

The **KENYA INSTITUTE** for **PUBLIC**
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Impact of Financial Inclusion on Access to Finance for Startup and Business Operations in Arid and Semi-Arid Lands of Kenya

Joseph Munene Mwaniki and Catherine Nyaboke Nyanga'au

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RESEARCH AND ANALYSIS (KIPPRA)**

**YOUNG PROFESSIONALS (YPS) TRAINING
PROGRAMME**

Impact of Financial Inclusion on Access to Finance for Startup and Business Operations in Arid and Semi-Arid Lands of Kenya

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Nyanga'au*

*Kenya Institute for Public Policy
Research and Analysis*

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Abstract

Access to finance is important for business start-up and operations. This study conducted an in-depth exploration into the financing landscape, preferences and factors influencing access to external financing for startups and day-to-day business operations in Arid and Semi-Arid Lands (ASALs) in Kenya. The findings indicate that internal financing, predominantly reliant on personal savings and close-knit networks, maintained its dominance as the primary source of funding for startups in ASALs. Importantly, it was observed that while the arid regions exhibited limited influence from access to formal financial services on external financing decisions, the semi-arid region relied significantly on both formal and informal financing channels. In addition, the level of education emerged as a pivotal factor that drives individuals to seek external financing. It is important to design targeted financial inclusion initiatives aimed at enhancing financial literacy, bolstering informal financial networks, and promoting education to foster entrepreneurship and ignite economic growth in Kenya's ASALs.

Abbreviations and Acronyms

ASALs	Arid and Semi-Arid Lands
FSD	Financial Sector Deepening
MSEs	Micro and Small Enterprises.
MFIs	Micro Finance Institutions
KNBS	Kenya National Bureau of Statistics
CBK	Central Bank of Kenya

Definition of Terms

Financial inclusion: Accessibility, usage, and quality of financial services.

Formal financing: Legal, regulated services provided by registered institutions such as banks and microfinance institutions.

Informal financing: Unregistered services often structured with defined organizations, e.g., shylocks and Chama groups.

Excluded financing: Obtaining financial support exclusively from social networks, such as family and friends.

Internal financing: Ability to have access to finance from including owners' capital, retained profit and selling assets.

External financing: Ability to have access to finance from external sources outside a business including, bank loans and overdrafts, venture capitalists and business angels and government grants among others.

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1. Introduction

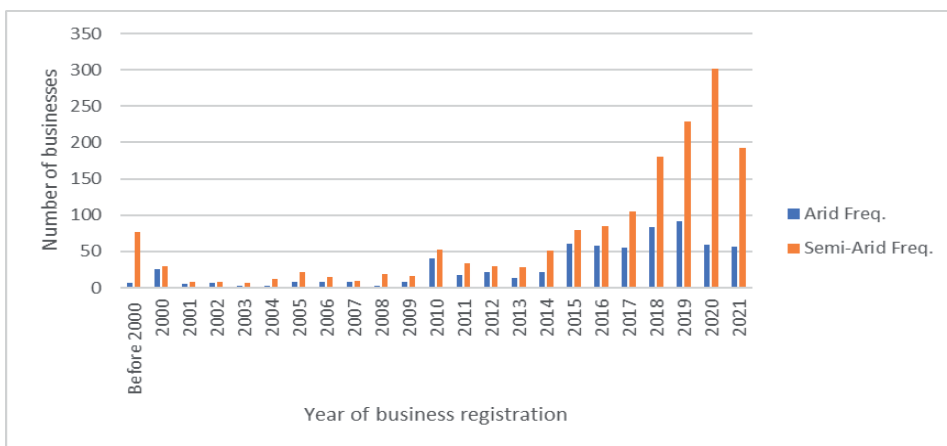
Financial inclusion, encompassing the accessibility, utilization, and impact of reliable financial services in both formal and informal financial markets, plays a pivotal role in shaping the entrepreneurial landscape. Recognized as a critical driver of progress in achieving the Sustainable Development Goals (2030), financial inclusion takes on a vital role in fostering entrepreneurial activities. Financial inclusion extends accessible and cost-effective financial services to individuals who have historically been marginalized from formal banking services (Barajas, Beck, Belhaj and Ben Naceur, 2020) especially in the arid and semi-arid lands (ASALs) in Kenya. This inclusiveness has further encouraged a diverse range of potential entrepreneurs to embark on new business ventures, assisting them in overcoming initial barriers to business entry.

Moreover, financial inclusion supports entrepreneurial activities through financing for entrepreneurs without self-financing. Access to finance enables businesses to have convenient access to capital and credit facilities. This access not only enables their survival but also positions them to capitalize on expansion opportunities (Banerjee, Breza, Duflo and Kinnan, 2017). Also, with the emergence of digital financial services such as mobile money and fintech applications, financial inclusion has paved way for a new wave of innovative startups and has catalyzed the development of cutting-edge innovations within established firms in these arid and semi-arid areas of Kenya (Elia, Margherita and Passiante, 2020).

The significance of financial inclusion is particularly pronounced in the arid and semi-arid lands (ASALs) in Kenya, which account for approximately 80 per cent of the country's land area and are home to around 20 per cent of the population. The ASALs have long faced unique challenges, including climatic variability, limited infrastructure, low market access, and vulnerability to shocks such as droughts and conflicts. As a result, these regions have often been marginalized and underserved, with limited access to formal financial services (Government of Kenya, 2013). However, within these areas lies a wealth of untapped potential, especially in terms of entrepreneurial activities and startups that have the capacity to drive local economic growth and improve livelihoods.

A report by the financial sector deepening (FSD) on financial access shows that growth of startups in arid and semi-arid lands (ASALs) over the past two decades have been marked by a remarkable evolution. The FinAccess 2021 report reveals a substantial increase in the number of startups initiated in these regions, demonstrating a growing enterprising spirit and potential for entrepreneurial development in previously underserved areas. This upward trajectory in startup creation sets the stage for examining the influence of financial inclusion on these burgeoning businesses and their role in the economic transformation of ASALs.

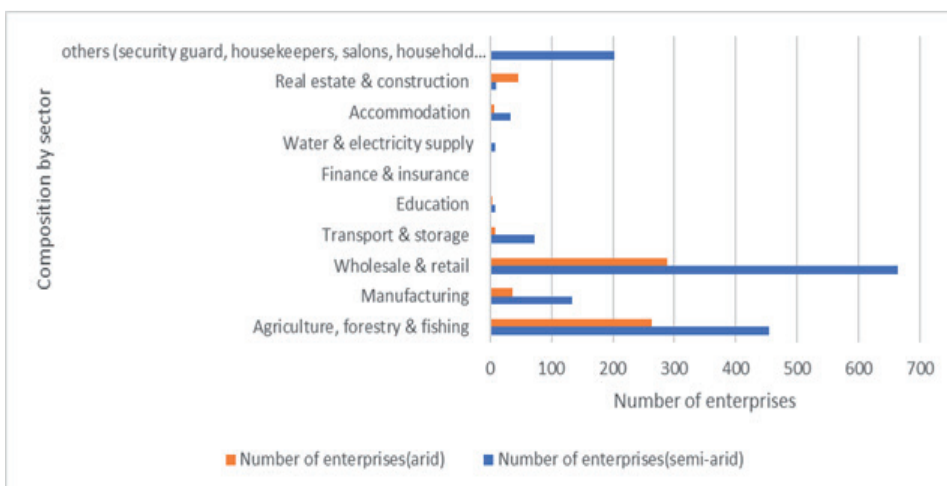
Figure 1: Startups in ASALs 2000-2021



Data Source: FinAccess (2021)

A study by the KNBS and CBK on financial inclusion revealed that ASALs are engaged in various sectors. Further, wholesale and retail were the most prevalent (FinAccess, 2021).

Figure 2: Composition of economic activities in arid and semi-arid lands



Data Source: FinAccess (2021)

Having increased access, particularly to mainstream financial services, can enhance the likelihood of micro and small enterprises becoming self-sustaining and achieving long-term success. This is especially true for individuals in arid areas, who have traditionally been excluded from financial markets. The 2021 FinAccess Household Survey highlights the significant disparity in financial inclusion between ASALs and non-ASALs, with only 64.4 per cent of adults in

ASALs having access to formal financial services compared to 86.8 per cent in non-ASALs. Despite these challenges, ASALs harbour substantial untapped potential for entrepreneurial ventures capable of driving local economic development and enhancing residents' livelihoods.

The purpose of this study is to examine the implications of financial inclusion on entrepreneurs financing decisions in Kenya's arid and semi-arid lands with a specific focus on accessing external financing for business startups and supporting day-to-day operations. The specific objectives are to:

- i) Investigate the financing preferences of startups and businesses in ASALs, emphasizing the sources of capital used for initial setup and ongoing operations.
- ii) Identify the factors influencing individual decisions to access external financing for entrepreneurial ventures in ASALs.
- iii) Provide policy recommendations for government interventions aimed at enhancing financial inclusion and promoting entrepreneurship in Kenya's ASALs.

The rest of the paper comprises of literature review in section 2, which delves into pertinent theories and prior research on financial inclusion and access to finance in ASALs; the methodology, offering insights into our research design (section 3), the model and descriptives; the findings (section 4), which present empirical results; and finally, the conclusion, summarizing key takeaways and policy recommendations as presented in section 5.

2. Literature Review

2.1 Theoretical Literature

This section delves into the foundational theories that underpin the study. The choice of financing theories encompasses the Pecking Order Theory and the Trade-Off Theory. Additionally, the theories related to access to finance include the Financial Development and Economic Growth Theory and the Public Service Theory of Financial Inclusion.

2.1.1 Choice of Financing Theories

The primary choice between debt and equity as financing sources may not suit all businesses uniformly. The suitability and accessibility of these funding options often hinge on the specific financial growth stage of the enterprise (Mullen, 2012). Entrepreneurs' decisions regarding funding sources are commonly elucidated through two distinct theories. The Pecking Order Theory suggests that entrepreneurs make financing decisions based on a hierarchy of preferred financing sources. They tend to prioritize internal sources of finance, such as retained earnings, over external debt, with external equity being the least preferred source. This hierarchy is influenced by asymmetric information, with entrepreneurs preferring internal financing, when possible, followed by debt, and using equity as a last resort. The premise of this theory is that there is no well-defined, optimal capital structure, as it is up to the owner-manager to decide which financing sources to approach at any given time. Myers and Majluf (1984) posit that entrepreneurs tend to prefer own internal sources of finance over debt, which in turn takes precedence over external mezzanine finance and external equity as the last-ranked source of financing preferred by entrepreneurs.

Trade-off Theory focuses on the balance between the benefits and drawbacks of financing through debt versus equity. It acknowledges the tax advantages of debt financing, as interest payments are tax-deductible, reducing a firm's tax burden. However, it also recognizes that taking on more debt increases the risk of over-leverage, financial distress, and potential bankruptcy, which involves various costs to the business. This theory proposes that entrepreneurs choose financing sources by considering the trade-off between increased tax savings and the risks associated with higher debt levels (Agarwal, 2013; Fatoki and Smith, 2012).

2.1.2 Access to Finance Theories

The Financial Development and Economic Growth Theory underscores the role of financial inclusion in driving economic development and stimulating entrepreneurial development, particularly by enabling access to credit for SMEs (Schumpeter, 1911; Van Stel et al., 2007). The theory emphasizes the role of financial inclusion in driving economic development, social welfare, and poverty

reduction. It enables individuals to access formal financial services, aiding their economic well-being. Access to credit, especially for business, stimulates entrepreneurial development. However, financial constraints hinder business creation, tied to factors such as inadequate property rights, financial literacy, collateral, information asymmetry, and risk management infrastructure. Fostering an inclusive environment is crucial for businesses in ASALs.

The Public Service Theory posits that financial services should be considered a public good, accessible to all individuals for the collective benefit of society (Ozili, 2020). It emphasizes that financial inclusion can improve overall societal well-being and suggests that financial institutions and governments should work together to make financial services universally accessible (Pesqué-Cela et al., 2021). This theory considers formal financial services a public good. It asserts that everyone should have access, without diminishing availability for others. Financial institutions absorb costs, and the government may offer subsidies. This theory has advantages, including universal benefits, government support for costs, and an opportunity for the government to facilitate access to financial services for all.

2.2 Empirical Literature

2.2.1 Internal and External Financing

Access to credit plays a vital role in the development of businesses as it enables aspiring individuals to acquire the necessary capital for starting their ventures (Goergen and Renneboog, 2001). Availability of internal financing influences the profitability of the business. As external financing tends to be more expensive than internal financing. Individuals and businesses that has internal financing have better conditions to be profitable (Goergen and Renneboog, 2001). In addition, enterprises with cash surplus do not rely on external financing and mostly avoids external sources of financing (Helwege and Liang, 1996). This may seem rather limiting and is because external financing is more expensive than internal financing and businesses should therefore prefer internal funds. Profitable enterprises also prefer to use retained earnings as a source of investment regardless of the level of unused debt capacity they have (Vanacker and Manugart, 2010). These enterprises therefore tend to use internal financing instead of external financing. Furthermore, as businesses become profitable, the availability and use of internal funds will increase (Berger and Udell, 1998).

Financing for businesses can be diversified, drawing from a spectrum of sources. As posited by Nuttal (2002), these sources can be categorized into internal and external channels. Internal sources entail retaining profits, using reserves, selling assets, and infusing capital from shareholders. In contrast, external sources involve a broader spectrum, including funding from family and friends, bank loans, hire purchase agreements, trade credit, factoring, leasing, issuing debentures and corporate bonds, venture capital, and the public issuance of shares. Notably, Nuttal emphasizes that internal sources are relatively less favoured when compared to external sources.

Stokes et al. (2010) identifies a range of finance sources for SMEs, including asset finance, international trade finance, leasing, hire purchase, factoring or invoice discounting, trade credit, and loans. Moore et al. (2008) expand on this by listing various sources such as personal savings, financial support from friends and family, commercial banks, business suppliers, asset-based lenders, venture capital firms, financial institutions specialized in the commercial sector, large corporations, and public stock offerings.

Brealey et al. (2012) introduce the idea that businesses can also secure financing through venture capital and Initial Public Offerings (IPOs). In the case of fledgling SMEs, venture capital can provide the essential support needed to reach the stage where they can initiate their first public stock offering. Additionally, the business can explore alternative stock markets designed for smaller enterprises, offering a less restrictive entry requirement.

Carpenter (2001) conducted a study examining how the funding structure influences the development and growth of enterprises. The empirical findings from this research reveal that a significant portion of companies primarily rely on internal funding sources. The results of the regression analysis put forth the idea that the growth of companies that do not heavily utilize external funding is closely associated with the scale of their equity.

2.2.2 Drivers of External Financing

As business requirements continue to expand, there is a noticeable rise in the availability of diverse external funding options. Furthermore, alternative funding channels such as venture capital, peer-to-peer lending, and crowdfunding have gained significance due to the increasing demand for non-traditional financial sources, as pointed out by Jurevičienė and Martinkutė (2013). In addition, access to credit has become a pivotal factor in fostering business development, enabling aspiring entrepreneurs to secure the necessary capital for their ventures.

Notably, the absence of adequate capital has been recognized as a significant hindrance to entrepreneurship (Evans and Jovanovic, 1989; Wang, 2012). However, constraints often arise as individuals and/or businesses tend to have fewer employees and limited liquid assets available for loan collateral. Research by Beck and Kunt (2006) underscores that these financing challenges disproportionately affect small firms, potentially resulting in slower growth rates compared to larger counterparts. Furthermore, studies like Beck et al. (2005) emphasize that firms operating in places with higher levels of institutional development tend to face fewer obstacles in accessing external financing. This is relative to starting or operating a business in the ASALs on Kenya compared with other regions.

Entrepreneurs, particularly those seeking smaller loan amounts, often grapple with higher transaction costs and information imbalances, driven by factors such as information asymmetry and agency-related expenses. This opaqueness in business external finance applications can lead to limited access to capital markets,

primarily due to the less transparent nature of their financial characteristics. This lack of transparency poses challenges for banks and financial institutions when assessing the credit risk associated with businesses. Moreover, the individual/business typically need to provide collateral assets to secure loans, necessitating them to maintain liquid assets at a certain proportion to their total assets.

Mobile money accounts have transformed entrepreneurship, facilitating increases in business capital value and profits (Riley, 2020). Mobile money has also accelerated business operations and increased the valuation of trade credit in Kenya (Beck et al., 2018). Studies by Sharma (2015) and Sethi and Acharya (2018) established a positive association between economic growth and various dimensions of financial inclusion. Various factors affect financial inclusion, encompassing institutional, supply-side, demand-side, market opportunity, cost of borrowing, and collateral requirements (Oshora et al., 2021).

Kabakova and Plaksenkov (2018) and Allen et al. (2015) underscore the role of socio-demographic, political, technological, and economic factors in influencing financial inclusion. These factors interact differently depending on the context, affecting individuals' and businesses' access to and benefit from financial services. Furthermore, education plays a crucial role in entrepreneurship, enhancing decision-making processes related to financial matters and instilling confidence in entrepreneurs' skills for savings and financial management (Cossa, Madaleno, and Mota, 2018; Adomako et al., 2015). The current study aims to establish the role of financial inclusion in financing business startups and operations.

3. Methodology

This section discusses the approach adopted by the study, the variables and their measurements and the data sources and descriptive analysis. The study employed a combined approach of descriptive analysis and linear regression modeling, leveraging on the 2021 Fin Access Household Survey data.

3.1 Theoretical Framework

According to the literature, access and use of external financial services may play a key role for startups and running of businesses. Financial inclusion is therefore likely to influence the access and use of external financing for startups or the day-to-day operation of the business. Following this logic, we can deduce that the decision to access external financing for startups and business operation can be modelled as a function of financial inclusion.

Financial inclusion could affect decisions related to access to external finance for business start-ups. The estimated model takes the form of:

$$BS - UP = f(Fincl, X) \dots\dots\dots (1)$$

Financial inclusion could also affect decisions related to external financing for the business day-to-day operations. The estimated model is defined as follows:

$$BOP = f(Fincl, X) \dots\dots\dots (2)$$

Where, both access and use of financial services is a function of financial inclusion and a set of control variables (X) expected to influence access to capital for start-ups.

BS-UP and **BOP** is a dependent variable which is binary where 1 represents the decision to access external financing, and 0 represents the reliance on internal financing sources.

Financial Inclusion (Fincl) is a composite variable reflecting access to formal banking services, usage of informal financial services, formal digital financial services, and access to mobile money services. It measures the level of financial inclusion.

X is a set of control variables that influence an individual's decision to access external financing.

3.2 Empirical Model

To empirically test the relationships in the theoretical model, a Probit regression model is used for each of the dependent variables. The empirical models can be formulated as follows:

Equation one

To examine how financial inclusion influences the entrepreneurs' decision to use external financing for startup capital,

$$Pr (BS - UP = 1) = F(\beta_0 + \beta_1 * FIncl + \beta_2 * X + \varepsilon) \text{ is estimated (3)}$$

Equation two

To explore how financial inclusion affects the entrepreneurs' decision to access external financing for the business day-to-day operations,

$$Pr (BOP = 1) = F(\beta_0 + \beta_1 * FIncl + \beta_2 * X + \varepsilon) \text{ is estimated (4)}$$

Where: Pr (BS-UP = 1) represents the probability of accessing external financing to finance startup,

Pr (BOP = 1) represents the probability of accessing external financing to support business day to day operation using external financing,

F is the cumulative distribution function of the standard normal distribution, β_0 , β_1 , β_2 are coefficients to be estimated, and ε is the error term.

FIncl represents the financial inclusion variable, the probability of having access to and usage of financial services,

and X, is a vector of control variables that can affect the business decisions.

3.3 Presentation of Variables**3.3.1 The Dependent Variable-External Finance**

These variables serve as binary outcome, capturing the key entrepreneurial decisions regarding external financing and internal financing. Our dependent variable is considered binary and consists out of two categories: internal financing and external capital.

1 represents accessing external financing,

0 represents a reliance on internal financing.

This binary equation effectively signifies whether an individual or business opts for accessing external financing (assigned the value of 1) or relies on internal financing (assigned the value of 0) to meet their financial needs for the business.

3.3.2 Explanatory Variables: Financial Inclusion

An individual reported accessing external financing or using internal financing

using at least one type of financial service (formal, informal, mobile money). Financial Inclusion Indicators cover a wide range of payment instruments and access channels and is measured in three dimensions:

- i) Access to financial services,
- ii) Usage of financial service,
- iii) Quality of the products and the delivery service.

In this study, financial inclusion' was broadly defined by the fact that an individual reported accessing external financing or using internal financing using at least one type of financial service, whether formal, informal or having a mobile money account

Three variables that were used to measure financial inclusion include:

- i) Use of formal-banking services;
- ii) Use of informal financial services; and
- iii) Access and use of mobile money services.

3.3.3 Control Variables

The control variables in this study encompass various demographic factors that could influence an individual's ability to access external financing for their entrepreneurial endeavours. These variables include:

Education: Education refers to the level of formal education attained by the respondent, which can impact their ability to access external financing. Individuals with higher education levels may have an advantage in navigating financial institutions and understanding the requirements for obtaining external financing (Simoes et al., 2013).

Age: Age plays a role in the decision to access financing for startups and business operations. Younger individuals may find it easier to access external financing, especially for innovative ventures. Further, the youth are more likely to engage in entrepreneurial activities, as they are typically more up to date with knowledge and technological advancements (Bernat et al., 2017).

Gender: Gender influences the decision to access external financing, with men historically having better access. Gender disparities can impact the ability of women entrepreneurs to secure external financing for their businesses. Research consistently indicates that men are more likely to engage in entrepreneurial endeavors compared to women (Minniti and Nardone, 2007; Allen et al., 2008; Wagner, 2007).

Marital Status: Marital status indicates whether the respondent is married, divorced, widowed, or single, which can affect their access to external financing. For example, being married may provide a more stable financial environment for pursuing external financing, while single individuals may face unique challenges.

Business Income: Business income is essential for supporting day-to-day operations and can also impact access to external financing. Higher business income may improve an entrepreneur’s eligibility for external financing, while limited business income may necessitate external financing to sustain operations.

3.4 Variables Measurement

Table 1: Measurement of variables

Variables	Description	Measurement
Business Startup denoted BS-UP	Measures the capital utilized for startup	1: If the individual accesses external financing for the purpose of starting a business 0: if the individual uses internal financing to finance startup
Business day to day operation BOP	Measures the capital utilized in supporting business day to day operation	1: If the accesses external financing for the to support the business day to day operation. 0: if the individual uses internal financing for the business day to day operation
Formal	Will measures the use of formal financial services	1: If the individual accesses external financing exclusively from formal financial sources (e.g., banks, microfinance institutions). 0: If the individual uses internal financing or any other non-formal sources for external financing.
Informal	Will measures the use of non-formal financial services	1: If the individual accesses external financing exclusively from informal financial sources (e.g., borrowing from friends, family, or non-institutional lenders). 0: If the individual uses internal financing or any formal financial sources for external financing, even if they also use informal sources simultaneously.
Mobile money	Identifies the use of mobile money services	1: If the individual actively accesses and uses mobile money services for external financing, regardless of whether they use formal or informal sources alongside mobile money. 0: If the individual states that they have never accessed or used mobile money services for external financing.

Education Level	Identifies the individual's level of education	1: Has formal education primary, secondary, tertiary or university. 0: The individuals has no formal education
Age	Age of respondent in years	Continuous
Employment income	The respondent's income that can be used for start-up capital	1: Use employment income for business 0: Otherwise
Marital status	The respondent's marital status assumed to influence the decision to access financing for business	1: Single (Never Married /Divorced / separated / Widowed) 0: Married/living with partner
Business income	Business income to support day to day operation of business	1: Use business income to support the day-to-day operation of business. 0: Otherwise

3.5 Data Sources

The study utilized data from the Fin Access Household Survey data (2021) which provides both national and county data. The survey had various study domains: National, rural and urban, and 47 Counties. The sample size for the survey was 30,600 households and it utilized the Kenya Household Master Sample Frame (K-HMSF) that is based on the 2019 Kenya Population and Housing Census data.

3.6 Descriptive Statistics

3.6.1 Classification of Economic Activities in Arid and Semi-arid Areas of Kenya

Wholesale and retail is the most prevalent sector in both the semi-arid and arid areas of Kenya constituting 41.81 per cent and 44.12 per cent of economic activities, respectively. Followed by agriculture, forestry and fishing, which accounts for 28.59 per cent of economic activities in the semi-arid areas and 40.15 per cent in the arid areas.

Table 2: Composition of economic activities by sector

Sectors	Number of enterprises (semi-arid)	Per cent	Number of enterprises (arid)	Per cent
Agriculture, forestry and fishing	454	28.59	263	40.15

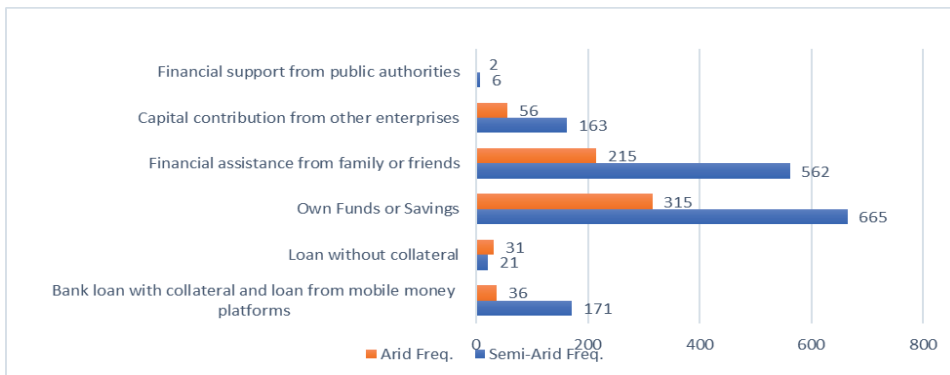
Manufacturing	134	8.44	36	5.5
Wholesale and retail	664	41.81	289	44.12
Transport and storage	73	4.6	8	1.22
Education	8	0.5	3	0.46
Finance and insurance	2	0.13	1	0.15
Water and electricity supply	8	0.5	2	0.31
Accommodation	33	2.08	6	0.92
Real estate and construction	9	0.57	46	7.02
Other service sectors	203	12.78	1	0.15
Total	1,588		655	

Source: Author's computation

3.6.2 Sources of start-up finance in ASALs

Several sources of finance exist but many of them may not be accessible to businesses in ASALs. The various means by business can have access to finance for either start-up or for operational purposes are as follows:

Figure 3. Sources of start-up finance in ASALs



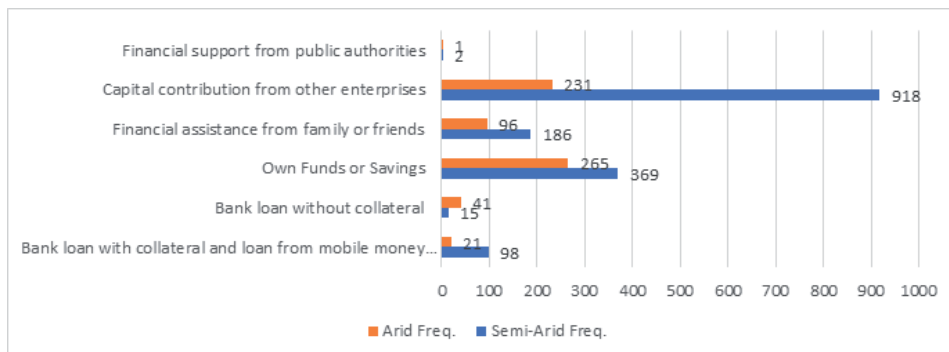
Data Source: FinAccess (2021)

Figure 3 shows the main sources of finance used for business start-up in ASALs of Kenya. The results reveal that entrepreneurs rely on own funds and savings, and financial assistance from family and friends are the main source of start-up both the arid and semi-arid region. Other sources of funding are bank loans and mobile loans, and capital contributions from other enterprises. Access to these sources can be vital to the ability of entrepreneurs to make the necessary start-up investments and to cover operating costs until revenues flow in.

3.6.3 Sources of Finance for Business Day to Day Operation in ASALs

Businesses in both semi-arid and arid regions heavily rely on capital contributions from other enterprises, own funds and financial assistance from family or friends to support the business day-to-day operation. A noteworthy observation from the data is that bank financing and government funding are substantially under-utilized.

Figure 4: Sources of finance for business day to day operation in ASALs



Data Source: FinAccess (2021)

Overall, this pattern underscores the self-reliant nature of entrepreneurship in the semi-arid region, with entrepreneurs relying on their own profits, savings, and informal networks to sustain and grow their businesses.

3.6.4 Summary Statistics

In the arid region, the mean age of business owners was approximately 36 years, with a wide age range from 16 to 92. Most individuals (38.5%) had lower levels of education indicating lower formal education attainment, and marital status varies considerably. Employment income is reported by 19.3 per cent of participants, while 98.4 per cent report business income, suggesting a considerable proportion of entrepreneurs in this region. Regarding financial inclusion, approximately 72.6 per cent of participants have access to formal financial services, while 47.1 per cent report using informal financial services. Mobile money access is high at 80.9 per cent.

Table 3: Summary statistics for arid region

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	3,405	36.318	15.932	16	92
education	3,405	0.385	0.487	0	1
marital status	3,405	0.242	0.186	0	1
employment income	3,405	0.193	0.394	0	1
business income	309	0.984	0.126	0	1
Formal	3,405	0.726	0.446	0	1
Informal	3,405	0.471	0.499	0	1
mobile money access	3,405	0.809	0.393	0	1
Gender	3,405	0.427	0.495	0	1

Source: Author's compilation

Table 4: Summary statistics for semi-arid region

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	9,990	39.416	17.259	16	116
education	9,990	0.872	0.334	0	1
marital status	9,990	0.988	0.996	0	1
employment income	9,990	0.16	0.367	0	1
business income	587	0.973	0.163	0	1
Formal	9,990	0.808	0.394	0	1
Informal	9,990	0.497	0.5	0	1
mobile money access	9,990	0.862	0.345	0	1
Gender	9,990	0.434	0.496	0	1

Source: Author's compilation

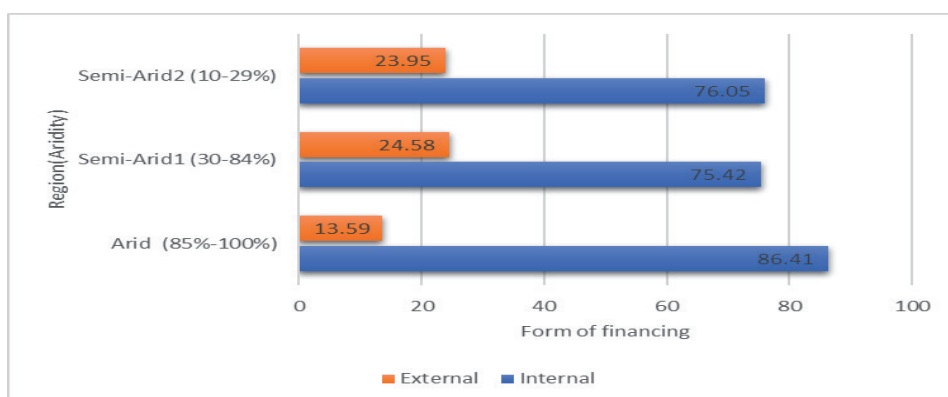
In the semi-arid region, education levels were notably higher, with 87.2 per cent of participants having received some form of formal education. Marital status is diverse, and employment income is reported by 16 per cent of participants. A high proportion 97.3 per cent reports business income, indicating a strong entrepreneurial presence. Financial inclusion is high, with 80.8 per cent having access to formal financial services and 49.7 per cent using informal financial services. Mobile money access is even more prevalent at 86.2 per cent.

3.7 Preference for Financing Businesses in ASALs

The current study set to examine the financing preferences for businesses and whether businesses rely on internal financing or businesses access external finances. The study reveals that internal financing is the predominant source of funding for startups. A significant majority of startups rely on internal financing rather than external sources to fund their businesses.

3.7.1 Source of Capital for Financing Startups in ASALs

Figure 5: Source of capital for financing startups in ASALs of Kenya



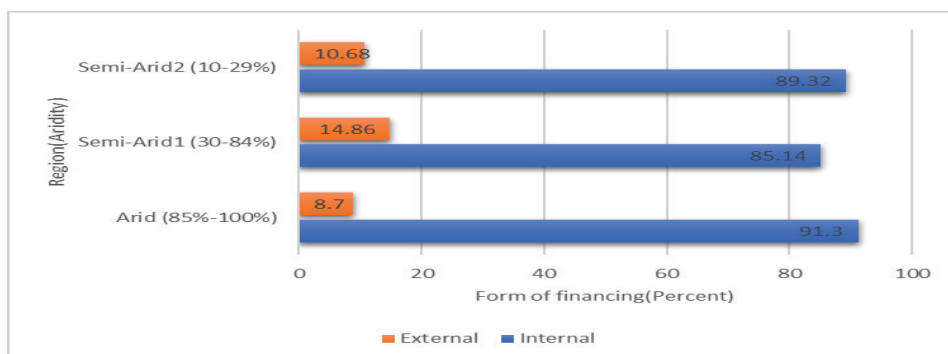
Data Source: FinAccess (2021)

Internal financing, which includes sources such as personal savings, retained earnings, and contributions from family or friends, continue to be the primary form of financing in ASALs. The highest percentage of internal financing is observed in the arid regions, with 86.41 per cent. In the semi-arid (30-84%) and semi-arid (10-29%) regions, internal financing accounts for 75.42 per cent and 76.05 per cent, respectively. This reaffirms that businesses in these regions mostly rely on their own resources and immediate networks for funding. External financing is less commonly chosen but shows variation by region. The semi-arid regions have highest proportion of external financing at semi-arid (24.58%), semi-arid (23.95%), respectively.

The arid regions is at 13.59%. While internal financing remains the dominant choice in all regions, the semi-arid region has a comparatively higher utilization of external financing options.

3.7.2 Source of Capital for Financing Business Day to Day Operations

Figure 6: Financing business day to day operation for arid and semi-arid regions



Data Source: Finaccess 2021

Internal financing is the dominant form of financing in all regions. It accounts for most cases in each category, ranging from 85.14 per cent in semi-arid lands to 91.30 per cent in the arid region. This suggests that businesses in these regions primarily rely on their own resources and those of their immediate network for funding. While internal financing is prevalent, external financing options, are less commonly chosen across all regions. The highest proportion of external financing is observed in the semi-arid regions, with 14.86 per cent of businesses accessing external funding.

Overall, these findings provide insights into the financing behaviour of businesses in the arid and semi-arid regions, emphasizing the significance of internal financing and the limited use of external financing sources. The preference for internal financing may indicate limited access to formal financial services or a higher perceived risk associated with external financing in these regions. It also highlights the importance of financial inclusion efforts to improve access to credit and financial services, particularly in arid and semi-arid areas, as it may provide businesses with more diverse financing options and support economic growth.

Policy makers and financial institutions may consider targeting these areas with initiatives aimed at improving financial inclusion, increasing access to credit, and providing businesses with more diverse financing options. Supporting the growth of local financial institutions and offering tailored financial products for businesses in arid and semi-arid regions could be potential strategies.

4. Results and Discussion

4.1 Access to External Financing for Startups in ASALs

The results of the Probit regression analysis provide insights into how various factors, including financial inclusion-related variables, impact the decision of individuals to access external financing for startup ventures in the ASALs of Kenya.

Table 5: Marginal effect analysis on the determinants of external financing for startups in ASALs

Variables	Arid	Semi-Arid
	dy/dx	dy/dx
Formal	-0.047 (0.539)	0.151* (0.089)
Informal	0.032* (0.067)	0.050** (0.031)
Mobile money usage	0.129 ** (0.017)	-0.042 (0.087)*
Mobile money access	0.074** (0.046)	0.122** (0.030)
Marital status	-0.015 (0.587)	-0.013 (0.587)
Education level	0.068** (0.024)	0.024*** (0.008)
Gender	0.005 (0.752)	0.007 (0.536)
Age	0.001 (0.449)	0.001 (0.422)

Note ***, ** and * denote 1 per cent, 5 per cent and 10 per cent significance levels, respectively.

In the arid regions, the results reveal that access to informal financial sources and mobile money services affect the decision to access external financing for startups. Based on these results, financial inclusion-related factors such as informal financing, mobile money usage, and mobile money access appear to be significant drivers of the decision to access external financing for startups in ASALs.

Education level of the individuals significantly impact the individual's decision to access and use external financing for startups. This suggests that individuals with a higher education level are more likely to decide to access external financing for startups. Higher education may equip individuals with the knowledge and skills needed for entrepreneurial ventures. These findings suggest that policies and interventions aimed at promoting financial inclusion may need to focus on

formalizing informal financial sources and enhancing the financial literacy and education of individuals, as informal financing and education level appears to be a key determinant in their decision-making regarding external financing for startup businesses.

However, in the semi-arid region, the effect of formal financing is positive (0.1510) and statistically significant ($p = 0.089$). This suggests that individuals in semi-arid regions who have access to formal financial services, such as traditional banking and lending institutions, are more likely to decide to access external financing for startups. Formal financial services may offer greater security and ease of access in regions with limited resources. Informal financing also has a positive (0.0498) and statistically significant ($p = 0.031$) effect. This indicates that access to informal financial sources, such as borrowing from friends or family, plays a statistically significant role in influencing the decision to access external financing for startups in semi-arid regions. Informal networks may be particularly important in areas with limited access to formal financial services. The effect of mobile Money is also statistically significant, showing that having access to mobile money services has a statistically significant influence on the decision to access external financing for startups in semi-arid regions.

The findings reveal that for individuals in semi-arid regions, factors related to formal financing mobile money and informal financing appear to play a significant role in influencing their decision to access external financing for startup ventures. Access to formal financial services and reliance on informal financial networks are both associated with a higher likelihood of seeking external financing. Other factors, including education level, show statistically significant effects on this decision in this specific region.

These findings suggest that in semi-arid regions, efforts to promote financial inclusion should consider strengthening both formal and informal financial systems to support individuals in accessing external financing for startup businesses, as these factors seem to be particularly relevant in this context.

4.2 Access to External Financing for Business Day to Day Operation in ASALs

In the context of how financial inclusion affects individual decisions to access external financing for supporting day-to-day business operations in the arid region, the results of the probit regression analysis reveal that formal and informal financing has a negative effect (-0.063) and (-0.022), which suggests that individuals in the arid region who have access to formal and informal financing sources are less likely to access external financing for their day-to-day business operations. However, this result is not statistically significant (p -value = 0.272 and 0.338, respectively). Mobile money access is also positive (0.029), indicating that individuals with easy access to mobile money services are more likely to access external financing but statistically significant (p -value = 0.711).

Table 6: Marginal effect analysis on the determinants of external financing for business day to day operation in ASALs

Variables	Arid	Semi-Arid
	dy/dx	dy/dx
formal	-0.063 (0.272)	-0.002 (0.972)
informal	-0.022** (0.038)	0.055*** (0.003)
Mobile money usage	0.142** (0.037)	0.053*** (0.011)
Mobile money access	0.029*** (0.011)	0.032*** (0.009)
Marital status	-0.003 (0.910)	-0.013 (0.460)
Education level	-0.012* (0.080)	0.021 (0.198)
gender	-0.005 (0.676)	-0.000 (0.944)
age	-0.000 (0.794)	0.000 (0.664)

Note ***, ** and * denote 1per cent, 5per cent and 10per cent significance levels, respectively.

The results indicate individuals in the arid regions rely on informal financing, and mobile money to access external financing for day-to-day business operations. Mobile money utilization recorded a marginal positive association with accessing external financing, indicating that individuals who actively use mobile money services may be more inclined to seek external financing for their business operations.

In the semi-arid region, having access to formal financial services, such as traditional banking, does not have a statistically significant impact on the decision to access external financing to support business operations. However, informal financing is positive (0.0551) and statistically significant ($p = 0.003$) suggesting that individuals in semi-arid regions who have access to informal financial sources, such as borrowing from friends or family, are more likely to decide to access external financing for business operations. Informal financial networks appear to play a statistically significant role in influencing this decision. Mobile money is positive and statistically significant ($p = 0.749$). This suggests that having access to mobile money services has a statistically significant influence on the decision to access external financing for business operations.

The results reveal that for individuals in semi-arid regions, access to informal financial sources and mobile money appears to be a significant factor influencing the decision to access external financing for business operations. Education level of the individual also significantly influence the decision to access external financing in ASALs.

5. Conclusion and Policy Recommendations

5.1 Conclusion

This study sought to examine the dynamics of financial inclusion and its profound effect on entrepreneurial financing decisions in Kenya's arid and semi-arid lands (ASALs), with a specific focus on access to external financing for business startups and sustaining daily operations. Our first objective was to investigate the financing preferences exhibited by startups and businesses in ASALs, emphasizing the sources of capital used for initial setup and ongoing operations. Our findings unveiled a landscape where internal financing sources, including personal savings, familial support, and capital from informal networks, predominate. This dominance of internal financing underscores the resourcefulness of ASAL entrepreneurs. However, it also underscores the limited access to external financing options, highlighting the need for innovative strategies to bridge this gap.

The second objective was to identify the factors influencing individual decisions to access external financing for entrepreneurial ventures in ASALs. Through rigorous analysis, the study analyzed the factors that shape these choices. It became apparent that access to formal financial services remains a formidable challenge for entrepreneurs in ASALs, hindering the financing of startups and day-to-day operations in regions characterized by high poverty and vulnerability. The disparities in financial inclusion between ASALs and non-ASAL areas underscore the need for targeted interventions to level the playing field.

Our study identified that education has a significant impact on the entrepreneurial activities within ASALs. Additionally, education acts as a gateway to formal financial services. The research has shown that individuals with higher levels of education are more likely to access and utilize mainstream financial products and services, such as banking, microfinance, and credit cooperatives. This access, in turn, enables entrepreneurs to tap into external financing sources, diversify their funding options, and facilitate the growth and expansion of their businesses.

5.2 Policy Recommendations

Policy recommendations emerging from the study include:

- i) Financial institutions, including banks and microfinance institutions need to collaborate with community-based organizations to develop culturally sensitive financial products that adhere to banking principles, especially in Arid regions. These specialized financial products should account for the absence of traditional collateral and offer alternative financing solutions such as patient capital, equity, or quasi-equity, aligning with the unique needs of ASAL communities.
- ii) Public sector actors, in partnership with non-governmental organizations (NGOs) and educational institutions, could launch financial literacy

programmes that target ASAL communities. These programmes should aim to enhance individuals' financial knowledge and skills. By empowering entrepreneurs with financial knowledge, they can make informed decisions about their financing options.

- iii) To improve long-term financial inclusion, public state actors, in partnership with financial institutions, need to focus on expanding the presence of banks, Savings and Credit Cooperative Organizations (SACCOs), and Microfinance Institutions (MFIs) in ASALs. Establishing more branches, introducing mobile banking units, and leveraging technology to offer financial services in remote areas are long-term strategies.
- iv) Community based organizations and other non-state actors can take the lead in facilitating informal financial networks and develop policies that aim to strengthen and formalize informal financial networks. This can be achieved by encouraging the creation of community-based lending and borrowing associations and peer-to-peer lending platforms.

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Annexes

Annex 1: Source of financing startups and business day to day operation in arid regions

Source of Startup Capital	Semi-Arid		Arid	
	Freq.	Per cent (%)	Freq.	Per cent (%)
Bank loan with collateral and loan from mobile money platforms	171	10.77	36	5.49
Loan without collateral	21	1.32	31	4.73
Own funds or savings	665	41.88	315	48.1
Financial assistance from family or friends	562	35.39	215	32.82
Capital contribution from other enterprises	163	10.26	56	8.55
Financial support from public authorities	6	0.38	2	0.31
	1,588	100	655	100

Annex 2: Source of financing startups and business day to day operation in semi-arid region

Source of Business Day to Day Operation Capital	Semi-Arid		Arid	
	Freq.	Per cent (%)	Freq.	Per cent (%)
Bank loan with collateral and loan from mobile money platforms	98	6.17	21	3.2
Bank loan without collateral	15	0.94	41	6.26
Own funds or savings	369	23.24	265	40.46
Financial assistance from family or friends	186	11.71	96	14.66
Capital contribution from other enterprises	918	57.81	231	35.27
Financial support from public authorities	2	0.13	1	0.15
	1,588	100	655	100

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