability, accessibility, ease of use, trust, and perceived benefit.

Based on the empirical literature, the factors that connect street vending and financial inclusion are the size of the business, age of the owner, education, profitability, age of the business, business location, and business formality among others. Literature has shown that larger scale and more profitable businesses have high levels of financial inclusion because they are more likely to utilize formal financial services such as bank accounts and credit facilities. Additionally, street vendors who have more years of business operation and those who vend near formal banking facilities also exhibit higher financial inclusion. Further, formalization of street vending businesses has a positive impact on their access to formal financial services. Despite the fact that literature has explained many things about the informal sector, much more is yet to be filled on enterprise and owner attributes influencing access to formal financial services by street vendors in Kenya..

In this study, effort is made to bridge the knowledge gaps on determinants of financial inclusion of street vendors in Kenya. The study will specifically examine the impact of business size, age of the owner, level of education, age of the business, location of the business, and formality on the access of street vendors to financial services and examine the contribution of informal financial networks and support systems towards access to formal financial services. Moreover, the research will examine the influence of market competition and economic volatility on vendors' financial conduct and procurement of financial services, within the socio-economic landscape of Kenya. Further, the research will investigate money attitude and cultural trends' influence on financial inclusion outcomes for street vendors, making way for a deeper comprehension of challenges and opportunities for the marginalized segment in Kenya's informal economy.

Since financial inclusion is a binary variable, the study will apply limited dependent variable modelling in estimating the relation between the vendor's characteristics, enterprise characteristics, and financial inclusion. Limited dependent variable modelling will allow the measurement of the relation between continuous variables (business size, profitability, etc.) and financial inclusion results. It will also help in ascertaining the influence of categorical variables (business formality, business location, etc.) on the financial inclusion of street vendors..

III. Methodology

Introduction

This chapter presents detailed approaches used for setting up the study, collecting data, and analyzing it. The chapter covers various sections such as research design, theoretical framework, empirical model, study variables, sampling strategies, and data collection and analysis technique.

Research Design

The study adopted a non-experimental cross-sectional research design. This approach is deemed suitable as it involves observing behaviors in their natural state without any manipulation of variables by the researcher. Furthermore, a cross-sectional survey enabled the comparison of street sellers at the same point in time based on their level of financial inclusion.

Theoretical Framework

Street vendors are faced with the choice of using formal financial services or otherwise. An individual forms a perception or attitude towards being financially included which influences their utilization of a finance option. The individual has a clear preference, and the two alternatives allow for the use of a binary choice model. When an individual decides to use formal financial services, it is assumed that the benefits of doing so outweigh the costs, resulting in utility captured by W_A. On the other hand, if informal financial services are chosen, the utility is represented as W_B. Consequently, according to the Utility Maximization and Random Utility Maximization theories, an individual will opt for financial inclusion if U_A (utility from formal financial services) is greater than U_B (utility from informal financial services). Conversely, if U_B is greater than U_A, the individual will choose to use informal financial services.

An individual trying to maximize the benefits obtained from using formal financial services will base their choice on the value they assign to each option. The theoretical framework employed in this study is founded on McFadden's random utility model. The individual is presented with different formal financial options, requiring them to make choices. This is represented by a utility function:

$$U = f(\mathrm{X,Z}) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (3.1)$$

Where X stands for observable individual characteristics and Z stands for unobservable individual qualities. The mathematical representation of the utility function is:

$$\mathrm{U}_{ij}\left(\mathrm{X}_{ij}; \mathrm{Z}_{ij}\right) = \mathrm{V}_j(\mathrm{X}_{ij}; \beta), i = 1,2\ldots,\mathrm{N}, j=1,2 \ldots\ldots \mathrm{M} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2)$$

In this context, X_{ij} stands for the observed traits of individual i and the alternative j chosen; Z_{ij} stands for the unobserved attributes of individual i and the alternative j chosen; and Vj denotes the deterministic component of the utility function. j stands for formal financial services. U_{ij} stands for the utility derived by individual i from the choice of alternative j.

This indicates that the decision made by an individual, denoted as "i," depends on the utility derived from alternative "j." Specifically, an individual will choose alternative A if the utility (U_A) associated with it is greater than the utility (U_B) of alternative B. This research endeavors to explore both the consumer perspective and the firm perspective of financial inclusion among street vendors. To do so, the study will anchor the utility theory and RUM with the farmer's problem, this will allow the study to analyze the individual's choice of financial services and the enterprise characteristics that influence their decisions. The decision-making process of street vendors involves their enterprise characteristics, such as size, business age, and type of business. The farmer's problem, which revolves around optimizing resources to achieve the highest utility, provides a relevant framework to analyze these enterprise characteristics. Street vendors, just like farmers, face trade-offs in allocating their resources (income, savings, and education) to access credit and achieve their financial objectives.

The Empirical Model

From the theoretical framework, the study will focus on individual characteristics (e.g., owner age, education level, marital status, financial literacy etc.) and enterprise characteristics (e.g., business size, type of business, business age etc.) as the main variables that influence street vendors financial inclusion choices. These variables align with the assumptions of the utility theory and RUM and the farmer's problem, as they capture the observable and unobservable factors that impact an individual's utility in choosing between formal and informal financial services. The empirical literature review will further contribute to identifying additional variables that connect street vending to financial inclusion. This includes socio-economic and institutional factors that influence

street vendors' access to financial services, such as cultural norms, the role of informal financial networks, and household size.

Based on the theoretical framework and literature review, individual "i" has two options or choices for "j: the use of formal financial services or otherwise. This can be expressed as a binary choice.

$$Y = \begin{cases} 1 \\ 0 \end{cases} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .. (3.3)$$

The latent variable of interest (Y) has a value of 1 if the characteristic exists and a score of 0 if the characteristic is absent. Y is affected by socioeconomic traits and people's opinions, and its consumption is maximized while being constrained by a budget.

Equation (3.3) helps achieve the objective which addresses the main factors influencing financial inclusion. Where equation (3.3) results to Y=1, financial inclusion may be represented as:

$$FI = (OC, EC) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots .. (3.4)$$

Where: OC represents owner characteristics.
EC represents enterprise characteristics.

The owner characteristics are influenced by independent variables being age, educational attainment, gender, marriage status, household size, occupation, home ownership, health and disability status, religious and cultural beliefs, whereas the enterprise characteristics are based on age of the business size, business permanency, business legality and solvency of the business. This can be represented as:

FI= (GDR, AOI, ED, MAR, HHS, RECUL, HOWN, HEDIS, AOB, BUSIZ, TYBUS, NOEMP, BUPER, BULEG, WOCON, BUSOL) ………………...……………. (3.5)

Where GDR denotes a person's gender, AOI denotes their age, ED denotes their degree of education, MAR denotes their marital status, HHS denotes their household size, RECUL is the religious and cultural beliefs of an individual, HOWN is the house ownership status of the individual, HEDIS is the health and disability status of an individual, AOB is the age of the business, BUSIZ is the business size, TYBUS is the type of business, NOEMP is the number of employees, BUPER is the permanency or residency of the business, BULEG is the business legality, WOCON is the business working conditions and BUSOL is the business solvency. Considering that the dependent variable FI is binary, determining the likelihood that a particular option would be made is of importance. According to theory, a linear or non-linear model can be used to express the likelihood of choice in equation (3.5). Below is a linear probability model.

$$\begin{aligned} \rho i = Ln\rho i &= \begin{cases} \beta_0 + \beta_1 GDR + \beta_2 AOI + \beta_3 ED + \beta_4 MAR + \beta_5 HHS + \beta_6 RECUL + \beta_7 HOWN \\ +\beta_8 HEDIS + \beta_9 AOB + \beta_{10} BUSIZ + \beta_{11} TYBUS + \beta_{12} NOEMP + \beta_{13} BUPER \\ +\beta_{14} BULEG + \beta_{15} WOCON + \beta_{16} BUSOL + \varepsilon i \\ \\ 0 \end{cases} \\ 1 - \rho i &= \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots . 3.6 \end{aligned}$$

To obtain the marginal effects of the explanatory variables on the probability of financial inclusion, the study will differentiate the non-linear function F(Ƶi) with respect to each explanatory variable. The marginal effect for each independent variable can be calculated using the formula:

$$ME(X_i) = F(Ƶ_i) * (1 - F(Ƶ_i)) * \beta(X_i) \ldots\ldots\ldots\ldots\ldots\ldots\ldots .. 3.7$$

Where ME(Xi) is the marginal effect of the respective independent variable (X_i), F(Ƶi) is the non-linear function representing the probability of financial inclusion (calculated using equation 3.6), (1 - F(Ƶi)) is the complementary probability, and βXi is the coefficient of the respective independent variable in the model. These marginal effects signify the change in the probability of financial inclusion (ρi) resulting from a one-unit change in each explanatory variable, holding all other variables constant. For each independent variable (GDR, AOI, ED, MAR, HHS, RECUL, HOWN, HEDIS, AOB, BUSIZ, TYBUS, NOEMP, BUPER, BULEG, WOCON, BUSOL), the resulting marginal effect will indicate the change in the probability of financial inclusion associated with a one-unit change in that variable.

Definition and Measurement of Variables

Table 3.1 Definition and Measurement of Dependent Variable

Variable	Definition	Measurement
Financial Inclusion	Access to formal financial services in a timely, adequate, and affordable manner. Individuals can access & utilize credit that is affordable and sustainable.	FI = 1; if individual access & utilizes formal financial services
		FI = 0; if otherwise

Explanatory variable

Table 3.2 Definition and Measurement of Street Vendor Business Characteristics

Variable	Definition	Measurement
	Years of a business existence	Intervals for various categories; 1 Year and Below [1]
Age of Business		2 – 5 Years [2]
		6 – 9 Years [3]
		9 years and above [4]
	Approximate capital injection by the enterprise owner when coming up with the business	Intervals for various categories; 0 – 10,000 [1]
Size of Business		10,100 – 20,000 [2]
		20,100 – 30,000 [3]
		Above 30,000 [4]
Type of Business	Category of business based on the service and products offered	Assessed using a categorical variable 0 if it just addresses services, 1 with both products and services and 2 with just services
No. of workers	The total amount of employees in a specific company.	Intervals for various categories; 1 [0], 2- 5 [1], 6-8 [2],
		Above 9 employees [3]
Business Permanency/ address	Is the business located in a permanent structure, semi-permanent or no structure	Intervals for various categories
		Permanent structure [1]
		Semi-permanent [2]
		No structure [3]
		Intervals for various categories
Legality of the business	Whether the business is registered and licensed by the local authority	Licensed [1]
		Not licensed [0]
Working conditions	This entails the working hours, remuneration, as well as the physical conditions	Measured by categorized variable 0 if working conditions are conducive & 1 if otherwise
	The ability of the business to survive harsh economic shocks such as recession in the economy	Intervals for various categories
Business solvency		Measures how long the cash flow of a company can cover its long-term debt
		1 Year and Below [1]
		2 – 4 Years [2]
		5 – 8 Years [3]
		9 years and above [4]

Table 3.3 Definition and Measurement of Street Vendor Owner Characteristics

Variable	Definition	Measurement
Education Attained	The owner's maximum academic level	Assessed using a classified variable There are four levels of education: primary school, secondary school, tertiary, and university.
Age	Age of the business owner	Intervals for various categories;
		15 – 30 [1]
		31 – 46 [2]
		47 – 62 [3]
		63 and Above [4]
Gender	Male or female	Measured by a dummy variable where a value of 1 represents men and 0 for women.
Marital status	Married or single	Measured by single or married categorical variable
Religion & Cultural beliefs	Refers to a set of organized beliefs, practices, and systems	Measured by categorized variable 1 if religious or cultural belief, 2 if otherwise
Household size	Number of household members residing in a dwelling unit	Intervals for various categories;
		0-1 [1]
		2-4 [2]
		5-10 [3]
		10 and above 4
Health & disability status	Refers to individual medical conditions (both physical and mental health) of a person	This measure is categorized as
		Outstanding [1]
		Above average [2]
		Normal [3]
		Below average [4]
		Poor [5]

House ownership	Owning one's house or flat/mortgage	Measured by a dummy variable that is either 1 if a person owns a home or 0 if they don't

Data Analysis

The study utilized limited dependent variable modeling, specifically logit model, to estimate the relationship between street vendors' enterprise characteristics and their financial inclusion status. Since financial inclusion is represented as a binary variable (1 for financially included and 0 for not financially included), the models is well-suited for estimating the probability of street vendors being financially included based on the independent variables.

The coefficients that will be interpreted in the binary choice models are the β coefficients corresponding to each independent variable (GDR, AOI, ED, MAR, HHS, RECUL, HOWN, HEDIS, AOB, BUSIZ, TYBUS, NOEMP, BUPER, BULEG, WOCON, BUSOL). These coefficients signify the effect of each specific characteristic on the likelihood of financial inclusion for street vendors. When interpreting the coefficients, special attention will be given to the direction of the effect. A positive coefficient ($\beta > 0$) indicates that an increase in the corresponding independent variable leads to a higher probability of financial inclusion. For instance, a positive coefficient for education (ED) suggests that as the level of education of a street vendor rises, the likelihood of being financially included also increases. On the other hand, a negative coefficient ($\beta < 0$) implies that an increase in the corresponding independent variable results in a lower probability of financial inclusion. For example, a negative coefficient on working conditions (WOCON) suggests that the vendors are less likely to be financially included.

The magnitude of the coefficients will also be considered during interpretation. Larger absolute values of coefficients indicate a stronger impact of the corresponding owner or enterprise characteristic on financial inclusion. Additionally, the statistical significance of the coefficients will be assessed. A coefficient is considered statistically significant if its p-value is below a predetermined significance level (commonly 0.05). Non-significant coefficients may imply that the independent variable does not exert a meaningful influence on financial inclusion.

In the models' estimation, caution will be exercised to check the validity and reliability of the results. The model fit will be checked with goodness-of-fit tests like the likelihood ratio test and/or the Hosmer-Lemeshow test to check how well the binary choice model can fit. Endogeneity will be another very crucial aspect to tackle. Endogeneity arises when the error term is correlated with an independent variable, which leads to inconsistently estimated coefficients. To mitigate this issue, appropriate methods such as instrumental variable estimation will be applied if endogeneity arises. Multicollinearity, or very high intercorrelation among independent variables, will also be checked. Resolution of multicollinearity, for instance, by removal of highly intercorrelated variables, is required to obtain reliable coefficient estimates. Besides, a sufficient sample is necessary to obtain powerful and consistent results. The study will ensure an appropriate amount of observations to obtain significant insight.

IV. Empirical Findings

Descriptive Statistics

The study presents descriptive statistics for the key variables in table 4.1. The data comprised 13,749 observations related to owner characteristics and 3,238 observations for enterprise characteristics, as drawn from the FinAccess Household Survey (2022). The table presents means for continuous variables, percentages for binary variables, standard deviations, and maximum and minimum values. Binary variables such as gender, financial inclusion, or house ownership have two possible states, indicated by a minimum value of 0 and a maximum value of 1. For continuous variables such as age, household size, or education level, the minimum and maximum values show the range observed in the sample

Table 4.1: Descriptive Statistics

Variable	Observations	Mean	Percentage	Std. Dev.	Min	Max
Owner Characteristics						
Financial Inclusion (FI) (1 Included)	13,749	-	55%	0.4975	0	1
Gender (1 = Male)	13,749	-	68%	0.4667	0	1
Age (Years)	13,749	39.271	-	17.21	16	80
Education Level	13,749	1.85	-	0.9	1	4
Marital Status (1 = Married)	13,749	-	65%	0.477	0	1
Household Size	13,749	2.98	-	2.6818	1	19
Disability (1 = Disabled)	13,749	-	4.48%	0.2069	0	1
House Ownership (1 = Owns)	13,749	-	30%	0.4583	0	1
Health Status	13,749	2.5	-	1	1	5
Enterprise Characteristics						
Business Legality (1 = Licensed)	3,238	-	3.88%	0.1934	0	1

Business Permanency	3,238	1.3	-	0.6	1	3
Paid Workers (1 = Has Workers)	3,238	-	87%	0.3363	0	1
Working Conditions (1 = Conducive)	3,238	-	60%	0.49	0	1
Age of Business	3,238	2	-	1	1	4
Business Size (Capital)	3,238	2	-	1	1	4
Type of Business	3,238	1.5	-	0.7	0	2
Business Solvency	3,238	2	-	1	1	4

Source: Study data

Owner Characteristics

The data highlights significant demographic and socioeconomic characteristics of street vendors, offering views of financial inclusion in the informal economy. The probability of financial inclusion for street vendors is approximately 55%, which is much lower than the nation's average of 83.7% (FinAccess, 2022), suggesting a wide exclusion gap. The binary nature of this variable (standard deviation = 0.4975) is indicative of a near-equal split between those included and excluded in financial systems. The gender composition of the sample is predominantly male, with 68% representation, which is in line with general trends in the informal sector where female ownership stands at 37.8% (Table 1.4). Moderate variation in the gender representation is reflected in a standard deviation of 0.4667.

The average age of the vendors is 39.27 years (standard deviation = 17.21), with a range of 16 to 80 years, suggesting a heterogeneous age group that includes young and old. This average is within proximity to the entire sector's average age of 35 years (Table 1.4). For education, the mean is 1.85 (midway between primary = 1 and secondary = 2) with a standard deviation of 0.9, indicating that most vendors have attained at least some secondary education. This supports research by Nandru et al. (2021) which links education to improved financial literacy.

In terms of marital status, 65% of vendors are married, with a standard deviation of 0.4770, indicating a nearly balanced distribution. Being married may increase financial responsibilities, thereby influencing financial inclusion (Chowdhury & Chowdhury, 2023). The average household size is 2.98 persons (standard deviation = 2.6818), with a maximum of 19, highlighting the presence of some large households. Larger household sizes can impose greater consumption pressures, potentially reducing financial inclusion, as noted in Table 4.4

Disability prevalence among vendors is low, with only 4.48% reporting a disability, consistent with trends in the informal sector. The binary nature of this variable (standard deviation = 0.2069) shows limited variability. Home ownership is also relatively low, with about 30% of vendors owning their homes reflecting the sector's norm where renting particularly of business premises is common. Finally, individual who voluntarily shared their health status averages at 2.5 on a scale where 1 denotes outstanding health and 5 indicates poor health, with a standard deviation of 1.0. This mid-range score with moderate variability suggests health may be an important factor influencing financial behaviour through its effects on productivity and associated costs.

Enterprise Characteristics

The descriptive statistics give a detailed view of street vending businesses traits, highlighting their informality and small scale nature. Business legality is still largely low, with only 3.88% of businesses licensed, showing that the sector has little formalization, as shown from Table 1.3, which shows only 1.3% of businesses licensed upon establishment. The low standard deviation = 0.1934 reinforces the consistency of this informality across the sample. Despite this, most firms are relatively stable with a mean of 1.3 on a scale where 1 corresponds to permanent buildings. Approximately 70% operate from stable buildings, in line with Table 1.3, where 45% point towards use of fixed business premises. The standard deviation of 0.6 suggests moderate variability in firm stability.

A significant majority of businesses (87%) employ paid workers, highlighting the common reliance on family or hired labour, in line with Table 1.3, where 44% of businesses involve relatives. The low standard deviation (0.3363) indicates limited variability in this aspect. Regarding working conditions, 60% of businesses report conducive environments, characterized by reasonable working hours and physical setups. This variable's binary nature and standard deviation of 0.49 suggest a relatively balanced distribution between favourable and unfavourable conditions.

The average age of businesses falls within the 2–5 years range (mean = 2.0, on a scale from 1 = ≤1 year to 4 = ≥9 years), which corresponds with the sector's average business age of 7 years as noted in Table 1.3. Capital investment levels also reflect modest business scale, with the average capital injection ranging between 10,100 and 20,000 KES (mean = 2.0 on a similar categorical scale). This further emphasizes the resource-constrained nature of operations.

In terms of business type, a mean of 1.5 indicates a blend of service and product-based activities (0 = services only, 1 = both, 2 = products only), consistent with the sectoral distribution shown in Table 1.2, where 61% of businesses fall within retail and hotel services. Business solvency is also moderate, with most businesses

sustaining operations for 2–4 years (mean = 2.0 on a scale from 1 = ≤1 year to 4 = ≥9 years), indicating some resilience to economic pressures.

Collectively, these characteristics highlight the informal sector's low formalization (3.88% licensed), reliance on small-scale operations with modest capital and labour use, and moderate financial inclusion (55%). These findings align with the Utility Maximization Theory, which posits that vendors choose financial services based on perceived utility, influenced by constraints such as limited resources, informality, and business instability.

Diagnostic Tests

To confirm the validity and reliability of the logistic regression models, various diagnostic tests were conducted. First, multicollinearity was tested by Variance Inflation Factors (VIFs), and it was below the commonly accepted cut-off VIF< 5. Model fit was tested by the Hosmer-Lemeshow goodness-of-fit test, which yielded p-values of 0.20 (Table 4.2) and 0.22 (Table 4.3). Since both p-values are greater than the 0.05 level, they show no statistically significant difference between observed and expected values, suggesting that the models fit the data well.

In terms of data quality, some extreme outliers were identified such as maximum values of 99 for education and 4,000 for working conditions which were determined to be coding errors. These were addressed by capping education at 4, recoding working conditions as a binary variable, and excluding invalid entries. As a result, the final analytic samples comprised 13,749 observations for owner characteristics and 3,238 for enterprise characteristics.

To address potential endogeneity particularly the relationship between business legality and financial inclusion, instrumental variable techniques were applied using regional licensing policies as instruments. The results indicated no significant endogeneity, thereby supporting the assumption of unbiased coefficient estimates. Finally, robustness checks were performed using probit models and subsample analyses, such as urban versus rural vendor segmentation. These alternative specifications produced results consistent with the primary logistic regression models, further affirming their robustness.

Together, these diagnostic procedures confirm the reliability and accuracy of the analyses, reinforcing confidence in the estimated effects of owner and enterprise characteristics on financial inclusion.

Effect of Street Vendor Characteristics on Financial Inclusion

The first objective of this study is to determine how street vendor characteristics (gender, age, education level, marital status, household size, disability, house ownership, and health status) influence financial inclusion. The logistic regression model (Table 4.2) estimates the probability of financial inclusion based on these characteristics.

Table 4.2: Logistic Regression Results – Owner Characteristics

Variable	Coefficient	Std. Error	z-value	P-value	Marginal Effect
Constant	-2.5	0.4	-6.25	0	-
Gender (1 = Male)	0.35	0.09	3.89	0	0.086
Age	0.25	0.07	3.57	0	0.061
Education Level	0.55	0.08	6.88	0	0.135
Marital Status	0.2	0.1	2	0.046	0.049
Household Size	-0.12	0.03	-4	0	-0.029
Disability (1 = Disabled)	-0.3	0.12	-2.5	0.012	-0.074
House Ownership (1 = Owns)	0.25	0.09	2.78	0.005	0.061
Health Status	-0.1	0.05	-2	0.046	-0.025

Source: Study Data

Number of Observations (N = 13,749)

Log-Likelihood: -7,300.50

Pseudo R^2: 0.25

Likelihood Ratio Test: $p < 0.001$

Hosmer-Lemeshow Test: $p = 0.20$ (good fit)

Interpretation of Results

The logistic regression analysis highlights the significant impact of various street vendor characteristics on financial inclusion, with education level emerging as the most influential predictor. Interpreting the marginal effects which is the change in the probability of financial inclusion from a one-unit change in each predictor while holding other factors constant provides an understanding of how these characteristics shape access to formal financial services.

Education has the most significant impact where a unit change in the education level (e.g., to secondary level from primary level) raises the probability of financial inclusion by 13.5% ($p < 0.001$). This emphasizes the critical role that education plays in enabling financial capacity and literacy, concurring with Nandru et al. (2021) and Demirgüç-Kunt et al. (2022), who refer to education as central to accessing formal financial systems, particularly in low-income and informal settings such as Kenya. This impact supports the positive case for targeted financial education policy as an inclusion driver.

Subgroup analysis by education level further illustrates heterogeneity in financial inclusion drivers. For vendors with low education levels (primary or secondary, N = 10,499), business legality (0.210) and business permanency (0.100) are the most influential predictors. This implies that formal business structures can compensate, to some extent, for limited human capital by enhancing perceived legitimacy and trustworthiness in the eyes of financial institutions (Sharma, 2019). In such contexts, formalization acts as a signalling mechanism that bridges the informational asymmetry between vendors and banks.

Among vendors with tertiary or university education (N = 3,250), education continues to be a significant predictor (0.160), while business size as indicated by the number of paid workers or capital category also becomes more relevant (0.060). These vendors tend to have greater access to financial resources and formal processes, and may engage more frequently with products such as savings accounts, mobile wallets, and business loans (Demirgüç-Kunt et al., 2022). The findings suggest a potential value for interventions like rural banking expansion, financial empowerment programs targeting women, and support for the formalization of businesses operated by vendors with lower levels of education.

Gender differences are also pronounced with male vendors being 8.6% more likely to be financially included than their female counterparts ($p < 0.001$). This is likely to be due to structural and socio-cultural barriers such as limited mobility, lesser financial autonomy, and discriminatory practices undergone by women, as Kiptui (2018) and Fletschner and Kenney (2014) have demonstrated.

Additional analysis by gender yields significant differences in the determinants of financial inclusion. Among men traders (N = 9,349), education whose marginal effect = 0.140 and business legality (0.220) are the most significant predictors according to the full model. The extremely high impact of business legality among men can be attributed to higher mobility and broader social capital and regulatory network access, which ease licensing procedure and interaction with institutions in formal ways (Fletschner & Kenney, 2014)..

For female vendors (N = 4,400), education remains a strong predictor (0.130), while the effect of doing business legality is much smaller (0.180). This may be due to gender-specific restrictions such as limited accessibility of licensing centers, added household responsibilities, and cultural restrictions on women's movement and entrepreneurship activities (Kiptui, 2018). The findings necessitate gender-responsive policies such as mobile registration services, group-based licensure schemes, or woman-focused financial education training to address structural disparities in formalization and access.

Age contributes positively, with each upward shift in age category increasing the probability of inclusion by 6.1% ($p < 0.001$). This may reflect the greater financial experience, stability, and trust in formal institutions that often come with age (Patwardhan, 2018). However, literature also notes potential decreases in inclusion at advanced ages due to technological challenges (Zins & Weill, 2016), suggesting the need for further exploration of non-linear age effects.

Homeownership is associated with a 6.1% higher likelihood of inclusion ($p = 0.005$). This aligns with the Pecking Order Theory (Myers, 1984), where owing assets like a home enhances access to formal credit markets. It also echoes findings from Allen et al. (2016), who report that asset ownership correlates with higher banking uptake in Sub-Saharan Africa. Nonetheless, the low homeownership rate among vendors (30%) highlights an underlying structural challenge.

Marital status also plays a role, with married vendors are 4.9% more likely to be included ($p = 0.046$). This may reflect increased financial responsibilities, such as supporting a household, which create incentives to engage with formal financial systems (Chowdhury & Chowdhury, 2023). While the effect is statistically significant, it is comparatively modest, suggesting that marital status is a secondary factor.

In contrast, larger household sizes exert a negative effect. Each additional household member reduces the likelihood of inclusion by 2.9% ($p < 0.001$). This supports the view that higher consumption demands can limit a vendor's ability to save or access credit (Banerjee & Duflo, 2011). Given that the average household size is 2.98, this effect is insignificant.

Disability status demonstrates a negative correlation with financial inclusion . Disabled vendors are 7.4% less likely to be financially included ($p = 0.012$), a proxy for systemic barriers in the form of physical inaccessibility, lack of proper information, and social stigma. Tran (2022) recognizes that disabled people are often excluded by banks in developing countries, a condition reflected in this sample despite the minimal rate of disability (4.48%).

Finally, health status also matters where it is noted that a one-unit decline in health (e.g., from "Good" to "Fair") reduces the probability of inclusion by 2.5% ($p = 0.046$). Poor health likely undermines productivity

and increases financial strain due to medical costs, reducing engagement with financial services (Asuming et al., 2019). Though this effect is relatively moderate, it reinforces the multidimensional challenges vendors face.

Together, these findings justify the Utility Maximization Theory that puts forward the idea that individuals utilize financial services when gains are perceived to exceed losses. From the findings, one can conclude that the vendors who are educated, stable, and have fewer economic limitations will be included in greater numbers. Pseudo R^2 of 0.25 indicates that the model has moderate explanatory ability, and also the Hosmer-Lemeshow test value ($p = 0.20$) confirms that the model fits the data well. Overall, these results highlight that structural and personal impediments need to be resolved to enhance financial inclusion among street vendors.

Effect of Enterprise Characteristics on Financial Inclusion

The second objective was to establish the effect of enterprise characteristics (business legality, permanency, paid workers, working conditions) on financial inclusion. The logistic regression model includes these variables alongside owner characteristics for a comprehensive analysis

Table 4.3: Logistic Regression Results – Full Model

Variable	Coefficient	Std. Error	z-value	P-value	Marginal Effect
Constant	-2.8	0.45	-6.22	0	-
Gender (1 = Male)	0.35	0.09	3.89	0	0.086
Age	0.25	0.07	3.57	0	0.061
Education Level	0.55	0.08	6.88	0	0.135
Marital Status	0.2	0.1	2	0.046	0.049
Household Size	-0.12	0.03	-4	0	-0.029
Disability (1 = Disabled)	-0.3	0.12	-2.5	0.012	-0.074
House Ownership (1 = Owns)	0.25	0.09	2.78	0.005	0.061
Health Status	-0.1	0.05	-2	0.046	-0.025
Business Legality (1 = Licensed)	0.85	0.18	4.72	0	0.209
Business Permanency	0.4	0.12	3.33	0.001	0.098
Paid Workers (1 = Has Workers)	0.25	0.09	2.78	0.005	0.061
Working Conditions (1 = Conducive)	0.3	0.1	3	0.003	0.074
Age of Business	0.15	0.08	1.88	0.06	0.037
Business Size	0.2	0.09	2.22	0.026	0.049
Type of Business	0.1	0.07	1.43	0.153	0.025
Business Solvency	0.12	0.08	1.5	0.134	0.03

Source: Study Data

Number of Observations: (N = 3,238)
Log-Likelihood: -1,800.25
Pseudo R^2: 0.32
Likelihood Ratio Test: $p < 0.001$
Hosmer-Lemeshow Test: $p = 0.22$ (good fit)

Interpretation of Results

The inclusion of enterprise characteristics in the full logistic regression model improves its explanatory power, with the Pseudo R^2 rising from 0.25 to 0.32. This suggests that enterprise variables play a key role in determining the probability of financial inclusion among street vendors. The findings highlight that financial inclusion is not only the result of personal factors such as education or gender but also critically contingent on organizational, managerial, and financing arrangements.

From the findings business legality emerges as the most influential factor where vendors operating licensed businesses are 20.9% more likely to be financially included ($p < 0.001$), representing the strongest effect across all variables. This result reinforces the importance of formalization in accessing financial services, as formal registration provides vendors with legitimacy, access to essential documentation, and improved credibility with banks and lenders. As noted by Sharma (2019), formal businesses often face fewer barriers when applying for loans or opening accounts, given that legal documentation is typically a precondition. Despite this, only 3.88% of vendors reported holding a business license (Table 4.1), suggesting a substantial gap in formalization and an untapped opportunity for policy intervention. These findings are consistent with Abor et al. (2018), who document significantly higher financial access among formalized SMEs in Sub-Saharan Africa. This result also aligns with

Pecking Order Theory, which posits that businesses prefer internal funding but turn to formal external sources when they have the structural capacity and documentation to do so.

Vendors with permanent or fixed locations are 9.8% more likely to be financially included ($p = 0.001$). This is most likely due to the way physical stability allows for better relations with financial institutions, more stable streams of revenue, and greater customer confidence. These qualities improve businesses' desirability to formal lenders. With 70% of vendors having a permanent place, the factor is both effective and widespread. The result has been corroborated by Klapper et al. (2014) research, which attributes physical business stability to greater financial integration, particularly in informal economies.

Working conditions increase the likelihood of financial inclusion by 7.4% ($p = 0.003$). Conducive conditions like secure working environments, decent working hours, and offering of basic amenities will more than likely increase productivity, allow for long-term planning for funds, and reduce physical and psychological limitations that could deter financial participation. The relatively high incidence (60%) of such conditions suggests that this is a viable arena for policy intervention, e.g., improving market infrastructure and safety nets. This result is supported by Ozili (2020), who emphasizes how the quality of the work environment plays a critical role in the financial decisions of informal workers.

In addition, paid employee vendors are 6.1% more likely to be financially included ($p = 0.005$). This is because employing labor tends to imply a higher level of operation complexity and scale, thus boosting the need for financial services such as payroll management, business savings accounts, and credit lines. This concurs with Beck et al. (2018), who observe that larger or employer-based microenterprises have better prospects of accessing the formal financial system. Because 87% of the respondents who are vendors report having at least one paid staff, this characteristic is a key driver of financial inclusion.

Capital investment is also positively associated with financial inclusion. An increase in startup capital by one category (e.g., from KES 10,100–20,000 to 20,100–30,000) equates to a 4.9% higher probability of inclusion ($p = 0.026$). It suggests that capitalized businesses are likely to require formal financial tools to deal with liquidity, cover expansion, or mitigate risks. Yet, the general capital index score (mean = 2.0) shows most firms are of low scale size, which may limit their perceived eligibility or necessity for formal financial products.

Age of business, or the years of operation, has a small but positive impact. A one-unit rise in age increases the probability of inclusion by 3.7% ($p = 0.060$). This means that older businesses can draw benefits through cumulative experience, stable client bases, and heightened lender confidence. However, the relatively modest effect size and marginal statistical significance suggest that tenure alone is not sufficient to bring about financial inclusion as Stein et al. (2013) argue, with the idea that the maturity dividend may plateau in informal settings without complementary gains in scale, formalization, or financial literacy.

Conversely, type of business, for example retail vs. service and business solvency (perceived ability to meet obligations) were not statistically significant predictors ($p = 0.153$ and 0.134, respectively). This may be due to overlapping effects with more directly measurable variables such as capital, legality, or worker employment. Additionally, some service-oriented enterprises may rely on trust-based, cash-only transactions and informal networks, thus minimizing the role of formal solvency metrics or service type in financial decisions (Allen et al., 2016).

Importantly, the inclusion of enterprise characteristics does not alter the significance or magnitude of owner characteristics identified in the previous model (Table 4.4). Education remains the strongest predictor (13.5%), followed by gender (8.6%) and age (6.1%). Negative predictors such as household size (-2.9%) and disability status (-7.4%) also remain robust. This consistency indicates that both personal and enterprise-level variables independently contribute to explaining financial inclusion and should be considered together in policy design.

V. Summary, Conclusions And Policy Implications

Introduction

The summary and conclusion of the study are presented in this. The chapter also provides implication of the results to policy implementation and areas that need further research.

Summary of the Findings

This study investigated the determinants of financial inclusion among street vendors in Kenya, addressing two objectives: to determine the effect of street vendor characteristics on financial inclusion and to establish the effect of enterprise characteristics on financial inclusion. Financial inclusion was defined as access to and utilization of formal financial services (e.g., bank accounts, credit), coded as a binary variable (FI = 1 for included, 0 for not included). The analysis utilized secondary data from FinAccess Household Survey 2022, filtered to focus on street vendors, yielding 13,749 observations for owner characteristics and 3,238 for enterprise characteristics.

The methodology followed a binary choice model (logistic regression to estimate the probability of

financial inclusion. The independent variables included owner characteristics, gender, age, education, marital status, household size, and disability and enterprise characteristics, business legality, business permanency, paid workers, and working conditions. Data quality issues, such as high maximum values, were addressed by recoding variables and excluding invalid observations.

Descriptive statistics revealed that 55% of street vendors were financially included, lower than the national rate of 83.7% (FinAccess 2022), highlighting an exclusion gap. The sample was predominantly male (68%), aged 31–46 years, with secondary education (mean = 1.85), and married (65%). Businesses were mostly unlicensed (3.88% licensed), permanent (70%), and employed paid workers (87%). Diagnostic tests (VIFs < 5, Hosmer-Lemeshow $p > 0.20$) validated the model's robustness.

The logistic regression results for owner characteristics (13,749 observations, Pseudo $R^2 = 0.25$) showed that male vendors were 8.6% more likely to be included than females, a one category age increase raised inclusion by 6.1%, and a one level education increase boosted inclusion by 13.5%. Married vendors were 4.9% more likely to be included, while each additional household member reduced inclusion by 2.9%, and disability decreased inclusion by 7.4%. The full model, including enterprise characteristics (3,238 observations, Pseudo $R^2 = 0.32$), confirmed these effects and revealed that licensed businesses were 20.9% more likely to be included, permanent businesses 9.8%, those with paid workers 6.1%, and those with conducive working conditions 7.4%. All effects were statistically significant ($p < 0.05$). Robustness checks, including probit models and subsample analyses, supported the findings.

The results align with Utility Maximization Theory, where vendors choose financial services maximizing utility, and Pecking Order Theory, where formalized businesses access formal finance. Limitations of the study include data quality issues.

Conclusions of the study

The study finds that street vendor characteristics and enterprise characteristics significantly influence financial inclusion among street vendors in Kenya. Education has the largest effect among owner characteristics, with higher educational attainment substantially increasing the likelihood of accessing formal financial services, likely due to enhanced financial literacy. Gender disparities are evident, with male vendors more likely to be included, pointing to systemic barriers for female vendors. Older vendors benefit from greater stability, while married vendors are driven by financial responsibilities, both facilitating inclusion. However, larger households and disabilities pose challenges, reducing inclusion due to economic pressures and accessibility barriers, respectively.

Enterprise characteristics are equally critical, with business legality having the most substantial impact, as licensed businesses gain credibility and access to formal financial systems. Permanent businesses and those with paid workers reflect operational stability and scale, enhancing inclusion. Conducive working conditions also contribute, suggesting that better business environments support financial integration. The higher explanatory power of the full model (Pseudo $R^2 = 0.32$) underscores the combined importance of owner and enterprise factors in driving financial inclusion in the informal sector.

The results emphasize the need to address both individual and structural level impediments to financial inclusion. Education and formalization are key drivers, but gender, disability, and family size have persistent gaps which require attention. The empirical study evidence illustrates that financial inclusion in the informal sector is determined by a web of personal and firm-level determinants as explained by theoretical frameworks like Utility Maximization and Pecking Order Theories.

Contribution to Knowledge

This study contributes to the literature on financial inclusion in several ways. First, it provides an analysis of financial inclusion in the informal sector with focus on street vendors in Kenya, a group often underrepresented in financial inclusion studies despite their economic significance. By employing a binary logistic regression model, the study offers a methodologically robust approach to quantifying the effects of both owner and enterprise characteristics, addressing a gap in prior research that often focuses on either individual or business level factors in isolation.

Secondly, the empirical evidence from research on education and business legality complements empirical evidence in the financial literacy and formalization debate as drivers of inclusion. Describing gender and disability as constraints presents new evidence to the socio-economic problems of informal sector marginalized groups, thus challenging the hypothesis on equal financial services access (e.g., Tran, 2022). The positive effects of business stability and employment status introduce new enterprise-level factors, expanding understanding on how stability in operations makes financial behavior.

Finally, the study bridges theoretical and empirical perspectives through its utilization of Utility Maximization and Pecking Order Theories and its demonstration of how these apply to the informal economy. Utilizing a large dataset (13,749 observations) and rigorous diagnostic tests ensures the robustness of results,

setting the standard for future research into financial inclusion in emerging economies.

Policy Implications

The study suggests several policy interventions that enhance financial inclusion among street vendors in Kenya. First, given education's substantial impact, the Ministry of education together with the Ministry of Labour and Social Protection should prioritize financial literacy programs tailored to street vendors, particularly those with lower educational attainment. These programs could be delivered through community workshops or mobile platforms, leveraging Kenya's high mobile penetration to reach informal sector workers.

Secondly, the gender disparity calls for targeted interventions to improve female vendors' access to formal financial services. The Department for Gender and Affirmative Action should facilitate women focused financial products, such as microcredit with flexible terms, and initiatives to address socio-cultural barriers, some of this could be partnerships with women's cooperatives to provide training and support.

The significant implication of business legality emphasizes the need to promote formalization in the informal economy. The Business Registration Service (BRS) can make registering a business easier, lower licence costs, and provide incentives like tax relief and access to credit for registered street vendors. Furthermore, through awareness campaigns vendors can be educated on the benefits of formalization, i.e., improved access to bank accounts and loans.

To address barriers faced by vendors with disabilities, financial institutions should enhance accessibility through mobile banking solutions and physical accommodation at service points. Government policies could mandate inclusive financial products and provide subsidies for disabled vendors to access formal services. The negative effect of household size suggests that economic pressures limit financial engagement. Social safety nets, such as contigent cash transfers or subsidizing savings schemes, could redeuce consumption pressures, encouranging vendors to save and access formal financial systems.

Finally, the positive effects of business stability, salaried workers, and working conditions reflect how important it is to enable stable and scalable businesses. The county governments can provide specialized vending spaces to enhance permanency and enable good working conditions, while microfinance players such as Faulu Microfinance Bank, Kenya Women Microfinance Bank (KWFT) can offer growth loans to vendors with employed employees, promoting business growth and financial inclusion.

Areas for Further Research

Several areas warrant further researched in order to build on this study's findings and bridge its gaps. Firstly, longitudinal studies would examine the evolution over time of street vendors' financial inclusion and how policy measures like formalization or financial education interventions impact it. In addition, qualitative analysis could be employed to examine the socio-cultural and institutional barriers faced by female and disabled vendors that were not possible for the quantitative analysis to enumerate. Comparative studies of other informal sector actors (e.g., small farmers, artisans) or geographies would enable testing the generalizability of findings by unearthing context-specific determinants of financial inclusion. Finally, incorporating mobile money usage as a variable would provide additional strength to the analysis since it connects formal and informal financial systems.

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