DETERMINANTS OF DEBT FINANCING TO SMALL FIRMS IN JOS-NORTH LOCAL GOVERNMENT AREA OF PLATEAU STATE, NIGERIA

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Abstract
Access to debt financing remains a major constraint for small firms in developing economies, particularly those operating outside formal regulatory classifications. This study examines the determinants of debt financing among small firms in Jos-North Local Government Area of Plateau State, Nigeria, focusing on firm size, firm age, entrepreneur age, gender, and business location. Primary data were collected through a structured questionnaire using delivery-and-collection, wait-and-retrieve, and researcher-administered methods, and the analysis was conducted using quantile regression to capture variations across different levels of debt access. The findings show that at the lower quantile (τ 0.25), firm age and entrepreneur age have significant positive effects on debt financing, while firm size, gender, and business location are insignificant. At the median quantile ($\tau = 0.50$), firm age and entrepreneur age remain the only significant positive determinants. At the upper quantile ($\tau = 0.75$), firm size emerges as the sole significant predictor of debt financing, indicating that scale becomes relevant only at higher levels of access. Gender and business location are consistently insignificant across all quantiles. The results highlight the heterogeneous nature of debt financing determinants among small firms and demonstrate the relevance of quantile-based analysis for understanding financing dynamics in small business contexts.

Keywords: Debt financing, firm size, firm age, entrepreneur age, gender, business location

1.0 Introduction
Firms require financing at every stage of their life cycle, with funding needs typically more pronounced during the early stages of operation. Young firms often lack sufficient internal resources to finance investments, meet operational expenses, or service financial obligations. Even mature firms with accumulated financial reserves may experience funding shortfalls when internal resources are committed to ongoing activities. Consequently, access to external finance remains a critical concern across firm sizes and stages. Contemporary research consistently emphasizes the central role of financing in sustaining firm operations, growth, and competitiveness across economies (Ayyagari et al., 2020; Beck & Demirgüç-Kunt, 2021; Hasan et al., 2021).

Larger firms are generally perceived to be better positioned to access debt financing due to their scale, visibility, and established networks. Firm size often enhances credibility and bargaining power, enabling firms to leverage long-standing relationships with financial institutions. Well-connected firms benefit from trust and reputation built over time, which can translate into preferential lending terms and support during financial distress. These relational advantages significantly strengthen firms' access to debt markets and reduce perceived lending risks (Le & Vinas, 2024; Shikumo et al., 2023; Ullah et al., 2021). The strength of a country's financial system plays a decisive role in shaping firms' access to finance. Economies with well-developed financial institutions enable firms to obtain funding more efficiently, thereby

encouraging innovation, productivity, and expansion. When access to finance is less constrained, firms conserve time and resources that would otherwise be spent searching for capital. Recent studies emphasize that financial inclusion and institutional support are vital for channeling funds to productive enterprises that contribute meaningfully to economic development (Beck et al., 2020; Cao & Cuong, 2020; Eniola & Entebang, 2021).

Firm reputation remains a crucial determinant of access to debt financing. A strong reputation signals reliability, reduces information asymmetry, and lowers lenders' perceptions of default risk. Firms with established reputations are incentivized to honor debt obligations to protect long-term relationships and market standing. Consequently, financial institutions are more willing to extend credit to reputable firms, often at lower cost and with fewer restrictions (Hasan et al., 2020; Nguyen & Qian, 2022). Access to financing tends to be relatively easier in developed economies due to stronger corporate cultures and governance frameworks. Variations in borrowing capacity across countries are frequently attributed to differences in institutional quality, regulatory enforcement, and governance effectiveness. Countries with robust governance structures promote transparency and creditor protection, thereby enhancing firms' access to debt markets. Recent empirical evidence confirms that institutional environments significantly influence firms' financing opportunities (Ahmed et al., 2023; Fan et al., 2021). Despite extensive existing literature, research on firm financing continues to evolve as financial needs persist throughout a firm's existence. As long as businesses operate, the demand for financing remains unavoidable, prompting continuous exploration of financing mechanisms and constraints. Recent studies reaffirm that firms must remain informed about diverse financing options to navigate changing economic conditions and financial market dynamics effectively (Hashmi et al., 2020; Paseda, 2021).

Information asymmetry remains a major challenge in firm financing, particularly for small enterprises. Financial institutions possess greater capacity to monitor borrowers than borrowers have to observe lenders' behavior. To safeguard their investments, lenders closely scrutinize borrowers, especially those with weak credit histories. Small firms, while flexible and responsive, often face higher perceived risk due to limited transparency, leading to higher borrowing costs or credit denial. In contrast, larger firms benefit from economies of scale, lower risk profiles, and long-standing lender relationships that enhance credit access (Beck et al., 2021; Shikumo et al., 2023). The significance of this study lies in the persistent financing challenges confronting small firms in Nigeria. Many of these firms lack adequate collateral and formal documentation required by lenders. Notably, the firms examined fall outside the official classifications of the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), representing a segment with minimal capital and limited institutional support. This category remains particularly vulnerable to financial exclusion.

Larger firms often rely on internal funds before seeking external debt, reflecting risk-averse financing behavior. While internal financing may reduce exposure to debt obligations, excessive reliance on internal resources can leave firms vulnerable during periods of financial strain. Even when debt is available, firms may opt for equity financing depending on market conditions. Small firms, however, depend heavily on debt due to limited internal resources, yet face significant financial and legal barriers that restrict access to credit (Beck & Demirgüç-Kunt, 2021; Le & Vinas, 2024).

This study focuses on identifying the determinants of debt financing among small firms in Jos-North Local Government Area of Plateau State, Nigeria. Although prior Nigerian studies have explored financing determinants, they predominantly emphasize listed firms, thereby

overlooking small enterprises. Furthermore, many studies equate access to finance with leverage, which measures debt intensity rather than borrowing capacity. The scarcity of firm-level evidence on small-firm financing motivates the present investigation. Existing research on small-firm financing is largely conducted at the macro level, often relying on voluntary survey responses that may introduce selection bias. Such approaches also risk individualistic fallacy when macro-level findings are generalized to firm-level behavior. Consequently, there is a growing need for localized, region-specific studies that capture the unique financing dynamics faced by small firms across different contexts.

In response to these gaps, this study adopts a regional focus and examines firm size, firm age, entrepreneur age, gender, and business location as key determinants of debt financing. Given the limited availability of secondary data on small firms, primary data collection becomes essential for capturing firm-level characteristics. By addressing these dimensions, the study contributes context-specific evidence to the literature on small-firm financing in developing economies.

2.0 Literature Review

This section reviews existing literature on the determinants of debt financing to small firms. While a substantial body of empirical evidence exists on firm financing, much of the literature is concentrated in developed economies where firm-level data are readily available due to strong institutional databases and reporting systems. In contrast, evidence from developing countries, particularly at the micro and regional levels, remains limited. To enhance clarity and analytical coherence, the literature is reviewed based on the key independent variables examined in this study.

Firm Size and Debt Financing

A significant proportion of empirical studies on firm financing examine leverage rather than direct access to debt, often using firm size as a central explanatory variable. Recent studies confirm that firm size plays an important role in shaping financing outcomes, although the direction and magnitude of this relationship remain contested. Larger firms generally enjoy better access to debt due to greater asset bases, higher visibility, and established relationships with financial institutions, which reduce information asymmetry and perceived lending risk (Le & Vinas, 2024; Gur et al., 2023).

However, evidence also suggests that the effect of firm size is sensitive to measurement and context. Dang et al. (2018) show that different size proxies yield divergent results, while Ahmed et al. (2023) demonstrate that firm size moderates the relationship between capital structure and profitability rather than directly determining debt access. Similarly, Kumar and Yerramilli (2023) argue that financing to small firms becomes more constrained during adverse business cycles, with smaller firms disproportionately affected. Contrary findings also exist. Some studies report a negative or insignificant relationship between firm size and debt financing, particularly in developing economies where institutional weaknesses persist (Egiyi, 2022; Santosa et al., 2022). Mallik et al. (2022) and Dell'Ariccia et al. (2022) document that small firms face persistent financing constraints regardless of size due to collateral limitations and risk perceptions. These mixed findings suggest that firm size alone may not uniformly determine debt financing outcomes, thereby necessitating context-specific and distribution-sensitive analysis.

Business Location and Debt Financing

Business location has been widely examined as a determinant of firm financing, particularly in relation to spatial inequality and financial access. Empirical evidence indicates that firms located in economically active or urban areas tend to enjoy better access to debt financing than those in rural or less developed locations. This advantage is often attributed to proximity to financial institutions, better infrastructure, and higher market activity (Emovon et al., 2023; OECD, 2024). Recent studies reinforce this view, showing that firms in dense commercial environments benefit from lower transaction costs and stronger lender-firm interactions (Guzman, 2024; Oyedokun, 2024). Institutional reports also suggest that financiers differentiate firms based on geographic location, reflecting perceived differences in risk and growth potential (WTO, 2023; PWC, 2024). Nonetheless, advancements in digital finance and branchless banking raise questions about whether location-based financing disadvantages persist uniformly across regions.

Firm Age and Debt Financing

Firm age is frequently associated with financing capacity, as older firms are assumed to possess established track records, reputational capital, and operational stability. Recent empirical studies from developing economies largely support a positive relationship between firm age and debt financing, indicating that mature firms are more likely to access external credit (Okechukwu et al., 2024; Ayoor et al., 2022). However, some studies report that firm age alone does not guarantee improved access to finance, particularly where financial markets remain underdeveloped or risk-averse (Aguli & Odunga, 2019). These findings suggest that while firm age may signal credibility, its influence on debt financing is contingent on broader institutional and market conditions.

Entrepreneur Age and Debt Financing

Entrepreneur age has also attracted scholarly attention as a determinant of debt financing. Older entrepreneurs are often perceived as more experienced, stable, and trustworthy, characteristics that may positively influence lenders' decisions. Empirical evidence from recent studies indicates that entrepreneur age can enhance access to debt financing, particularly in environments characterized by weak formal screening mechanisms (Kolawole & Onmonya, 2018; Slavec & Prodan, 2012). Nonetheless, inconsistent findings persist. Okechukwu et al. (2024) report no significant effect of entrepreneur age on access to finance among small firms, suggesting that personal characteristics may be secondary to firm-level attributes or institutional constraints. These mixed results indicate the need for further investigation into how entrepreneur age interacts with firm characteristics in shaping financing outcomes.

Gender and Debt Financing

The relationship between gender and debt financing remains one of the most debated issues in the small-firm finance literature. Some recent studies find no statistically significant gender-based differences in access to debt financing, suggesting that formal lending practices may be becoming more neutral (Hewa-Wellalage et al., 2022; Audretsch et al., 2023). In contrast, other studies provide evidence of persistent gender disparities, arguing that female-owned firms face higher financing constraints due to structural biases, risk perceptions, and collateral limitations (Dutta & Mallik, 2023; Villaseca et al., 2021). These conflicting findings imply that the effect of gender on debt financing is context-dependent and may vary across firm size, sector, and financial systems.

Theoretical Framework

This section discusses the theoretical foundations underpinning the study. The theories reviewed establish conceptual linkages between the independent variables and debt financing, providing testable predictions that guide the empirical analysis.

Agency Theory

Agency theory, propounded by Jensen and Meckling (1976), is based on the premise that conflicts arise due to the separation of ownership and control within firms. Managers may pursue self-interested objectives such as empire building, investment in suboptimal projects, or excessive retention of internal funds, which may not align with shareholders' wealth maximization goals. To mitigate these agency problems, shareholders often rely on monitoring mechanisms such as audits and external financing. Debt financing, in particular, serves as a disciplinary tool by subjecting managers to market scrutiny and fixed repayment obligations. From this perspective, larger firms, which typically exhibit more pronounced agency problems and possess greater asset bases, are expected to rely more on debt financing. The theory therefore predicts a positive relationship between firm size and access to debt financing.

Trade off Theory

The trade-off theory of capital structure, developed by Kraus and Litzenberger (1973), posits that firms seek to maximize value by balancing the benefits of debt financing against its associated costs, particularly bankruptcy and financial distress costs. While debt provides tax advantages and may enhance firm value, excessive borrowing increases the risk of insolvency. Larger firms are generally better positioned to manage bankruptcy risks due to diversified operations, stable cash flows, and stronger market presence. As a result, they are perceived by lenders as less risky borrowers. The trade-off theory therefore predicts that larger firms can access higher levels of debt financing relative to smaller firms.

Structural Inequality Theory

Structural inequality theory, advanced by Marlow and Patton (2005), explains how systemic social and institutional biases influence economic outcomes. The theory argues that gender-based discrimination is embedded within societal structures and may extend into formal financial markets. Female entrepreneurs may face unfavorable perceptions regarding managerial competence, risk tolerance, or repayment capacity, which can affect lenders' decisions. As a result, women-owned firms may encounter greater difficulty accessing debt financing compared to male-owned firms. The theory thus predicts a gender-based disparity in access to debt financing.

Agglomeration Economics and Financing Theory

Agglomeration economics theory, as articulated by Gertler (1995), emphasizes the advantages firms derive from geographic concentration in economically vibrant areas. Firms located in dense commercial and industrial clusters benefit from superior infrastructure, information spillovers, and closer proximity to financial institutions. These advantages reduce transaction costs and enhance visibility to lenders. Consequently, financiers may perceive firms in economically active locations as less risky and more profitable. The theory predicts that firms situated in urban or commercially dense areas have greater access to debt financing than those located in less developed regions.

Life Cycle Theory

Life cycle theory suggests that firms' financing needs and capabilities evolve over time. Berger and Udell (1998) argue that young firms typically rely on informal or internal sources of

finance due to limited track records and higher perceived risk. As firms mature, they accumulate reputational capital, financial history, and operational stability, making them more attractive to external lenders. Older firms also tend to engage in larger-scale activities that require increased financing. Based on this framework, the theory predicts a positive relationship between firm age and access to debt financing.

Human Capital Theory and Entrepreneur Financing

Human capital theory, developed by Becker (2000), emphasizes the role of individual attributes such as education, experience, and skills in shaping economic outcomes. In the context of entrepreneurship, older entrepreneurs are likely to possess greater managerial experience, established networks, and industry knowledge. These attributes reduce information asymmetry and enhance lenders' confidence in the entrepreneur's ability to manage debt obligations effectively. Younger entrepreneurs, by contrast, may lack these advantages. Accordingly, human capital theory predicts that entrepreneur age positively influences access to debt financing.

3.0 Methodology

This study adopts a cross-sectional survey research design**,** which is appropriate for examining relationships among firm and entrepreneur characteristics at a single point in time using primary data. The design enables systematic collection of firm-level information required to explain variations in access to debt financing among small firms. Generally, data on small firms in Nigeria are not available in secondary form due to weak documentation and limited institutional record keeping. Even the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), which is mandated to support small businesses nationwide, mainly reports aggregate figures without firm-level demographic details such as gender, age, and business location. This limitation necessitates the generation of firm-level data through primary data collection.

The small firms considered in this study are those that fall outside official government classifications. For example, SMEDAN defines small firms as enterprises employing between 10 and 49 workers or having annual turnover between ₦10 million and ₦50 million. Most firms examined in this study fall below these thresholds and are therefore categorized as very small firms. These firms operate with minimal to moderate capital bases and are largely excluded from formal financial reporting systems. The sample was selected using a combination of convenience and purposive sampling techniques due to the dispersion of firms across Jos-North Local Government Area and limited internet accessibility among business owners. Many respondents operate in rural or semi-urban locations, making online data collection impractical. Consequently, questionnaires were administered manually using delivery-and-collection, wait-and-retrieve, and researcher-assisted methods. For respondents with limited literacy, the questionnaire was administered orally by the researcher to ensure accuracy and completeness. Out of 220 questionnaires distributed, 202 were successfully completed and returned, yielding a response rate of 92 percent.

Instrument Validation

Instrument validation was conducted through a pretest involving respondents excluded from the final sample. While most questionnaire items posed no difficulty, respondents were reluctant to disclose exact figures relating to firm size. To address this challenge, a second pretest was conducted using asset-size ranges rather than absolute values. Respondents selected the range within which their total assets fell, and the midpoint of each range was used as an estimated proxy for firm size. Although approximate, this approach was considered the most

feasible under the circumstances. Most variables employed in the study are observable and objective. Gender and business location are easily verifiable characteristics, while age-related variables are unlikely to be deliberately misreported. Loan access is unidimensional and directly observable, making internal validity testing unnecessary. These characteristics collectively enhance the reliability of the measurement instrument.

Table 1:

Measurement of Study Variables

Variable Type	Variable	Measurement	Source
Dependent Variable	Debt Financing (Loan Access)	Access to external debt measured as the availability of loans to the firm	Beck & Demirgüç-Kunt (2021)
Independent Variable	Firm Size	Estimated total assets of the firm measured using asset-value ranges	Dang, Li, & Yang (2018); Le & Vinas (2024)
Independent Variable	Firm Age	Number of years since the firm was established	Okechukwu et al. (2024)
Independent Variable	Entrepreneur Age	Chronological age of the business owner in years	Hewa-Wellalage et al. (2022)
Independent Variable	Gender	Dummy variable: 0 = Male, 1 = Female entrepreneur	Dutta & Mallik (2023)
Independent Variable	Business Location	Dummy variable: 1 = Urban/busy business area, 0 = Less busy/rural area	OECD (2024); Guzman (2024)

Source: Author Compilation, 2025.

Model Specification

The data generated for this research is cross sectional. The model is given as:

$DF_i = \beta_o + \beta_1 FS_i + \beta_2 FA_i + \beta_3 EA_i + \beta_4 D_{1i} + \beta_5 D_{2i} + e_i$, where,

DF = Debt financing

FS = Firm size

FA = Firm age

EA = Entrepreneur age

D_1 = Gender dummy

D_2 = Firm location dummy

β_o = intercept

β_1, β_2 and β_3 = Slope coefficients

β_4 and β_5 = Dummy coefficients

e = error term

i = case or unit of analysis

4.0 Discussion of Results and

This section presents the empirical results of the regression analysis. Initial pooled regression estimates indicated poor model fit, suggesting heterogeneity in the relationship between the explanatory variables and debt financing. To address this issue, quantile regression techniques were employed at $\tau = 0.25$, $\tau = 0.50$, and $\tau = 0.75$. These estimations allow for a more nuanced examination of how the determinants of debt financing vary across different levels of loan

access. For clarity, the results are presented using coefficient estimates and corresponding probability values.

Table 2
Results of quantile regression of debt financing on firm size, firm age, entrepreneur age, gender and business location at tau 0.25

Intercept/Variable	Coefficient	Probability Value
Intercept/Variable	-1.869	.110
Capital	-6.910	.276
Gender	-2.172	.602
Age of entrepreneur	1.314	.001
Age of Business	1.369	.016
Location	6.571	.368

Source: Author's Compilation, 2025.

From the quantile regression of debt financing on firm size, firm age, entrepreneur age, gender and business location in table 5.1, it can be seen that firm size is not significant at tau 0.25 at any level of significance of 10%, 5% and 1%. Similarly, gender and business location are not significant at these levels. Firm's age and entrepreneur age are significant at 5% level.

Table 3
Results of the regression of debt financing on firm size, firm age, entrepreneur age, gender and business location at tau 0.50

Intercept/Variable	Coefficient	Probability Value
Intercept/Variable	-6.343	.129
Capital	-8.633	.702
Gender	-1.751	.240
Age of entrepreneur	3.266	.025
Age of Business	7.853	.0.000
Location	1.754	.500

Source: Author's Compilation, 2025.

From table 3, it can be seen, again, that only coefficients of firm age and entrepreneur age are significant at 5% level at tau 0.50. The coefficients of firm size, gender and business location are not.

Table 4
Results of the regression of debt financing on firm size, firm age, entrepreneur age, gender, and business location at tau 0.75

Intercept	Coefficient	Probability Value

Intercept	1.214	.000
Capital	-1.402	.000
Gender	3.016	8.013
Age Entrepreneur	-2.797	8.102
Age of Business	1.115	8.203
Location	2.481	2.376

Source: Author's Compilation

5.0 Conclusion and Recommendation

This study investigated the determinants of debt financing among small firms in Jos North Local Government Area of Plateau State, Nigeria, focusing on firm size, firm age, entrepreneur age, gender, and business location. Using primary data and quantile regression techniques to account for heterogeneity in loan access, the study reveals that the determinants of debt financing vary significantly across different levels of access. At the lower ($\tau = 0.25$) and median ($\tau = 0.50$) quantiles, firm age and entrepreneur age exert significant positive effects on debt financing, while firm size, gender, and business location are statistically insignificant. At the upper quantile ($\tau = 0.75$), firm size becomes the only significant determinant, indicating that scale matters primarily for firms with relatively higher access to credit. Across all quantiles, gender and business location do not significantly influence debt financing. These findings confirm that debt financing constraints among small firms are not uniform and are better understood when analyzed beyond average effects.

The study concludes that access to debt financing among small firms in Jos North is primarily shaped by firm maturity and entrepreneurial experience at lower and median levels of financing, while firm size becomes relevant only at higher levels of access. The findings support the Life Cycle Theory and Human Capital Theory by demonstrating that older firms and more experienced entrepreneurs are better positioned to secure debt financing. Conversely, the results do not support the Agency Theory, Trade-Off Theory, Structural Inequality Theory, or Agglomeration Economics Theory within the context of very small firms operating outside formal classifications. The insignificance of gender and business location suggests that microfinance-oriented lending and the spread of digital banking services may have reduced traditional biases related to gender and geography. Overall, the study demonstrates that quantile-based analysis provides a more accurate and policy-relevant understanding of small-firm financing behavior than pooled regression approaches.

Recommendations

i. Policy makers should redesign SME financing policies to explicitly incorporate firm age as a primary eligibility criterion, allowing credit limits and loan tenures to expand progressively with verifiable years of operation, particularly for very small firms.

ii. Government agencies and development finance institutions should integrate entrepreneur age and experience into public credit guarantee and intervention programs, recognizing entrepreneurial maturity as a reliable indicator of managerial competence and repayment capacity.

iii. National and subnational SME financing frameworks should adopt stage-specific lending models that distinguish early-stage, growth-stage, and mature firms, thereby aligning credit products with the heterogeneous financing needs revealed by quantile-level analysis.

v. Public lending and refinancing policies should rely on firm size primarily when evaluating applications for larger loan amounts, as evidence shows that firm size significantly influences debt access only at higher financing levels.

iv. Regulatory and development institutions should encourage the use of quantile-based and region-specific evidence in SME finance policy design and evaluation, ensuring that credit interventions reflect localized constraints and improve financial inclusion outcomes.

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