

Factors affecting the size of SMMEs: Evidence from Gauteng province, South Africa



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Background: It is estimated that small, medium and micro-enterprises (SMMEs) employ nearly half of South Africa's labour force and account for approximately a third of the country's Gross Domestic Product (GDP). The literature reveals that larger SMMEs tend to make a significantly larger contribution to employment creation and output growth than smaller SMMEs. It is, therefore, imperative to understand factors that affect SMME size. This calls for a study of the determinants of SMME size.

Aim: This study investigates the factors that explain different matrices of the size of SMMEs in South Africa.

Setting: The study uses data from a sample of 100 SMMEs in the Gauteng province, South Africa, that applied for funding or were funded by Development Finance Institutions.

Methods: The study employs an ordered logit model for analysis. Turnover, number of employees and loan size are used as proxies for SMME size.

Results: The study finds that equity capital positively predicts turnover, but it has the opposite effect on the workforce base; operational experience enhances SMME size in terms of both workforce base and turnover; and equity capital, effective use of funds and the accessibility of funding institutions positively predict loan size as a proxy for SMME size.

Conclusion: We also conclude that operational experience is necessary to accelerate SMME growth in terms of turnover and employment capacity.

Contribution: We argue that SMMEs' access to credit is contingent on their savings, competence or experience in using borrowed funds and access to a variety of funding institutions.

Keywords: Development Finance Institutions; loan size; number of employees; SMME size; South Africa; turnover.

Introduction

Small, medium and micro-enterprises (SMMEs) are recognised as enablers of inclusive growth in South Africa and around the world (Botha et al. 2021; Mutezo 2024). Besides contributing directly towards economic growth, they also create employment opportunities for the unskilled and semi-skilled labour force that would otherwise remain unemployed (Ngo Ndjama & Van Der Westhuizen 2024; Ngundu & Ngalawa 2023). In South Africa, statistics show that there were 5.78 million SMMEs in 2018 employing approximately 50% of the working population and contributing an estimated 34% of the country's Gross Domestic Product (GDP) (Sibiya, Van Der Westhuizen & Sibiya 2023).

The literature reveals that firm size matters (Dang, Li & Yang 2018; Pervan & Višić 2012). Larger enterprises typically make a relatively larger contribution to employment creation and economic growth than smaller enterprises (Bhorat et al. 2018; Eresia-Eke & Raath 2013; Urban & Naidoo 2012). It is, therefore, imperative to understand the factors that explain the size of SMMEs in order to formulate meaningful policies aimed at enhancing the role of SMMEs as drivers of growth and employment in the economy. This study, therefore, contributes to the literature of SMMEs in South Africa by investigating factors that explain the size of SMMEs in Gauteng province. The investigation is conducted using data from a survey conducted by the National Financial Literacy Association (NFLA) in 2019 on SMMEs that were funded by or had applied for funding from Development Finance Institutions (DFIs) in Gauteng province, South Africa. Consistent with recent studies

(see e.g., Botha et al. 2021), the study employs turnover, size of loans and number of employees as proxies of SMME size and uses an ordered logit model and a linear regression model for analysis.

Clearly, SMME size and numerosity are essential in determining the impact of SMMEs on employment creation, innovation, tax revenue expansion, poverty reduction and economic growth (Ramsuraj 2023). Matekenya and Moyo (2022) noted that SMMEs are a basis for the provision of solutions to the South African economy, which is presently characterised by stagnant economic growth and low levels of employment. It is expected that the expansion of SMMEs should lead to the creation of jobs, consequently contributing meaningfully to the economic growth. Small, medium and micro-enterprise growth is imperative in contributing towards the economy's GDP (Nyika et al. 2024). Furthermore, Ramsuraj (2023) argued that the growth of SMMEs is important in addressing the country's socio-economic challenges through employment creation. The National Development Plan (NDP) predicted that by 2030, SMMEs will create 90% of the 11 million jobs that the government seeks to achieve (National Planning Commission 2012). In response to this target, the South African government employed a nine-point strategy to curb high levels of unemployment by the year 2030. Point seven of the plan outlines measures to develop SMMEs, including those operating in townships and rural areas (Government Communications and Information Systems 2015).

In response to the need to support SMMEs, the South African government has been on a national and provincial mission to create programmes and initiatives aimed at fostering the growth of SMMEs. The initiatives are promoted by some government departments, national and provincial DFIs and other key stakeholders in both the public and private sectors (Small Enterprise Development Agency [SEDA] 2021). These institutions include the Banking Association of South Africa (BASA), Department of Trade and Industry (DTI) and Department of Small Business Development (DSBD) and its agencies, which include the SEDA and Small Enterprise Finance Agency (SEFA) (van Scheers 2016). There are also other DFIs and government agencies like the Gauteng Enterprise Propeller (GEP), Industrial Development Corporation (IDC), National Empowerment Fund (NEF), National Youth Development Agency (NYDA) and International Trade Administration Commission (ITAC) of South Africa. These initiatives highlight the significance of SMMEs in the South African economy and therefore the need for a dedicated and organised approach to ensuring their growth and sustainability (Moagi, Thomas & Mara 2025). Accordingly, this study contributes to an improved comprehension of the determinants of SMMEs' growth, which is necessary for the development of policies to support SMMEs. Furthermore, the study adds to the scarce empirical studies on the subject, especially in South Africa.

This study is organised into five sections. Following this introduction is a discussion of the definition of SMMEs and measures of SMME size. This is followed by a section that reviews the literature on various determinants of SMME size. The subsequent section outlines the methodology, followed by a section on the empirical findings of the study. The last section is the conclusion.

Definition of SMMEs and measures of SMME size

In South Africa, the *National Small Business Act, 102 of 1996*, as amended in 2019, defines an SMME as a distinct entity classified as a micro, small or medium enterprise that can operate in any sector or sub-sector of the economy. The Act establishes two proxies for measuring the size of SMMEs: number of employees and annual turnover. Before the 2019 *Act* amendment, these proxies were three, including gross asset value, which was removed because of its complexity. Across all sectors, the number of full-time employees of micro, small and medium enterprises is 0–10, 11–50 and 51–250, respectively, while the size of SMMEs measured in terms of annual turnover varies by sector. According to the amended *National Small Business Act*, for a company to be considered an SMME in South Africa, its total employee count should be no more than 250, with an annual turnover of at most R220 million.

As previously stated, the main objective of this study is to establish the factors that explain the size of SMMEs funded by DFIs in Gauteng province, South Africa. The size of an SMME is imperative; it carries certain benefits like the capability to acclimatise easily to adversative market conditions (Wagner 2021). In addition, the size of an SMME has the potential to demonstrate many elements of a business, such as its operating capacity and revenue, amongst others (SEDA 2021). The study uses three different measures of SMMEs, namely turnover, loan size and number of employees. The European Commission SMME Definition Guide (2016) classified the size of firms according to turnover, number of employees and capital employed (loan size). Small Enterprise Development Agency (2021) also used the same parameters (turnover and number of employees) to define the size of SMMEs in South Africa.

Turnover

Several studies showed that turnover is a preferred measure of firm size, mainly because it effectively affects the firm's growth (see Hasangapon et al., 2021; Opeyemi 2019). However, according to Niresh and Thirunavukkarasu (2014), turnover as a measure of firm size showed no profound impact on profitability as other factors tend to have a larger impact on a firm's profitability than turnover. Similarly, De Meulenaere et al. (2021) stated that the approximation of firm size by turnover is influenced by other factors such as human capital, financial resources,

social capital and organisational culture. Furthermore, Gaur and Kesavan (2008) argued that inventory turnover, as a measure of size, increases with the sales growth rate, but its rate of increase is contingent on firm size. As a result of these issues, this study employed number of employees and loan size as alternative measures of firm size, in addition to turnover.

Number of employees

Staff headcount is also used as a measure of the size of a business (see e.g. Pan et al., 2023; SEDA 2018; Wagner 2015). It can also be used to measure the value added by each employee in an organisation (Hashmi et al. 2020). Oi and Idson (1999) asserted that large firms demand a higher quality of skilled labour and they have a higher proportion of full-time workers. The larger the firm, the more employees it requires. Alvarez et al. (2011) confirmed that there is a positive relationship between employment and the size of a firm. As the firm grows in operations, it also increases its staff headcount.

Loan size

There is near consensus in the literature that access to credit or the size of funding that firms receive is related to their size. Ngonisa et al. (2023), McPherson and Rous (2010) and John and Adebayo (2013) found that the larger the firm, the more opportunities it has to access finance. Large firms seem to have stronger balance sheets and their financial reporting processes make it easier for funders to approve their loans compared to smaller firms that have challenges such as poor record-keeping and irregular income, which are not appetising to financiers (Chimucheka & Rungani 2011; Chowdhury & Alam 2017). According to Dietrich (2012), small firms experienced lower levels of information efficiency which affects their ability to access financial resources. Jackson et al. (2018) maintained that small loans are usually less profitable, which makes them less attractive compared to large loans. The study further indicated that there is an imbalance in access to credit, which is also influenced by other aspects such as demographics and the size of the business applying for credit (Jackson et al. 2018).

Access to finance for SMMEs in South Africa has been highlighted as a major obstacle, hindering their growth and sustainability because of underdeveloped credit assessment tools for small enterprises (FinMark Trust 2015). According to the OECD (2020), stringent credit evaluations lead to information irregularities, which prohibit creditors from making sound credit decisions for SMMEs. Small Enterprise Development Agency (2018) asserted that ample access to finance assists owner-managers to grow their businesses, expanding in size and thereby increasing revenue and the number of jobs. This requires an inclusive banking system where community savings are effectively injected back into the economy to augment trade and industry.

Determinants of small, medium and micro-enterprise size

The relationship between the size of a firm and the years in operation, financial literacy, financial instruments used to finance SMMEs, institutions where the SMMEs receive funding from and how the SMMEs use loans and grants has been investigated by several studies (see e.g. Cowling, Liu & Zhang 2018; Wellalage, Locke & Samujh 2020; Ye & Kulathunga 2019).

Operation experience

It is apparent that SMMEs that have been in business for a long period are assumed to have gathered valuable experience which affects their growth and consequently size, and they tend to be investment-ready (Coad et al. 2018). The number of years in business matters when firms seek business support resources such as access to markets and finance, which propel their growth (Cowling et al. 2018). Small, medium and micro-enterprises with an insufficient operating history experience challenges when they seek to access finance. Without a solid operating history, their loans are likely to be rejected (Fatoki 2014). After all, financiers are not keen to finance a firm that has been in business for a long time, but has not achieved a significant level of success and credibility (Avevor 2016). Financiers believe that more years in business could indicate that the owner-manager has vast experience in how things work in the business (OECD 2017). However, Coad, Segarra and Teruel (2016) asserted that there is an inverse relationship between the years in operation and a firm's growth rate. The newer the firm, the faster it grows. Younis and Sundarakani (2019) further asserted that the age of the firm is not related to its operational ability and hence its performance.

Financial literacy

Fatoki (2014) argued that a lack of financial literacy in SMMEs negatively affects their growth potential and hence their size. These studies asserted that SMMEs are not getting adequate support, particularly with financial management skills and the expertise required to exercising money management skills in their business operations. This lack of financial and business literacy skills affects SMMEs' ability to access financial resources, thereby adversely affecting their growth and size. It also contributed to the mismanagement of funds by owner-managers (Hussain, Millman & Matlay 2006). Eresia-Eke and Raath (2013) claimed that SMME owner-managers often lack the necessary skills required to efficiently look after the financial aspects of their businesses. Rogerson (2008) further argued that a lack of financial knowledge because of a lack of financial literacy training could be a limitation for SMMEs to implement proper financial management in their operations and subsequently, business growth. Small, medium and micro-enterprises that are receiving ongoing structured development are likely to do well in their business and increase their turnover and hence size (Eresia-Eke & Raath 2013).

Funding Institutions

Agwa-Ejon and Mbohwa (2015) and Chimucheka and Rungani (2011) argued that the nature of support that financial institutions offer SMMEs is dependent on their size and development phase. The larger and more formalised the business, the more access it has to funding from various financial institutions (Mutezo 2024). The literature further states that financial institutions do not fund SMMEs like they fund large businesses. This is because of a banking system and credit scoring method that is not flexible to accommodate the needs of SMMEs, and when they lend, they charge higher costs as they classify SMMEs as a risky category to finance (Ibrahim & Aliero 2012; Wellalage et al. 2020). The operating conditions of various financial institutions affect the availability of funding for SMMEs because of their size and risk profile (Berger & Udell 2006). The BASA (2018) asserted that there is an outstanding issue between financial institutions and SMMEs, especially with banks, which emanates from a strong risk aversion by commercial banks towards SMMEs, especially start-ups and smaller businesses. This leads to SMMEs seeking financial resources from different institutions using the same business plan to increase their chances of making it through the institutions' credit scoring (Finmark Trust 2015). Small firms' credit scoring is carried out by analysing the historical data of the SMME's owner-manager (OECD 2015). This approach is crucial in improving tools to measure the firm's creditworthiness to combat the challenge of information asymmetry between financial institutions and small businesses (OECD 2015). Financial institutions are also disinclined to offer their services to small firms because of higher monitoring costs (BASA 2018).

Financial Instruments

According to Gbandi and Amissah (2014), capital structure has been an unending theoretical debate in business finance. In the literature, there is little evidence on how firms choose between financial instruments such as debt and/or equity. Godke Veiga and McCahery (2019) argued that SMMEs seem to be prone to liquidity constraints more than large firms because bigger firms have more access to a variety of financial instruments. In addition, some studies have observed that bigger firms have access to more exotic financial instruments compared to smaller firms (see e.g. Masiak et al. 2019). McPherson and Rous (2010) and John and Adebayo (2013) investigated the relationship between the firm size and access to credit. Their results showed that the larger the firm, the more opportunities it has to access finance. Large firms seem to have stronger balance sheets and their financial reporting processes make it easier for funders to approve their loans compared to smaller firms that have challenges such as poor record-keeping and irregular income, which are not appetising to financiers (Chimucheka & Rungani 2011; Chowdhury & Alam 2017). According to Dietrich (2012), small firms experience lower levels of information efficiency which affects their ability to access financial resources. Jackson et al. (2018) maintained that small loans are usually

less profitable, which makes them less attractive compared to large loans. The study further indicated that there is an imbalance in access to credit, which is also influenced by other aspects such as demographics and the size of the business applying for credit (Jackson et al. 2018).

Fund use

The character and skills of the owner-manager influence the performance and growth of the firm and hence its size (Leboea 2017; OECD, 2017; Ye & Kulathunga 2019). Sikenyi (2017) argued that SMME managers can mismanage the funds and use them for what they were not intended for, which affects the growth of their firms. The literature demonstrates the importance of understanding the financial appetite of SMMEs, the financial instruments they are likely to access and use, and their relationship with the firm size (Moritz, Block & Heinz 2016). Leeuw (2013) highlighted the importance of post-investment support in determining how owner-managers use funds disbursed to their SMMEs.

Research methods and design

Study area

The study used secondary data independently collected by the NFLA in 2019 from SMMEs in Gauteng, the smallest province in South Africa, covering 18176 square kilometres (1.5% of the country's land area). Although small in size, the province is the country's economic hub and the biggest contributor to the country's GDP (Gauteng Provincial Government 2018). In 2018, Gauteng contributed 34% to South Africa's GDP (Statistics South Africa 2018). In addition, nearly 20% of the country's population is located in Gauteng, and the province is viewed as an economic hub for entrepreneurs to engage in business activities (GEP 2019). More than 30% of SMMEs, the largest concentration of SMMEs in South Africa, are located in Gauteng (SEDA 2019).

According to the Gauteng Provincial Government (2018), the core sectors that drive the provincial economy are agriculture, mining, manufacturing, construction and services. The SMMEs emerging in Gauteng are mostly operating in these sectors (Gauteng Provincial Government 2018). The large population living in the province creates opportunities for SMMEs because of considerable demand, accompanied by an increasing relocation pattern to the province in search of employment opportunities (Statistics South Africa 2018).

According to SEDA (2019), there are about 2550540 SMMEs in South Africa operating in both the formal and informal sectors, 736198 (28.86%) of which are formally registered. The SMME sector has created 10839819 jobs in the country. In addition, Gauteng has a Total Early-stage Entrepreneurial Activity (TEA) rate of 13.3%, compared to 11.5% for the rest of South Africa (SEDA 2019). Indisputably, Gauteng has the highest SMME activity compared to the rest of the country. It is against the foregoing that this study focuses on the formal SMMEs operating in Gauteng province, South Africa.

Population and sample

In Gauteng, there are about 736 198 formally registered SMMEs (SEDA 2019). Although this number is high, most SMMEs still struggle financially and only a few receive financial and non-financial support from private sector institutions and/or Development Finance Institutions (Agwa-Ejon & Mbohwa 2015). According to Dikaiakos et al. (2017), 28% of SMMEs ceased operations between 2016 and 2017 because of poor access to finance, which is almost double the average for other African countries, estimated at 15.6% over the same period. The Small Enterprise Finance Agency (2019) outlined that about 72894 SMMEs and cooperatives were funded in the 2018–2019 financial year. The GEP supported 374 SMMEs across the 11 priority sectors through the provision of Loans, Community Fund Grants and the Township Business Renewal Program (GEP 2019). The NEF (2020) suggested that NEF has approved 927 cases for funding since its inception in 2004. The National Youth Development Agency (2019) indicated that the agency had disbursed grants to 1103 businesses in 2019. The loan and grant approvals of these institutions combined are still far less than the number of formal businesses available in Gauteng (SEDA 2019).

This study uses secondary data collected by the NFLA, independent of this study, in 2019. The data were collected from SMMEs that had applied for funding or were funded by any of the following four Development Finance Institutions: NYDA, NEF, SEFA and GEP. The NFLA sent out emails to its Gauteng database of 4200 SMMEs operating in all sectors, inviting those who have applied and/or have received funding from the four DFIs mentioned above to participate in the survey. In total, 136 SMMEs expressed their interest to participate in the study. National Financial Literacy Association then sent out questionnaires to these 136 SMMEs and 100 responses were received. The data were analysed from these questionnaires to address the research questions of the study.

Effectively, NFLA used convenience sampling because the participating SMMEs were in their database. Convenience sampling is a non-probability sampling method where the sample is drawn from a group of subjects because of their ease of accessibility and proximity to the researcher (Speak et al. 2018). Etikan, Musa and Alkassim (2016) asserted that convenience sampling is a non-random sampling technique where the target population meets certain criteria, including easy accessibility, geographical proximity, availability and willingness to participate.

Model specification

This study takes a quantitative approach. To measure SMME size, we use three different variables, namely turnover, loan size and number of employees. Turnover and loan size are ordinal variables, while the number of employees is a discrete variable. Accordingly, an ordered logit model is used to estimate the 'turnover' and 'loan size' models, while an ordinary least squares model is used in the 'number of employees' regression. The regressions were conducted in STATA.

Two standard techniques are often used in the literature when analysing categorical variables. These are the logit and probit models. These models are used to estimate the functional relationship between the dependent (categorical) and independent variables, which may be a combination of categorical and discrete variables (Chen & Tsurumi 2010). The literature reveals that the logit and probit models have minor technical differences when one of them is used and that, on the whole, they yield similar results (Hahn & Soyer 2005; Ngalawa 2012). This study uses the logit model to regress ordered categorical variables (turnover and loan size, as measures of firm size) on a set of explanatory variables.

A categorical variable is a number whose values can be put into a countable set of distinct groups based on their respective characteristics (Kaur 2013). If there is clear ordering of the categories, it is referred to as an ordinal variable. Following Gaur and Kesavan (2008), Kumar and Kaur (2016) and De Meulenaere et al. (2021), we use turnover as the primary measure of firm size. For the robustness check, the study also regresses loan size and number of employees as an alternative measure of SMME size on the same set of explanatory variables.

To demonstrate the specification of the model, suppose Y_i denotes the measure of firm size as a dependent variable and Z_i is a vector of independent or explanatory variables. The relationship can be presented as:

$$Y_i = f(Z_i) \quad [\text{Eqn 1}]$$

where i is the number of SMMEs. We employ turnover, number of employees and loan size as measures of SMME size (Y_i).

An ordinal logit regression model models the relationship between an ordinal response variable and a set of predictors (Adeleke & Adepoju 2010). Estimation using a logit regression starts with the transformation of the dependent variable, followed by the use of the maximum likelihood approach to estimate the parameters.

Suppose $Y_i \rightarrow k$, where the elements of k are represented by $k \in (1, 2, 3, 4, 5)$, and the probability of each ordered category of k occurring is described by:

$$P(Y_i = k) = p^k \quad \forall k \in (1, 2, 3, 4, 5) \quad [\text{Eqn 2}]$$

The $(5 - 1)$ cumulative probabilities are given by:

$$\phi^k = P(Y_i \leq k) = p^1 + \dots + p^k \quad \forall k \in (1, 2, 3, 4) \quad [\text{Eqn 3}]$$

where $\phi^5 = P(Y_i \leq 5) = 1$. The ordinal logit model, therefore, is given by:

$$\begin{aligned} L_i &= \log \left(\frac{p_i^k}{1 - p_i^k} \right) = \log \left(\frac{P(Y_i \leq k)}{P(Y_i > k)} \right) \\ &= \alpha^k - (\beta_1 Z_{1i} + \dots + \beta_k Z_{ki}) \end{aligned} \quad [\text{Eqn 4}]$$

where L_i is the regressand or the ordinal logit. Our dependent variable Y_i is categorical. Therefore, the empirical regression equation is given by:

$$\text{Size} = \delta_0 + \delta_1 \text{Years} + \delta_2 \text{Inst} + \delta_3 \text{Finlit} + \delta_4 \text{Instru} + \delta_5 \text{Funduse} + \omega \quad [\text{Eqn 5}]$$

where *Size* depicts turnover, loan size and number of employees; δ_i are parameter estimates of the explanatory variables; *Years* (years in operation), *Inst* (number of institutions that the funding was received from by an SMME), *Finlit* (financial literacy training provided before the funds were disbursed), *Instru* (financial instrument used to fund the SMME) and *Funduse* (use of funds) are explanatory variables and ω is a disturbance term. This model was estimated using ordinary least squares (OLS).

Description of the dependent variables

In South Africa, there are two measures gazetted in determining the size of an SMME, namely the number of employees and total annual turnover. Turnover as a measure of size is imperative as it is also used by the country's National Treasury in its turnover tax relief system which aims to support survivalist small businesses with their tax compliance to encourage their growth (Schutte et al. 2019). In this study, turnover as a measure of SMME size is an ordered categorical variable with five categories, namely: (1) R1.00 to R100 000.00; (2) R100 001.00 to R1 million; (3) R1 000 001.00 to R5 million; (4) R5 000 001.00 to R50 million; and (5) R50 000 001.00 and above. It is coded as 0,1,2,3 and 4, for the first, second, third, fourth and fifth categories as outlined above, in that order. The number of employees depicts the staff headcount in an organisation that is fulfilling operational and management roles. It has also been used to measure the value added by each employee in an organisation (Hashmi et al. 2020). This is a discrete variable that takes on finite non-negative numerical values. Furthermore, this employs the size of loans to proxy the size of an SMME because their annual growth rates are determined by the availability of funds and are positively related to firm size, such that larger firms display higher average growth (OECD 2020). Loan size is an ordered categorical variable and is measured in five categories, namely: (1) R1.00 to R10 000.00; (2) R10 001.00 to R100 000.00; (3) R100 001.00 to R1 million; (4) R1 000 001.00 to R5 million; and (5) R5 000 001.00 and above. It is coded as 0,1,2,3 and 4, for the first, second, third, fourth and fifth categories, respectively.

Description of the explanatory variables

The number of institutions (*Inst*) measures the extent to which SMMEs access funding from more than one development finance institution using the same business plan. This variable is binary, taking on a value of zero (0) for SMMEs that received funds from one institution and one for those who received funds from two or more institutions. The number of years in operation (*Years*) is a discrete variable that captures the age or number of years a firm has been trading. It is also an indicator of the trading history of a company. Financial literacy (*Finlit*) measures whether financial literacy training was provided by the Development

Finance Institutions to the owner-managers before the disbursement of funds, and the same is used as a proxy for financial knowledge. It is a binary variable taking a value of zero for 'No training provided' and one for 'Yes, training provided'. Financial instrument (*Instru*) is categorical where the reference group is 'mostly debt' denoted by zero; 'mostly equity' is coded as one; and equal portions of debt and equity are coded as two. The use of funds (*Funduse*) variable measures whether the borrowed funds were used according to the intended purpose, or not, by SMMEs. It is binary and taps into the character of the owner-manager. It takes the value 'one' if monies received were utilised for what they were intended for and zero if otherwise.

Ethical considerations

This study followed all ethical standards for research without direct contact with human or animal subjects.

Results

Descriptive statistics

The descriptive statistics are presented in Table 1. The Table shows that the majority of the SMMEs sampled were small and micro-enterprises. Amongst these firms, 31%

TABLE 1: Descriptive statistics.

Variable	Number of respondents	%
Turnover		
R1.00 – R100 000.00	31	31
R100 001.00 – R1 000 000.00	40	40
R1 000 001.00 – R5 000 000.00	21	21
R5 000 001.00 – R50 000 000.00	8	8
Over R50 Million	0	0
Number of employees		
1–10	89	89
11–50	11	11
51–250	0	0
Loan size		
R1.00 – R10 000.00	28	28
R10 001.00 – R100 000.00	44	44
R100 001.00 – R1 000 000.00	19	19
R1 000 001.00 – R5 000 000.00	7	7
Over R5 million	2	2
Number of institutions		
1	84	84
2–3	16	16
Over 3	0	0
Number of years in operation		
< 1	0	0
1–3	59	59
3–5	24	24
> 5	17	17
Instruments		
Debt	23	23
Equity	70	70
Equal portions of debt and equity	7	7
Effective fund use		
Yes	73	73
No	27	27
Financial literacy		
Yes	70	70
No	30	30

had a turnover of less than or equal to R100 000.00; 71% had a turnover of less than or equal to R1 million; 89% had less than 10 employees; 28% borrowed less than or equal to R100 000.00; and 72% borrowed less than or equal to R100 000.00. Very few firms in the sample can be categorised as medium-sized. It is observed that only 8% of the firms had a turnover between R5.1 million and R50 million; none of the firms had a turnover of more than R50 million; only 9% of the firms borrowed more than R1 million; and none of the firms employs more than 50 people.

Table 1 shows that over two-thirds of the sampled firms (72%) borrowed less than or equal to R100 000.00, which shows that a majority of the sampled SMMEs have limited access to credit. This explains why one finds that a majority (70%) of the sampled SMMEs were equity-financed, relative to 23% that were debt-financed, and 7% that had an equal mix of debt and equity financing. This also explains why a large proportion of the sampled SMMEs (73%) supported effective fund use to maximise the return on their equity investments. The majority (59%) of the sampled SMMEs had been in business for 1–3 years, followed by 24% that had been in business for 3–5 years, while the remainder (only 17%) had been in business for more than 5 years. Finally, Table 1 shows that a large proportion (70%) of the sampled entrepreneurs were financially literate.

Determinants of small, medium and micro-enterprise size using turnover as a proxy for small, medium and micro-enterprise size

To establish factors that explain SMME size, the study estimates the determinants of firm size using 'turnover' as a measure of firm size in the primary regression and 'number of employees' and 'loan size' as alternative measures of firm size in robustness check estimations. Estimation results of the ordinal logistic regression model with turnover used as a proxy for SMME size (from Eqn 5), are presented in Table 2. Model-based standard errors are used in the first regression (reported as Regression 1) and robust standard errors are used in the second regression (reported as Regression 2). Robust standard errors, also

referred to as Huber–White standard errors, adjust the model-based standard errors using the empirical inconsistency of the model residuals, which are the differences between the experimental outcome and the outcome forecasted by the statistical model (Mansournia et al. 2021). In the analyses, we employ both robust standard errors to check that the study results remain relatively the same even with possibilities of heteroscedasticity across clusters of observations.

The results reveal that if the size of SMMEs is measured using turnover, it is only the estimated coefficients of the 'number of years in operation' and 'equity' that are positive and statistically significant. The rest of the variables are statistically insignificant. This finding implies that the size of SMMEs (as measured by turnover) increases with the number of years in business and with equity as a source of financing (in comparison to debt). The number of years in business ideally translates to experience, and as stated by Kim (2022) and Atzmon, Vanderstraeten and Albers (2022), experience is an important factor for business growth, including SMMEs.

In the case of SMMEs, equity represents hard-earned money saved over a long period to start an entrepreneurial business, as opposed to debt which can be conveniently obtained from financial institutions. As equity, in the perspective of SMMEs, is personal savings from hard-earned cash, entrepreneurs tend to exercise discipline to maximise the return on their investment. This is reflected in the descriptive statistics, which show that 73% of the respondents reported that they make good use of their business funds. Entrepreneurs, alternatively, have a proclivity for misusing debt, possibly because of the ease with which they can obtain it.

Furthermore, Table 2 shows that the 'number of institutions from which the funding was received', 'financial literacy', 'debt instrument' and 'fund use' have no significant impact on SMME turnover. It is possible that these variables primarily apply to SMMEs that are debt-financed or have a significant proportion of debt in their capital structure, in which case their size is determined by the number of financial institutions willing to extend debt, financial literacy and the proper use of funds as reflected in their financial statements. If this is correct, then this finding indicates that the sample of this study constituted mostly SMMEs which were equity rather than debt-financed. This is consistent with the descriptive statistics in Table 1, which show that 70% of the SMMEs sampled in this study were financed with equity, while debt and a mix of debt and equity are recorded as the source of financing in 23% and 7% of the SMMEs, respectively. Furthermore, Table 1 shows that 92% of the sampled SMMEs were micro-enterprises, which are defined in the literature as having limited access to loans and poor fund management because of financial illiteracy and a lack of track records (Bvuma & Marnewick 2020).

TABLE 2: Estimation results of the ordinal logistic regression model with turnover as a proxy for small, medium and micro-enterprise size.

Variable	Regression 1	Regression 2
Years	1.42*** (0.17)	1.42*** (0.17)
Institutions	2.55 (1.62)	2.55 (1.61)
Financial literacy	1.08 (1.17)	1.08 (0.75)
Funds use	1.48 (1.63)	1.48 (1.05)
Mostly equity	0.26*** (0.12)	0.26*** (0.12)
Debt and equity (equal proportions)	2.15 (1.91)	2.15 (1.62)
Pseudo R ²	-	0.16
Probability > Chi ²	-	0.00

Note: Dependent variable = Turnover; Model standard errors and robust standard errors are in parentheses. Regression 1 reports standard errors, and Regression 2 reports robust standard errors.

***, denotes the odd ratio's statistical significance at 1%.

Determinants of small, medium and micro-enterprise size using number of employees and loan size as proxies for small, medium and micro-enterprise size

The findings in Table 2 were tested for robustness using 'number of employees' and 'loan size' as proxies for the size of SMMEs. While some variables are consistent with the estimates in Table 2, others are not. The estimation results for the robustness check are shown in Table 3.

The study findings indicate that financial literacy, as well as debt and equity proportions, do not determine the size of SMMEs, whether measured by turnover, loan size or number of employees. As reported in Table 1, the largest proportion of the sampled SMMEs (92%) were micro-enterprises (firms with a turnover of less than or equal to R5 million). In the literature, there is overwhelming evidence that micro-enterprises are characterised by financial illiteracy and limited access to credit (Bvuma & Marnewick 2020; Ismail & Naqshbandi 2022). Kärnä and Stephan (2022) and Mugano (2024) showed that access to loans, which ultimately influences debt and equity proportion, is among the factors that explain firm size.

The positive effect of the number of years in business on the size of SMMEs as measured by turnover is also observed and hence corroborated in the regression that uses the number of employees as a measure of firm size. These findings are consistent with Ismail, Donald and Ibrahim (2023), who indicated that experience in business (the number of years the firm has been in business) enhances a firm's turnover. In essence, SMMEs are critical sources of job creation (Bvuma & Marnewick 2020). Table 3 shows that the number of years in business is statistically insignificant in explaining firm size as measured by loan size, which is not in line with the 'turnover' and 'number of employees' regressions. This is likely because most of the sampled SMMEs were micro-enterprises that are mostly equity-financed.

The study also established that equity as a basis of financing (in comparison to debt) has a positive impact on turnover and loan size as measures of SMME size, but a negative impact on the number of employees as a measure

of SMME size. The negative relationship between equity as a source of financing (in comparison to debt) and the number of employees as a measure of loan size is an indication that micro and small enterprises can easily substitute labour for capital when necessary. As stated in the main findings, equity is a significant determinant of turnover because micro and small entrepreneurs finance their businesses with their hard-earned savings, so they tend to exercise discipline to maximise the return on their investments. It is worth noting that equity is also a positive predictor of loan size, implying that equity boosts creditors' confidence.

Furthermore, the study finds that fund use and the number of institutions from which funding was received are both positive and significant in explaining SMME size measured by loan size. As most micro and small businesses are equity-financed, they are not restricted in how they can use their funds, unlike debt-financed businesses. The effective use of funds, on the contrary, increases creditors' confidence in SMMEs. In terms of the number of institutions (from which an SMME obtained loans), the findings suggest that having access to a diverse pool of creditors increases the likelihood of obtaining a large loan, either through competition or collective financing. Access to various creditors, according to Weilbach and Visser (2024), is dependent on the size of the business, with larger SMMEs having better opportunities for collective financing. Overall, the study's findings are robust to the sampled SMMEs.

Areas for future research

There are several areas that future research can dwell on. There is a need, for instance, to conduct a detailed investigation of the relationship between financial literacy and SMME growth. This would have to include an examination of specific financial skills and knowledge required to grow an SMME. There is also a need to conduct an in-depth study of the impact of debt-financing on SMME growth. This study establishes that most SMMEs are equity-financed, which brings into question the challenges of accessing debt-financing and how SMME growth is affected by debt-financing. Further research can also examine the role of institutional support such as

TABLE 3: Estimation results of determinants of small, medium and micro-enterprise size using 'number of employees' and 'loan size' as proxies for small, medium and micro-enterprises size.

Variable	Dependent variable: Number of employees		Dependent variable: Loan size	
	Regression 1	Regression 2	Regression 1	Regression 2
Years	0.83** (0.22)	0.83** (0.33)	0.97 (0.12)	0.97 (0.12)
Institutions	1.41 (1.31)	1.41 (1.54)	2.58*** (2.66)	2.58*** (0.00)
Financial literacy	-1.81 (2.46)	-1.81 (1.59)	0.57 (0.69)	0.57 (0.38)
Funds use	1.09 (2.49)	1.09 (1.81)	2.46*** (5.68)	2.46*** (2.67)
Mostly equity	-2.75** (0.97)	-2.75** (1.20)	0.53*** (0.03)	0.53*** (0.03)
Debt and equity (equal proportions)	0.99 (1.90)	0.99 (2.39)	2.40 (2.29)	2.40 (1.86)
Pseudo R ²	-	3.88	-	0.34
Probability > Chi ²	-	0.00	-	0.00

Note: Model standard errors and robust standard errors are in parentheses; Regression 1 reports standard errors; and Regression 2 reports robust standard errors.

, denotes the odd ratio's statistical significance at 5%; *, denotes the odd ratio's statistical significance at 1%.

mentorship schemes, training initiatives and other specialised government programmes, among others, in promoting SMME growth. Other studies can also explore the role of technology adoption on SMME growth, including the benefits and challenges of technology adoption in explaining SMME growth.

Managerial implications

The study findings have significant implications for SMME owner-managers. To achieve growth, it is recommended that SMMEs prioritise effective financial management, including saving and investment in their businesses. This may involve robust financial planning and budgeting, cashflow monitoring and informed decision-making about resource allocation. Entrepreneurs should also exercise financial discipline, especially in the usage of loans and grants. This primarily includes using borrowed funds for their intended purposes. It may also include avoiding unnecessary debt and ensuring timely repayment of loans. It is also recommended that SMME owner-managers should establish strong relationships with creditors and investors, given the finding that the source of funding plays an important role in SMME growth.

Conclusions and areas for future research

The primary goal of this research was to investigate factors that influence the size of SMMEs in South Africa. The sample is confined to SMMEs in Gauteng province that receive funding from development finance institutions and were listed in the NFLA database in 2019. According to the *National Small Business Act, 102 of 1996*, as amended in 2019, SMME size in South Africa can be measured in two ways: annual turnover and number of employees. The number of full-time employees of micro, small and medium enterprises must be 0–10, 11–50 and 51–250, respectively, across all the sectors. The annual turnover varies by sector but should not exceed R220 million. Before the 2019 amendment, there were three proxies, including gross asset value, which was eliminated because of its complexity. This study proposes loan size, contending that SMME size can be inferred from access to credit. Loan size is a variable of principal interest, as access to credit is a major challenge for South African SMMEs. Several studies argue that the factors that explain SMME size are inconsistent across these proxies, and we contribute to this debate. The factors considered include the number of years in operation, capital structure, financial literacy, access to funding institutions and the ability to use borrowed funds. All estimations were carried out using an ordered logit model. The findings indicate that equity capital is a positive predictor of turnover. However, it has the opposite impact on the workforce base. These findings imply that as equity capital increases, SMMEs tend to substitute labour with machinery to boost productivity and, consequently, revenue. In line with the literature, we

found that operational experience positively predicts both turnover and the workforce base, implying that operational experience is necessary to accelerate SMME growth in terms of turnover and employment capacity. The findings also revealed that only effective use of borrowed funds, access to a diverse range of funding institutions, and equity capital positively predict loan size. These findings indicate that SMMEs' access to credit hinges on their savings, competence or experience with borrowed funds, and access to a variety of funding institutions. We thus urge the provision of SMMEs with freely available and generally accessible information about how and where to access funding institutions.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

N.M. undertook the study under the supervision of H.N. H.N. wrote the first draft of the manuscript. N.M. corrected and edited the manuscript.

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Data availability

The data that support the findings of this study are available from the corresponding author, H.N., upon reasonable request. The data are not publicly available and availability thereof is subject to approval from the NFLA.

Disclaimer

The views and opinions expressed in this study are those of the authors and are the product of professional research. It does not necessarily reflect the official policy or position of any affiliated institution, funder, agency or that of the publisher. The authors are responsible for this study's results, findings and content.

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