



The Role of Skills and Education in Predicting Micro-enterprise Performance

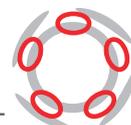
François Steenkamp and Haroon Borat

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SUMMARY

In light of South Africa's high levels of unemployment and relatively small informal sector, enabling and supporting growth of small, medium and micro enterprises (SMMEs) in the informal sector is of developmental importance and policy priority. The associated benefits of SMME growth, such as employment creation, enhancement of economic growth and poverty alleviation, provide further motivation for the prioritisation of this sector. In light of the developmental importance of SMMEs, the purpose of this paper is to examine the determinants of SMME performance in South Africa. In particular, this paper is interested in the role played by education and skills in driving firm performance.

The research objective of this paper is addressed by firstly using direct and indirect measures of skills to generate a human capital profile of SMME owners across both the formal and informal sectors, and secondly by using econometric analysis to examine the factors determining firm performance along two dimensions: financial performance and the ability to

access market opportunities. Finally, based on the analysis in this paper and related research, policy guidance concerning skills development initiatives to the SMME sector is provided.

The results show that formal education is a key factor driving SMME performance. Higher levels of education are associated with higher returns to self-employment, with returns being greatest for matric, post-matric and apprenticeship qualifications. Previous experience, marketing skills, accounting skills and IT skills positively affect firm performance. Given the importance of education and skills in determining firm performance, a number of policy recommendations are provided in Section 6 of this paper. However, these results must be considered in light of the fact that SMME performance is influenced by a wide range of factors (e.g. access to credit) and, as such, policy interventions regarding skills should form part of a wider policy initiative aimed at enabling and supporting SMME growth in South Africa.

1. INTRODUCTION

The informal sector plays a critical role as a source of employment and income outside the formal wage sector in developing countries' economies. Kingdon & Knight (2004) show that the informal sector's share of non-farm employment in the sub-Saharan African (excl. South Africa), Latin American and Asian regions is 74.8, 56.9 and 63.0% respectively. Estimating the size of the informal sector for 43 sub-Saharan African countries in 2007, Adams et al. (2013) find that it accounted for, on average, 40% of gross national product in those countries. More importantly, the informal sector offers an avenue where the poorer and more vulnerable members of society (i.e. youths and women) are able to earn income in the absence of formal sector employment.

Relative to other developing countries, South Africa's informal sector is small, particularly in light of the economy's high rates of unemployment.¹ Comparing ratios of non-agricultural informal employment to urban unemployment across a sample of developing countries, Kingdon and Knight (2004) describe South Africa as an international outlier. Typically, rigidities in the formal sector labour market, from which unemployment arises, are tempered by high rates of employment in the informal sector – the extent to which this occurs in South Africa is relatively limited (Heintz & Posel 2008).

Therefore, South Africa has a dual problem with respect to the informal sector. The economy has one of the smallest informal sectors as a share of

employment among developing countries. Yet given the sheer scale of the unemployment problem, the informal sector must be an integral part of any growth–employment discussion in South Africa. It is argued that it is only through the rapid growth and development of the informal sector that the extent of the unemployment problem can be significantly reduced (Rodrik 2008).

Key to generating growth in the informal sector is the growth of small, medium and micro enterprises (SMMEs). More broadly, growth in the SMME economy, across both formal and informal sectors, contributes to employment creation, the enhancement of economic growth and poverty alleviation (Rogerson 2001). McPherson (1996) cites a key argument for supporting SMME growth, particularly in the South African context. The 'redistribution with growth' argument suggests efforts to support poor producers, and results in both economic growth and more equitable income distributions.

The developmental importance of growth in the informal sector and, more generally, SMMEs, motivates for the primary research objective in this paper. This paper examines the determinants of SMME performance in South Africa. SMME performance is analysed along two dimensions: firstly, a firm's financial performance, and secondly, a firm's ability to access market opportunities. In particular, this paper focuses on understanding how the provision of appropriate skills to the SMME sector can improve the financial performance of these enterprises and their ability to access markets.

¹ The informal sector accounts for 18.9% of non-farm employment (Kingdon & Knight 2004) and over 20% of GNP (Adams et al. 2013).

In order to address the research objective, this paper starts by providing a descriptive overview of the human capital profile of the SMME sector, which includes both formal and informal sector firms.

Human capital is measured using direct measures – owner education and experience – and indirect measures – uniquely defined proxy variables that control for various entrepreneurial skills.

Econometric analysis is applied in order to examine which factors determine SMME performance – specifically, the role of skills and education. This paper also applies econometric analysis to examine the factors determining an SMME's ability to exploit market opportunities. Similarly, focus is placed on the role played by skills and education. Finally,

based on the analysis in this paper and related research, policy guidance to the SMME sector concerning skills development initiatives is provided.

The next section provides an overview of key concepts specific to this paper. There are a number of conceptual challenges in this area of study. Thus, it is key to get an idea of what these are, and how they relate to this paper. Section 3 describes the data and methodology employed in the analysis. The results of the descriptive and econometric analyses are discussed in Sections 4 and 5 respectively. Section 6 provides policy-orientated conclusions informed by the preceding analysis.

2. DEFINITIONS AND CONCEPTS

Since a number of important concepts and definitions are used in the analysis to follow, it is important to clarify them. This section highlights the definition that is applied when distinguishing between formal sector and informal sector firms. The analyses in Sections 4 and 5 focus on small, medium and micro enterprises (SMMEs) and thus we define what is meant by 'SMME'. From a conceptual standpoint, it is important to understand that these SMMEs differ in a number of fundamental aspects, which points to the heterogeneity of firms within and across the formal and informal sectors. It is important to have clarity on these conceptual and definitional issues because this frames the manner in which one assesses the education and skill requirements of this diverse set of firms across two very different sectors of the economy.

The formal and informal sectors

Although there has been much debate on how to define and measure the informal sector of an economy, much of this debate has centred on defining and measuring informal employment (Husmanns 2004; Heintz & Posel 2008; Yu 2012). This paper focuses on the owners of firms across both the informal and formal sectors, which means that the analysis avoids any issues related to the definition and measurement of employees in the informal sector.

This paper distinguishes between formal and informal sector firms by applying the enterprise-based definition used by Statistics South Africa (StatsSA). This definition is based on income tax and/or VAT registration (StatsSA 2008):

Employers, own-account workers and persons helping unpaid in their household business, who are not registered for either income tax or value-added tax.

This definition is applied consistently across the three datasets that are used in this paper.

Small, medium and micro enterprises (SMMEs)

The analysis in this paper focuses on a group of firms known as SMMEs. The National Small Business Act 102 of 1996, as revised by the National Small Business Amendment Act 26 of 2003 and 29 of 2004, categorises SMMEs into micro, very small, small, and medium enterprises using a complex set of thresholds. These thresholds are defined according to three measures: total number of full-time employees; total annual turnover; and total gross asset value excluding fixed property, by sector and sub-sector (DTI 2008).

This paper does not go into detail regarding the partitioning of our sample into these respective categories. Instead, we follow the FinScope Survey instrument, which limits its coverage to firms with fewer than 200 employees. This aligns with the thresholds defined by the National Small Business Amendment Act 26 of 2003 and 29 of 2004, which stipulate 200 employees as the upper limit for medium enterprises across all sectors and sub-sectors, except agriculture.

Firm heterogeneity

It is important to take cognisance of the fact that firms are a heterogeneous group of actors in the economy. They vary across a number of key characteristics, such as number of employees, industry, business location, turnover, productivity, access to technology, access to markets, and the like. Even the grouping of firms labelled SMMEs suggests a grouping of smaller firms that vary by size. The heterogeneous nature of firms is further evident in SMMEs that arrange themselves across the formal and informal sectors. Chen (2005) notes that even trying to separate firms along formal and informal lines is problematic since there exists a continuum of economic relations in which firms have varying linkages across these two sectors.

Within the informal sector, Rogerson (1996) distinguishes between two types of informal enterprise: *survivalist enterprises* and *micro-enterprises* (or *growth enterprises*). Ligthelm (2012) extends this grouping by labelling these two firm types as *unproductive* and *productive*, and labelling the owners as *necessity entrepreneurs* and *opportunity entrepreneurs* respectively.

The former grouping is typically constituted by unemployed individuals unable to secure regular

wage employment and thus motivated by survival and limiting descent into further poverty. Rogerson (1996) characterises these firms as low-income-generating, typically run by women, requiring minimal capital investment, and requiring virtually no skills training. The latter group are described as very small firms, often involving only the owner, some family members and maybe a number of additional employees. Their owners are motivated by the exploitation of a profitable opportunity with inherent growth prospects. These firms are free of the constraints of formality (e.g. business licenses), have a limited capital base, and have owners with rudimentary skills. However, these enterprises have the potential to develop into larger formal small business enterprises (Rogerson 1996). Nevertheless, firms do not all fit neatly into these two categories. Instead, one finds a continuum of firms distributed between these two informal sector firm types.

There is a rich literature focused on defining and understanding the segmentation of these markets. However, for the purposes of this paper it is important to bear in mind the heterogeneity of the firms, because any form of policy analysis regarding the provision of skills needs to be tailored to the different human capital needs of these firms and their owners.

3. DATA AND METHODOLOGY

This section details the methodology employed to measure which factors determine SMME performance, and SMMEs' ability to access market opportunities. It starts by describing the firm level datasets used in this analysis.

Data

The analysis benefits from the use of three publicly available datasets relating to the informal sector:

- The Survey of Employers and Self-Employed (SESE: 2009), which is derived from the Quarterly Labour Force Survey (QLFS), collected by StatsSA;
- The FinScope Study conducted by the Finmark Trust in 2010; and
- The Diepsloot Enterprise Survey conducted by the World Bank in 2012

Survey of Employers and the Self-Employed (SESE: 2009)

The longest-standing survey of informal enterprises is StatsSA's Survey of Employers and the Self-Employed (SESE), conducted in 2001, 2005, 2009 and 2013. Unlike surveys of formal sector firms, it is typically not possible to construct a national sample frame for informal sector firms. Instead, StatsSA uses the Quarterly Labour Force Survey to identify owners of businesses not registered for VAT, who are then selected for further interviewing. In 2009, this provided a sample of 1 076 owners of enterprises that were not VAT registered. Respondents could provide information on up to three different businesses that they owned.

FinScope Survey (2010)²

The FinScope Survey is a household survey with three criteria for inclusion. The respondent needed to be 16 years or older and own a business, and the business needed to have fewer than 200 employees. If an individual owned multiple businesses, he or she was asked to provide information only about the one that he or she spent the most time managing. It must be noted that none of these restrictions relate to informality per se, so the FinScope sample of 5 676 observations contains formal and informal sector enterprises below a certain size.

Diepsloot Enterprise Survey (2012)³

Informal micro enterprises are a prominent feature of township areas (Woodward et al. 2011; Ligthelm 2012). An alternative source of data is therefore available from the World Bank's Diepsloot Enterprise Survey. The sampling approach involved conducting

2 Further details on the sample design and weighting are provided in Appendix A.

3 Through a developmental lens, countries are typically divided into two spatial realms: urban and rural. However, unique to South Africa is a spatial realm that is neither rural nor fully urban. South African townships and informal settlements are a product of apartheid laws, which aimed to control African urbanisation while also providing a supply of cheap labour residing in dormitory settlements, yet maintaining a 'social and lifestyle' distance from white urban areas. Therefore, townships were characterised by their peripheral position in relation to economic centres and the rudimentary nature of their public infrastructure. Given the uniqueness of the spatial realm, the World Bank conducted a project that aimed to develop a deeper understanding of the structure of the township economy. As such, a case study of Diepsloot – a township in the northern part of the Johannesburg Metropolitan Area – was conducted (see <http://dx.doi.org/10.1596/978-1-4648-0301-7>). Key to this project was the collection of detailed survey data on enterprises operating within the Diepsloot economy.

an initial census of enterprises in Diepsloot, of which there were 2 509, and then sampling 500 of these for further interviews. Due to various survey difficulties, the final sample was 450 enterprises.

There are a number of limitations in using these informal sector survey data to address the research objective of this paper. Firstly, none of these surveys has been primarily concerned with the issue of skills (although the FinScope Survey does attempt to capture some indirect information on skills). The information available is therefore relatively generic (e.g. about the level of formal education attained by owner) and does not tell us much about the specific skills that are relevant to SMMEs.

Secondly, the cross-sectional nature of the data limits the story that one can tell. For instance, there are a number of studies which examine the determinants of SMME survival and performance over time (Sleuwaegen & Goedhuys 2002; Bosma et al. 2004). They are able to explore the effect of human capital characteristics of SMME owners on the survival and performance of their firms over time, because they use panel data. The cross-sectional nature of the data available to this study limits the focus to existing firms that have survived in that period.

Although the descriptive analysis in Section 4 uses all three datasets, this paper primarily employs the FinScope Survey data in the descriptive and econometric analyses. There are two reasons for doing so. Firstly, it is the only survey of the three that attempts to pick up information about owner skills other than level of education. It must be noted that the purpose of the survey was not to conduct an audit of the skill profile of owners of SMMEs in South Africa; thus, the extent to which skills are captured is limited. The variables generated to control for owner skills are inferred indirectly from questions in the survey. Secondly, the survey is nationally representative and covers both formal and informal enterprises. Therefore, one is able to compare firm and owner characteristics across formal and informal enterprises. This is important,

since formality is often associated with SMME success (Nichter & Goldmark 2009).⁴

The sample is restricted to SMMEs involved in non-agricultural activities across both the informal and formal sectors.

Methodology

Descriptive approach

In Section 4, we present a descriptive analysis aimed at unpacking the skill profile of SMME owners across the formal and informal sectors. The aim is to illustrate how different formal and informal enterprises, and the owners of these businesses, are over a wide range of indicators. In order to facilitate a more efficient reading of these descriptive analyses, we include the following measures in the descriptive tables below:

- A ratio of proportions for the proportion of informal sector enterprises/owners to formal sector enterprises/owners by indicator. A higher number indicates a higher proportion of informal sector enterprises/owners relative to formal sector enterprises/owners for the indicator under consideration. This measure is presented in a separate column for each table.
- The standard error of the mean for each measured proportion. This is a measure of the statistical accuracy of an estimate. The standard error of a sample is an estimate of how far the sample mean is likely to be from the population mean. The lower the standard error, the more precise the estimate. This measure is presented in parentheses below each estimate.
- A measure of whether the difference in the estimated mean between the two sample groups (i.e. formal versus informal) is statistically

⁴ It is worth noting that there are a number of issues regarding the reliability of survey information pertaining to business ownership and, hence, of the national survey estimates derived from these datasets. In particular, the QLFS (Quarter 2 of 2010) suggests that there are 1.1 million individuals running business in South Africa, whereas the equivalent estimate from the Finscope Survey suggest that this number is 5.6 million (Gasealahwe 2013). We provide additional detail in Appendix B. We also provide a comparison of the three datasets, in terms of the distribution of firm owners according to their individual and firm characteristics in Appendix D.

different to zero (i.e. the difference is statistically significant). This measure is represented as an asterisk, and is placed alongside estimates for indicators that exhibit a statistically significant difference in the estimated means between the two sample groups.

Empirical model

This paper employs an empirical model that allows for the analysis of the determinants of firm performance. The first dimension of firm performance of interest is financial performance. In order to estimate the determinants of financial performance of SMMEs, this paper follows the literature and employs a Mincer-type earnings function (Honig 1998). This human capital equation is typically used to examine the effect of human capital variables on the earnings of workers. In this case, it is used to examine the effect of human capital variables on entrepreneurial performance. The following equation is estimated:

$$\ln Y_i = \beta_0 + \beta_1 DS_i + \beta_2 IS_i + \beta_3 SC_i + \beta_4 OC_i + \beta_5 FC_i + \varepsilon_i \quad (1)$$

The dependent variable for firm financial performance is measured by monthly turnover, monthly net profit and productivity. Each of these dependent variables is in natural log form. Equation (1) is estimated using ordinary least squares (OLS) when the dependent variables are monthly turnover and productivity. In the case of monthly net profit, a Tobit estimator is used because the dependent variable is truncated at a lower boundary of zero.

The second dimension of firm performance of interest is a firm's ability to access market opportunities. In order to examine the factors determining a firm's ability to exploit market opportunities, a probit estimation procedure is employed. In this case, the dependent variable, y_i , is an indicator variable that is 1 when a firm is able to access the market opportunity, and 0 otherwise.

Specifically,

$$y_i = 1[y_i^* > 1] \quad (2)$$

$$y_i^* = \beta_0 + \beta_1 DS_i + \beta_2 IS_i + \beta_3 SC_i + \beta_4 OC_i + \beta_5 FC_i + \varepsilon_i \quad (3)$$

where y_i^* is a latent variable whose value determines whether a firm accesses the market opportunity. The FinScope Survey enables the measurement of access to market opportunities when it asks whether a firm submits a tender application or not.

With regard to the regression estimates for equations (1) and (3), specific focus is placed on the impact of education and skills on firm performance, which is captured by direct (DS_i) and indirect (IS_i) measures of human capital. The estimation of this equation also controls for social capital (SC_i), owner characteristics (OC_i) and firm characteristics (FC_i).

It is important to note that the regression results are likely to be affected by endogeneity. For instance, being located on a commercial property positively affects firm performance. However, the question that arises is whether a firm is successful because of this specific location or whether it is located in commercial premises because it is successful. Typically, studies attempt to address endogeneity by using panel data. However, this paper is restricted to cross-sectional data. As a result, this paper does not look at causation but rather correlation and, thus, the relationships between the variables.

Measures of SMME performance (dependent variables)⁵

The literature analysing SMME growth and success identifies a number of measures that can be used to measure SMME performance.⁶ This paper focuses on those that centre on firm financial performance and the ability to access market opportunities. Financial performance is captured by the measures of monthly turnover, monthly net profit, and productivity (turnover/workers). The ability to access market opportunities is captured by a dependent variable that measures whether an SMME has submitted a tender in the past 12 months.

Determinants of success (explanatory variables)

This paper is interested in the factors that determine SMME performance in terms of financial performance and the ability to exploit market opportunities. Particular emphasis is placed on the

5 A more detailed description of the construction of the dependent variables is provided in Appendix Table 3.

6 See Bosma et al. (2004) and Nichter & Goldmark (2009).

role played by education and skills. Therefore, the regression analysis controls for a number of direct and indirect measures of education and skills.

Direct measures of human capital⁷

Education

Owner education is one of the direct measures of human capital that can be controlled for in the regression analysis pertaining to equations (1) and (3). Prior research suggests that owners who are more highly educated tend to operate more successful firms. For instance, owners with higher levels of education may have greater capacity to learn new production processes, learn new product designs, and adjust more flexibly to changing market conditions. Owner level of education can be controlled for by either using a variable measuring the total years of schooling, or a series of dummy variables reflecting the exact level of education of the owner by category – the latter is applied in the econometric analysis in Section 5. It is expected that higher levels of owner education are positively associated with firm performance.

Experience

The other direct measure of human capital is the owner's level of experience. In small businesses, owners often learn on the job. Work experience may contribute to SMME performance along two dimensions: firstly, owners (and their employees) may expand their capabilities through the acquisition of skills and knowledge over time; secondly, owners may expand their business networks as they acquire experience in the industry. The common finding in the literature is that experience positively affects SMME performance and growth (Bosma et al. 2004; McPherson 1996).

There are a number of types of experience that can be used in the regressions: labour force experience, occupational experience, industry experience, and entrepreneurial experience (Sørensen & Chang 2006). Data limitations restrict the extent to which all these types of experience can be controlled for. The regression analysis below controls for labour force experience by using a measure of the owner's age and the square of this variable, in order to account

7 See Appendix Table 4 for details on the construction of the education and experience variables.

for the non-linear impact of experience over time. A dummy variable controlling for previous work experience is also included in the estimations below. It is expected that greater owner experience, especially industry-related work experience, is positively associated with enterprise performance.

Indirect measures of human capital⁸

Skills

The final set of human capital variables employed in the regression analysis tries to control for specific skills that the owner of the enterprise may possess. As far as we can tell, there are no studies for South Africa that have data detailing the specific skills that an entrepreneur might have or need, and how these impact firm performance. Therefore, the only human capital variables used in the literature are those controlling for education and experience.

The available datasets provide no direct measure of the types of skills that owners possess. However, given the emphasis that this paper places on the role of skills in SMME performance, indirect measures of the types of skills that firm owners possess are inferred from a set of questions in the FinScope Survey.

This is only possible using the FinScope Survey data since there is a section of the survey asking about the functions or services that a business currently uses.⁹ A follow-up question asks whether the owner and/or employees or an outside source performs this function. This paper assumes that if the enterprise uses any of these functions (e.g. computing), then the skill related to that function (e.g. IT skills) is a necessary skill to the business.¹⁰ Applying this logic, dummy variables are generated that measure whether an owner (or firm) has IT, accounting, administrative, human resource, marketing, or legal skills. It is expected that having various business skills (e.g. IT skills and marketing skills) positively affects the performance of the enterprise.

8 See Appendix Table 4 for details on the construction of the skill variables.

9 See Questions O.2 and O.3.

10 Even if the owner does not perform that function (for example, if it is outsourced), that skill is a function of the enterprise and upskilling the owner or his/her staff will aid the enterprise.

Based on an interrogation of the literature, a number of other variables that may influence SMME growth and performance are included in the econometric analysis. Following Nichter and Goldmark (2009), these variables are grouped into owner and firm characteristics.

Owner characteristics

Social capital

A number of studies explore the link between enterprise performance and owner access to social (business) networks (Bosma et al. 2004; Honig 1998). Having access to extensive social networks may benefit the enterprise by providing it with access to mentorship, information (e.g. profitable business opportunities) and resources (e.g. credit) (Nichter & Goldmark 2009). The econometric analysis includes dummy variables controlling for *stokvel* membership and business network membership (e.g. business organisations or professional bodies). It is expected that social capital is positively associated with firm performance.

A number of other owner characteristics that are typically controlled for in the literature are included as explanatory variables. Dummies controlling for race, gender and marital status are included.

Firm characteristics

It is believed that SMMEs face greater financial constraints than large firms. SMMEs' ability to access

credit, and whether access to credit influences SMME start-up and subsequent performance, has received attention in the literature (Honig 1998; Beck & Cull 2014; Farazi 2014). Given its importance in the literature, dummies controlling for access to formal and informal credit are included.

Dummies controlling for whether an enterprise keeps financial records, and whether these records are kept on a computer, are also included. It can be argued that the ability of a firm to keep financial records and to keep them digitally could proxy for financial and IT skills, respectively.

A number of variables control for certain enterprise characteristics that may influence the performance of the enterprise. For instance, dummies controlling for enterprise location (e.g. province, business premises), sector and BEE status are included.

Another firm characteristic that may influence firm performance is whether the firm advertises. If a firm advertises, it could be argued that the owner has some or other level of knowledge and skill regarding marketing. A dummy controlling for whether a firm advertises is included.

Finally, controls for firm age and firm size are included. The natural logs for both these continuous variables are used.

4. DESCRIPTIVE STATISTICS ANALYSIS

Before exploring the role of education and skills in determining firm performance, it is important to get a better understanding of the skill profile of SMME owners across the formal and informal sectors. In particular, emphasis is placed on measuring the direct (i.e. education and experience) and indirect level of firm owner skills and the skills they would require of their employees.

Education and skills in the SMME sector

Direct measures of skills: Owner education

A good starting point when analysing the skill profile of SMME firm owners is their level of formal education. Adams et al. (2013) state that the skill set required by workers and the self-employed in the formal sector is better aligned with the offerings provided by the formal education system, which is more vocational and technical in nature. The self-employed and those employed in the informal sector are required to perform multiple tasks, and thus require a broad range of skills (multiskilling), which the formal education system does not provide. However, Adams et al. (2013) suggest that despite this mismatch between the multiskilling required in the informal sector and the more defined skills offered in the formal education framework, formal education does provide a sound foundation upon which to develop further skills.

Therefore, it is important to consider the formal education profile of SMME firm owners across both the formal and informal sector. Understanding the existing level of education among the self-employed provides important information regarding the possible starting point for any skills development

programme for the self-employed in the informal sector. For example, the provision of part-time adult school-completion programmes may offer the basis for further skills development among the self-employed (and their employees) in the informal sector. Table 1 describes the formal education profile of firm owners across the non-agricultural formal and informal sectors using three datasets.¹¹

In Table 1, the proportion of informal sector enterprise owners is set against the proportion of formal sector enterprise owners by level of education. It is evident from the data that the ratios are highest for lower levels of education, suggesting that firm owners in the formal sector have higher levels of education than their informal sector counterparts. Figure 1 depicts the share of informal sector firm owners by level of education and indicates that just over two thirds of these individuals have less than a matric level education.¹² This suggests that the formal education foundation for those in the informal sector is relatively weak, and that skills development initiatives targeting those in the informal sector need to take this into consideration when designing curricula.

¹¹ These results pertain to the level of education of the owner of the enterprise (the FinScope and Diepsloot data only provide information on the self-employed), except in the case of the QLFS results, where the results for the informal sector pertain to the owner of the enterprise but the results for the formal sector pertain to the wage employees. The basis for this division is grounded on the idea that the self-employed in the informal sector typically resort to this employment option if they cannot obtain wage employment in the formal sector, and serve as a good comparator group. The formal sector self-employed are typically highly skilled professionals (e.g. lawyers, doctors, consultants etc.).

¹² Further detail on enterprise owner level of education by sector is provided in Appendix Table 5.

Table 1: Owner level of education by sector

Education category ¹	Ratio of informal to formal sector proportions ^{2, 3}		
	QLFS	FinScope	Diepsloot
No formal education	6.5*	4.1*	2.0
Some primary	2.9*	3.9*	0.9
Complete primary	1.8*	4.7*	1.0
Some secondary	1.4*	1.9*	1.1
Matric	0.5*	0.6*	0.9
Vocational	0.4*		0.7
Some university			0.8
Apprenticeship		0.3*	
Post-matric	0.2*	0.3*	
University degree	0.1*	0.1*	

Source: QLFS (2009: 3); FinScope Enterprise Survey (2010); World Bank Diepsloot Enterprise Survey (2012)

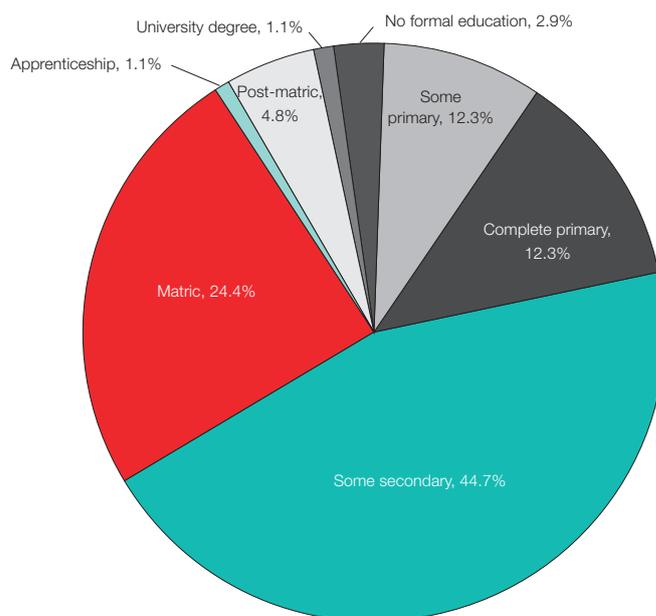
Notes:

1. These results pertain to the level of education of the owner of the enterprise, except in the case of the QLFS results where the results for the informal sector pertain to the owner of the enterprise but the results for the formal sector pertain to the wage employees in the formal sector.

2. These data show the ratio of the proportion of informal sector owners to the proportion of formal sector owners by level of education. The higher the number, the greater the proportion of informal sector owners relative to formal sector owners by respective level of education.

3. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.

Figure 1: Owner level of education in informal sector



Source: FinScope Enterprise Survey (2010)

Indirect measures of skills

The FinScope Survey data allows for the indirect measure of owner skills beyond formal level of education. This section makes use of these indirect measures in order to gain further insight into the skill profile of firm owners.

Table 2 shows that the two main sources of the skills needed by owners to manage their firms is through self-discovery ('taught myself'), and learning

from family.¹³ Over three quarters of informal sector firm owners cite these as their main source of skills. In the case of formal sector firm owners, these skill sources are prominent, but not to the same extent

¹³ It is also interesting to note that the relative importance of family as a source of skills is similar across both the informal and formal sectors. This is evident in the informal-to-formal-sector ratio in the fourth column of Table 2, which is close to unity. This is not an intuitive finding and it may be pointing to the important role that family businesses play in the South African economy.

Table 2: Owner's main source of skills by sector

Skill source ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
Work experience	0.143 (0.019)	0.080* (0.007)	0.56
Training programmes/courses	0.135 (0.021)	0.044* (0.005)	0.33
School	0.012 (0.004)	0.008* (0.002)	0.65
Tertiary education	0.094 (0.018)	0.009* (0.002)	0.09
Mentor/advisor	0.017 (0.006)	0.011 (0.003)	0.66
Family ⁴	0.135 (0.022)	0.117 (0.010)	0.87
Taught myself	0.316 (0.029)	0.654* (0.017)	2.07
On the job	0.148 (0.030)	0.075* (0.007)	0.51

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises. The data are weighted. Standard errors are in parentheses.
2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.
3. These data show the ratio of the proportion of informal sector owners to the proportion of formal sector owners by skill source. The higher the number, the greater the proportion of informal sector owners relative to formal sector owners whose main source of skills was from that particular source.
4. 'Family' incorporates two categories in the FinScope questionnaire, namely 'Spouse' and 'My family (other than spouse)'.
5. The sum of means in columns two and three do not sum to unity due to the omission of a variable covering all other skills sources, which is negligible.

as with informal sector firm owners. This suggests that individuals do not necessarily delay entry into self-employment while they acquire a defined set of entrepreneurial skills.¹⁴ In fact, data from the FinScope Survey indicate that the primary motivators driving entry into self-employment were that of necessity¹⁵ or the exploitation of an opportunity.¹⁶

Other key sources of skills for firm owners are those acquired through work experience and learning on the job. The importance (across both sectors) of skills acquired via self-discovery, work experience, on-the-job learning and family imply that the core skills needed by owners to manage their firms are not necessarily obtained via the formal education and training route. The implication for a skills-

development programme is that it should not aim to be the source of these core skills. Rather, skills-development offerings should be seen as providing secondary skills that complement existing core skills. These secondary skills should further equip the owner to 'do what he or she does, better'.

However, there is a role for the dissemination of skills via the formal education route. In Table 2, the proportion of enterprise owners in the informal sector who declare their main source of skills to emerge from formal education is lower relative to the matching proportion for formal sector enterprise owners. This indicates that formal education is a relatively more important source of skills for firm owners in the formal sector. This may be due to formal sector opportunities being more closely aligned with the specific qualifications acquired through formal education. However, it may also suggest that higher education may be less aligned to the needs of micro enterprises in the informal sector.

¹⁴ This is corroborated by the most frequently stated reasons by enterprise owners for business start-up being: 'lost my job', 'unemployed', 'saw an opportunity', and 'to make more money/provide for my family'.

¹⁵ I.e. 'Lost my job'; 'Could not find a job/unemployed'; 'To make more money/provide for my family'.

¹⁶ I.e. 'Saw an opportunity'.

Table 3: Owner's main source of skills by gender

Skill source ¹	Male	Female ²	Ratio of male to female proportions ³
Work experience	0.128 (0.012)	0.059* (0.007)	2.19
Training programmes/courses	0.047 (0.007)	0.059 (0.008)	0.80
School	0.008 (0.003)	0.008 (0.003)	0.97
Tertiary education	0.022 (0.004)	0.016 (0.003)	1.44
Mentor/advisor	0.017 (0.005)	0.008 (0.002)	2.01
Family	0.105 (0.014)	0.128 (0.013)	0.82
Taught myself	0.565 (0.021)	0.651* (0.022)	0.87
On the job	0.105 (0.012)	0.069* (0.009)	1.53

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises. The data are weighted. Standard errors are in parentheses.
2. * Indicates that the mean difference between male and female is statistically significantly different to zero.
3. These data show the ratio of the proportion of male owners relative to the proportion of female owners by skill source. The higher the number, the greater the proportion of male owners, relative to female owners, whose main source of skills was from that specific skill source.
4. 'Family' incorporates two categories in the FinScope questionnaire, namely 'Spouse' and 'My family (other than spouse)'.
5. The sum of means in columns two and three do not sum to unity due to the omission of a variable covering all other skills sources, which is negligible.

The FinScope data also reveal that the key sources of skills for firm owners vary according to gender, and this may have implications for skills development programmes targeting women. In Table 3, it is evident that men are more likely to acquire their core business skills from previous work experience, while learning on the job, or from tertiary education than women. Conversely, women are more likely to acquire their core business skills from teaching themselves, training programmes/courses, and from family members. It seems that men are more likely to acquire their skills through 'formal' avenues, whereas women are more likely to acquire their skills through 'informal' avenues. In particular, most women business owners acquire their core skills by teaching themselves. This may suggest that there is scope for the targeting of skills development initiatives at female entrepreneurs as they seem less likely to access these more 'formal' skills sources.¹⁷ The targeting of female

entrepreneurs is that much more important as they are more likely to find themselves in relatively more tenuous informal sector activities.

Table 4 presents the extent to which formal and informal sector firms use key business skills in their operations by using an indirect measure of these skills (as discussed in Section 3).¹⁸ For the majority of informal sector firms, these skills do not feature as a part of their firm operations. Although relatively more prominent, the extent to which these key business skills feature in formal sector firms is also limited. The limited extent to which these skills are applied in firms across both sectors suggests a role for higher education in terms of the provision of such business skills to SMME owners. The econometric analysis in the next section may shed light on whether these types of skills play a role in determining firm performance, and thus help identify which of these skill types to target.

¹⁷ Although it is evident in Table 3 that women are more likely than men to acquire their core business skills from a more 'formal source, training programmes/courses', the t-test suggests that the mean for men is not statistically different from the mean for women.

¹⁸ It is worth noting that only 13.6% of the sampled firms report having these business functions, the majority of which are formal sector firms.

Table 4: Functions performed by the business (owner/employees/outsourced)

Function ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
IT/computing	0.250 (0.025)	0.020* (0.003)	0.08
Accounting	0.326 (0.030)	0.020* (0.003)	0.06
Administrative	0.110 (0.018)	0.002* (0.000)	0.01
Human resources	0.107 (0.019)	0.005* (0.002)	0.05
Marketing and sales	0.230 (0.025)	0.020* (0.003)	0.09
Legal	0.062 (0.015)	0.001* (0.000)	0.02

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises. The data are weighted. Standard errors are in parentheses.
2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.
3. These data show the ratio of the proportion of informal sector owners relative to the proportion of formal sector owners by business function. The higher the number, the greater the proportion of informal sector owners relative to formal sector owners whose businesses have these functions.
4. The sum of means in columns two and three do not sum to unity because the proportions are calculated from data derived from questions with multiple responses. The results should be interpreted as such: in terms of IT functions, 25% and 2% of formal and informal sector firms have this function. As such, 75% and 98% of formal and informal sector firms do not have the IT function.

Enterprise owner perceptions of employee skill needs

Moving away from the skill profile of firm owners, this section details firm owners' perceptions of which skills their employees need. In this section, it is important to note that it pertains to firms that employ workers, and thus excludes own-account firms. The FinScope data indicates that 72.1 and 27.9% of firms in the formal and informal sectors employ workers respectively (see Table 7).

In Table 5, it is evident that the vast majority of firm owners in the informal sector (69%) felt that their employees needed neither a minimum level of education nor specialised skills. Of the remaining firms, 11.5, 5.8 and 13.7% of owners of informal sector firms felt that their employees needed specialised skills, a minimum level of education, or both, respectively.

The skill requirements are greater in formal sector firms. Table 5 shows that 8.2, 10.9 and 38.9% of owners of formal sector firms felt that their employees needed specialised skills, a minimum level of education, or both, respectively. However, the percentage of owners stipulating that their employees needed neither of these skill types (42%)

is surprisingly high. This does suggest that skills constraints with respect to the labour force, at least for firms that hire employees, may not be the most important constraint facing SMMEs.¹⁹ Such a finding does further motivate for analysing the importance of skills relative to other factors determining SMME success in the econometric analysis to follow.

The minimum education requirements stipulated by firm owners who responded affirmatively to employees needing a minimum level of education are not high, and this seems to be consistent across formal and informal sector firms. Table 6 shows that a matric qualification or less would suffice for employees in approximately 45% of formal and informal sector firms. The tertiary education requirement is minor across enterprises. The largest share of respondents, across both formal and informal sector firms, felt that their employees needed to have done some form of work-related training or coursework. This suggests that from a firm owner's point of view, the level of formal education of their employees may not be as important as more practical

¹⁹ This does seem to align with the results from question P5 in the FinScope Survey, which asks owners what the single biggest obstacle to growing their business is. Only 2.4% state that 'skills and education' is their biggest obstacle to growth.

Table 5: Main type of skill needed by employees

Skill type ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
Specialised skills	0.082 (0.018)	0.115 (0.018)	1.40
Minimum level of education	0.109 (0.023)	0.058* (0.011)	0.53
Both	0.389 (0.038)	0.137* (0.017)	0.35
None	0.420 (0.042)	0.690* (0.029)	1.64

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises that are employers. The data are weighted. Standard errors are in parentheses.

2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.

3. These data show the ratio of the proportion of informal sector owners relative to the proportion of formal sector owners by preferred skill type for their employees. The higher the number, the greater the share of informal sector owners relative to formal sector owners who prefer each respective skill type.

Table 6: Minimum level of formal education required by employees

Minimum level of education ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
Less than matric	0.172 (0.039)	0.236 (0.043)	1.37
Matric	0.286 (0.044)	0.239 (0.039)	0.84
Work-related training/course	0.431 (0.051)	0.461 (0.049)	1.07
Technical diploma/apprenticeship	0.068 (0.020)	0.059 (0.020)	0.86
General university degree	0.008 (0.004)	0.000* (0.000)	0.05
Specific university degree	0.013 (0.005)	0.001* (0.001)	0.11
Do not know	0.022 (0.020)	0.003 (0.002)	0.15

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises that are employers. The data are weighted. Standard errors are in parentheses.

2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.

3. These data show the ratio of the proportion of informal sector owners relative to the proportion of formal sector owners who prescribe a minimum level of education for employees if they believe that a minimum level of education is important for their employees. The higher the number, the greater the proportion of informal sector owners relative to formal sector owners who advance each respective level of education.

work-related skills, specific to the firm's activities. Therefore, skills development initiatives need to factor in this more practical type of skill.²⁰

Other firm characteristics of SMMEs

This paper is especially interested in the role played by skills in determining SMME financial performance and

ability to access markets. However, firm performance is influenced by a broad range of factors other than just skills. This section inspects the characteristics of firms that may influence their performance.²¹ Table 7 compares the mean firm characteristics of SMMEs across formal and informal sectors.

²⁰ An in-depth analysis of these work-related skill requirements, driven by consultation of SMME owners, would provide the basis for such a skills development initiative.

²¹ We also looked at individual characteristics pertaining to the owner of the business that may influence firm performance. However, these characteristics are not of prime interest to this paper and are reported in Appendix Table 6.

Table 7: Firm characteristics by sector

Firm characteristics ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
Sector			
Retail (no value-add)	0.429 (0.033)	0.597* (0.019)	1.39
Retail (value-add)	0.140 (0.023)	0.185* (0.013)	1.31
Professional services	0.083 (0.016)	0.006* (0.002)	0.08
Artisan services	0.162 (0.020)	0.149 (0.010)	0.92
Construction services	0.038 (0.010)	0.009* (0.002)	0.22
Tourism services	0.047 (0.010)	0.002* (0.001)	0.05
Other services	0.100 (0.018)	0.053* (0.006)	0.53
Location			
Urban (formal)	0.751 (0.033)	0.467* (0.022)	0.62
Urban (informal)	0.061 (0.019)	0.084 (0.008)	1.39
Former Bantustan	0.134 (0.030)	0.359* (0.019)	2.68
Rural (formal)	0.055 (0.012)	0.089* (0.008)	1.63
Non-permanent premises	0.065 (0.013)	0.176* (0.012)	2.71
Home-based premises	0.724 (0.027)	0.766 (0.014)	1.06
Market premises	0.033 (0.011)	0.033 (0.004)	1.01
Commercial premises	0.178 (0.023)	0.025* (0.003)	0.14
Financial capital			
Financial records	0.867 (0.019)	0.425* (0.021)	0.49
Financial records on computer	0.397 (0.030)	0.031* (0.005)	0.08
Access to credit	0.133 (0.024)	0.043* (0.005)	0.32
Social capital			
Member of <i>stokvel</i>	0.109 (0.023)	0.149* (0.012)	1.37
Social network	0.675 (0.030)	0.536* (0.021)	0.79
Business network	0.157 (0.023)	0.019* (0.003)	0.12
Other firm characteristics			
Employer	0.721 (0.026)	0.279* (0.019)	0.39
Markets product/service	0.664 (0.033)	0.300* (0.016)	0.45

Firm characteristics ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
BEE status	0.084 (0.018)	0.005* (0.001)	0.06
Business age	9.706 (0.497)	6.769 (0.254)	0.70
Performance measures			
Monthly turnover	119 052 (42 674)	12 270* (2 303)	0.10
Monthly net profit	34 290 (8 458)	4 164* (524)	0.12
Productivity (turnover/workers)	267 779 (83 940)	91 607* (14 129)	0.34
Firm size	5.594 (0.677)	1.597* (0.045)	0.29

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises. The data are weighted. Standard errors are in parentheses.

2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.

3. These data show the ratio of the proportion of informal sector enterprises relative to the proportion of formal sector enterprises by firm characteristic. The higher the number, the greater the proportion of informal sector enterprises relative to formal sector enterprises that exhibit each specific characteristic.

As expected, formal sector SMMEs exhibit more favourable financial performance indicators than their informal sector counterparts. On average, formal sector SMMEs generate monthly turnover and monthly profit of approximately R119 052 and R34 290 respectively.²² In contrast, informal sector SMMEs generate monthly turnover and net profit of R12 270 and R4 164 respectively. In terms of productivity, formal sector SMMEs generate much higher turnover per worker than SMMEs in the informal sector. Given the extent to which SMME financial performance differs across sectors, it is important to see how firms across these two sectors differ in terms of other firm characteristics.

Sector-specific factors may also be driving SMME performance.²³ SMMEs in the formal sector are more likely to be involved in service-related business activities, particularly professional services, which

may be associated with higher returns than retail-related activities. SMMEs in the informal sector are more likely to be involved in retail business activities, particularly no-value-add retail activities, which are expected to be associated with lower returns.

In terms of location, SMMEs in the formal sector are more likely to be based in urban (formal) areas. Conversely, informal sector SMMEs are more likely to be located in urban (informal) and rural (formal) areas, and former Bantustans. In fact, over a quarter of all firms (predominantly informal) are located in rural areas (formal) or former Bantustans.

Three quarters of SMMEs in both the formal and informal sectors are home-based enterprises. However, it is evident that formal sector SMMEs are more likely to be located in commercial premises, whereas their informal counterparts are more likely to be located in non-permanent premises.

Formal sector SMMEs are more likely to keep financial records, and to keep these on a computer. They are also more likely to have access to credit than SMMEs in the informal sector. Formal sector SMMEs are more likely to belong to social and business networks, whereas informal sector SMMEs are more likely to belong to a *stokvel*. On average,

²² A small number of firms generating very high levels of turnover and net profit push up the mean value of these measures. For example, the median for formal sector monthly turnover and monthly net profit sits at R22 485 and R7 500 respectively.

²³ The industry/sectoral classification in the FinScope Survey does not follow the Standard Industrial Classification, as per the QLFS. Therefore, we generate our own sector classification scheme, which is based on the information available in the FinScope Survey. More information is provided in Appendix C.

formal sector SMMEs are more likely to be employers, they are larger, they are older, they are more likely to advertise their product or service, and they are more likely to have BEE status.

Implications for skills development for SMMEs

Based on this descriptive analysis, the following observations can be made regarding skills development in SMMEs:

- The majority of firm owners in the informal sector have low levels of education. Skills-development programmes targeting such individuals need to take into account this base level of education when being designed.
- Most firm owners obtain the core skills needed to manage their business outside of formal education. Skills development should target the secondary skills needed by firm owners to 'do what they do better'
- The minor share of firms that employ business skills such as IT, accounting, marketing, etc. suggests scope for skills development programmes addressing deficiencies in these business skills.
- The perception of firm owners that their employees need more work-related training rather than more formal education implies that skills development programmes developing practical skills may be of more help to these firms.
- Variation in firm characteristics across sectors suggests a great deal of firm heterogeneity. As a consequence, skills development programmes need to be developed according to the type of firm that they are targeting.
- The spatial location of firms may impact on the reach of skills development initiatives targeting the owners and employees of micro-enterprises. For instance, over a quarter of all firms (predominantly informal) are located in rural areas (formal) or former Bantustans. This means that a one in every four micro-enterprises is located in regions of South Africa that are spatially distant from economic hubs. This may further impact on the ability and cost of providing skills to the individuals linked to these firms.

5. ECONOMETRIC ANALYSIS

The descriptive analysis above presents a skill profile of the owners of SMMEs and the various characteristics of these firms. This section employs econometric analysis to examine whether variation in firm owner skills and firm characteristics determine firm performance.

Skills and financial performance

Table 8 shows the results for the regressions examining the factors driving SMME performance.²⁴ The omitted categories in each of the regressions are for informal sector own-account firms in the retail (no value-add) sector, which do not keep financial records, are owned by single black foreign females with no education, and are located in a former Bantustan in the Eastern Cape, with no permanent business premises. Only variables controlling for direct and indirect measures of skills and some important firm characteristics are reported.²⁵

The importance of the owner's level of formal education is evident in Table 8. Across all three

performance measures, an SMME owner having at least some formal schooling (as opposed to no schooling) is positively and significantly associated with higher levels of SMME performance.²⁶ For example, a firm whose owner has 'a complete primary' education generates monthly turnover that is 105% higher than a firm whose owner has no formal schooling. Therefore, firm performance is firmly tied to the owner's level of education.

Furthermore, higher levels of owner education are consistently associated with higher levels of SMME performance across all three measures. It is interesting to note that there is an order of magnitude relating to each of the owner-education variables, which is consistent across all three measures. For example, relative to a firm owner with no schooling, a firm owner with some primary education, a complete primary education, some secondary education, a matric education, an apprenticeship, a post-matric qualification and a university degree generates 91%, 105%, 154%, 294%, 309%, 292% and 189% higher monthly turnover respectively. It is important to note that these returns to education are present even when controlling for formality. The implication for the higher education sphere is that investment directed towards informal sector firms and higher education and training could dramatically improve these firms' performance.

Turning to the dummy variable controlling for owner's previous work experience, it is evident that this has a positive and statistically significant effect

24 In the case of the productivity regression, we restrict the sample to firms that employ workers. The rationale for doing so is based on the initial coefficient estimates for the turnover and productivity estimations being similar in sign and magnitude. This was driven by the distribution of firms in terms of size, where over two thirds of the sampled firms are own-account. As such, the productivity and turnover measures for this large share of firms are closely related; thus, what is being picked up in the productivity regression is similar to what is being picked up in the turnover regression. By restricting the sample to firms that employ workers only in the productivity regression, we are better able to tease out the effects of the explanatory variables on productivity.

25 The full regression output for each of the regressions is included in Appendix Table 7.

26 In fact, the only owner-education variable that does not have a significant coefficient estimate is that for 'some primary education' in regression (2).

Table 8: Determinants of business success – regression estimates

Variables	(1) Log of monthly turnover	(2) Log of monthly net profit	(3) Log of productivity
Direct measures of skills			
Some primary	0.646** [0.285]	0.822 [0.623]	1.078* [0.566]
Primary	0.700** [0.343]	1.199* [0.679]	0.530 [0.554]
Some secondary	0.934*** [0.284]	1.320** [0.631]	1.286*** [0.475]
Matric	1.370*** [0.289]	1.571** [0.634]	1.496*** [0.492]
Apprentice	1.408*** [0.471]	2.054** [0.821]	1.026* [0.596]
Post-matric	1.366*** [0.322]	1.841*** [0.635]	1.465*** [0.526]
Degree	1.060*** [0.395]	1.469** [0.668]	1.329** [0.557]
Previous experience	0.194 [0.164]	0.335** [0.151]	0.388 [0.256]
Indirect measures of skills			
Skill – marketing	0.393* [0.216]	0.336 [0.245]	0.391* [0.219]
Skill – IT	-0.045 [0.292]	-0.282 [0.272]	-0.024 [0.271]
Skill – accounting	-0.055 [0.177]	0.240 [0.158]	0.257 [0.190]
Skill – administrative	-0.004 [0.260]	0.484 [0.344]	-0.254 [0.286]
Skill – HR	-0.155 [0.332]	0.067 [0.261]	0.005 [0.323]
Skill – legal	0.196 [0.502]	-0.289 [0.387]	0.180 [0.533]
Firm characteristics			
Firm size (1 employee)	0.170 [0.129]	0.074 [0.129]	1.229*** [0.442]
Firm size (2–4 employees)	0.581*** [0.126]	0.590*** [0.148]	1.123** [0.449]
Firm size (5–9 employees)	0.948*** [0.254]	0.637** [0.264]	0.869* [0.463]
Firm size (10–19 employees)	1.233*** [0.380]	1.193** [0.463]	0.566 [0.510]
Firm size (20–49 employees)	1.490*** [0.353]	0.925** [0.384]	
Firm size (50 plus employees)	2.969*** [0.837]	1.081 [0.757]	0.270 [0.996]
Formality	0.350*** [0.120]	0.519*** [0.132]	0.522*** [0.147]
Financial record	0.219** [0.088]	0.237** [0.110]	0.184 [0.152]
Computerised financial records	0.485* [0.252]	0.500 [0.313]	0.351* [0.210]
Advertises	0.263** [0.109]	0.125 [0.131]	0.164 [0.142]

	(1)	(2)	(3)
Variables	Log of monthly turnover	Log of monthly net profit	Log of productivity
BEE status	0.672** [0.315]	0.504 [0.350]	0.705** [0.357]
Constant	6.807*** [0.456]	5.513*** [0.721]	7.068*** [1.058]
Observations	2,567	2,563	880
R-squared	0.407		0.414

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises.
2. The data are weighted.
3. Standard errors in parentheses.
4. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.
5. The omitted categories are for informal sector own-account enterprises in the retail (no value-add) sector that do not keep financial records, are owned by single black foreign females with no education, and are located in a formal Bantustan in the Eastern Cape with no permanent location of business.
6. The regressions (1) and (3) use OLS, while regression (2) uses the Tobit estimator.
7. Dependent variables in natural log form.
8. The productivity regression is restricted to firms with one employee or more.

on monthly net profit in the firm. Firms whose owners have previous work experience generate 40% higher monthly net profit than firms whose owners do not have such experience. The coefficients for this variable are not statistically significant in determining monthly turnover or firm productivity. This implies that previous work experience is important, and that skills development initiatives could possibly target learnership programmes that expose potential entrepreneurs to existing industries.

From a skills development perspective, it is interesting to note that the effect of owner education on SMME success is greatest for a matric, post-matric and apprenticeship qualifications. This suggests that skills development initiatives targeting SMME owners should target matric and post-matric level competencies and not necessarily qualifications at the university degree level.

With regard to specific business-related skills, it appears that the ability of a firm to market itself, and hence the presence of that skill, is positively associated with its performance. There are two measures that are used to capture whether a firm owner (or staff) has (have) marketing skills: firstly, the 'Skill – marketing' dummy variable, which is equal to 1 if a firm has a marketing function and 0 otherwise;

and secondly, the 'Advertises' variable, which is equal to 1 if a firm advertises and 0 otherwise. Both of these variables are statistically significant and positive with respect to their relationship with monthly turnover and productivity (in the case of the 'Skill – marketing' dummy variable). For example, having a marketing function in a firm results in monthly turnover that is 48% higher, and productivity that is 48% higher, than a firm with no marketing function.

The indirect measures of skills variables do not perform well in the regressions. This may be due to the characteristics of the sample of firms in the FinScope Survey, which are predominantly own-account and in the informal sector. As such, we look at a number of other firm characteristics that may provide clues regarding skill requirements associated with SMME success.

For instance, the regressions also control for whether a firm keeps financial records. One could argue that keeping financial records indicates some level of accounting competency.²⁷ The results in Table 8 show that the 'Financial record' variable is positive and statistically significant in the monthly

²⁷ Even if the keeping of financial records is done by someone other than the owner, the statistical significance of this variable suggests that the inferred skill – accounting – is important to enterprise performance in general.

turnover and monthly net profit estimations. This implies that firms that keep financial records (and hence have some level of accounting competency) have monthly turnover that is 24% higher, and monthly net profit that is 27% higher, than firms that do not keep financial records.

Although the coefficient for the indirect measure of IT skills suggests that these skills do not statistically explain SMME performance, the variable controlling for whether a firm keeps computerised financial records may provide evidence that IT skills are important. If one were to assume that the ability of an enterprise to keep computerised financial records indicates the presence of some level of IT skills, then there is evidence in favour of this skill. The 'Computerised financial records' dummy variable is positive and statistically significant in explaining monthly turnover and firm productivity. A firm that keeps computerised financial records generates monthly turnover that is 62% higher, and is 42% more productive, than a firm that does not do so.

The coefficients for the dummy variables measuring the presence of administrative, human resource and legal skills suggest that these skills do not significantly determine enterprise performance. Using a Wald test to test for joint significance confirmed that the variables that control for business skills do not jointly determine enterprise performance.

Another variable of interest is the variable controlling for firm size. The positive and statistically significant coefficient estimates for the firm size dummy variables in Table 8 indicate that increased firm size is associated with higher levels of monthly turnover and monthly net profit.²⁸ For instance, firms with two to four employees, five to nine employees, 10 to 19 employees, 20 to 49 employees, and in excess of 50 employees generate monthly turnover that is 79%, 158%, 243%, 344% and 1 847% higher than

firms that do not employ anyone. A similar pattern is evident with monthly net profit.

Interestingly, the relationship between the firm size dummy variables and productivity indicate that smaller firms are relatively more productive than larger firms. The statistically significant and positive coefficients for the dummies controlling for firm size are higher for the smaller firm size dummies. The estimated coefficients suggest that firms that employ one employee, two to four employees, and five to nine employees are 242%, 207% and 138% more productive respectively than firms without any employees (the coefficients relating to dummies controlling for larger firms sizes are non-statistically significant). These results point to the importance of facilitating SMME development via initiatives targeting skills development, access to credit, or the like, in such a manner so as to allow these firms to expand and reap the productivity benefits from expansion.

The regressions also control for whether a firm has BEE status. The results are quite interesting since they imply that BEE status positively (and statistically significantly) affects firm performance in terms of monthly turnover and productivity. The ability of a firm to acquire BEE status may point towards some level of administrative competency that is related to the various administrative tasks involved with acquiring such status. However, the results may just suggest that firms that are already successful tend to acquire BEE status in order to progress further and obtain more lucrative projects or state tenders. Nevertheless, from a skills development standpoint, equipping entrepreneurs with the necessary skills to prepare the relevant documents used to apply for BEE status may be a valuable initiative in enabling them to access markets better.

Skills and exploiting market opportunities

This final section interrogates which factors determine a firm's ability to access market opportunities, with particular focus on the role played by skills. The ability to access market

²⁸ However, it must be noted that this relationship is likely to be endogenous. One cannot determine whether larger firms generate higher turnover or net profit because they are larger, or whether they are larger because they are more successful and can generate a higher turnover that allows them to employ more staff.

Table 9: Tender status by sector

Tender status ¹	Formal	Informal ²	Ratio of informal to formal sector proportions ³
Does not tender	0.885 (0.018)	0.986 (0.003)	1.11
Tendered successfully	0.072 (0.016)	0.004 (0.002)	0.05
Tendered unsuccessfully	0.044 (0.008)	0.010 (0.003)	0.23

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises. The data are weighted. Standard errors are in parentheses.

2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.

3. These data show the ratio of the proportion of informal sector owners relative to the proportion of formal sector owners by tender status. The higher the number, the greater the proportion of informal sector owners relative to formal sector owners who exhibit a specific tender status.

opportunities is measured using data on whether a firm submits a tender application or not.

Looking at Table 9, the first point to note is that the decision to submit a tender application is rare among both formal and informal sector firms. Only 1.4% of informal sector firms apply for tenders, while 11.6% of formal sector firms apply for tenders. It is also evident that successful tender applications are more likely in formal sector firms than in informal sector firms. This initially suggests that the decision to submit a tender application is closely linked to the sector status of the firm.

Table 10 presents the results of the probit regression that estimates which factors determine whether a firm submits a tender application.²⁹ The dependent variable is equal to 1 if an enterprise submitted a tender application and 0 otherwise.

The results in Table 10 suggest that a firm owner's level of education is an important factor determining whether it submits tender applications. They show that all of the education variables except 'some primary education' are positive and statistically significant. As a result, the probability of a firm submitting a tender application is higher for firms in which owners have a complete primary education, some secondary education, a matric, an apprenticeship, a post-matric qualification, or a degree than in firms where the owners have no formal education.

²⁹ The full regression output for each of the regressions is included in Appendix Table 7.

The results for the probit regression also show that firms in the formal sector have a higher probability of submitting a tender application than firms in the informal sector. To the extent that sector status influences a firm's ability to apply for tenders (e.g. being VAT registered), it may be an important component of any skills development initiative to facilitate and train firms' owners in the process of formalising their businesses.

Interestingly, the results point to firm size being an important determinant of tender application. The firm size dummy variables in Table 10 show a positive and statistically significant link between firm size and tender application, where the larger the size of the firm, the higher the probability of it submitting a tender application. The fact that the dummies for firm size are only statistically significant for firms that employ five to nine employees and more suggests a threshold. It may be the case that only larger firms are able to develop the economies of scale (i.e. produce enough) that would allow them to meet the demands pertaining to the tenders.

From a skills development perspective, the result suggesting that only large firms are able to apply for tenders may point to the need to facilitate training in the development of cooperatives. The data point to a majority share of SMMEs employing fewer than five workers (96%),³⁰ and thus probably not being able to reach the scale of operations needed to meet tender requirements. Bringing together and

³⁰ See Appendix Table 2.

Table 10: Determinants of tender access

Variables	Marginal effects
Direct measures of skills	
Some primary	0.009 [0.014]
Primary	0.026* [0.013]
Some secondary	0.023* [0.013]
Matric	0.022* [0.013]
Apprentice	0.043** [0.017]
Post-matric	0.041*** [0.016]
Degree	0.027 [0.017]
Previous experience	-0.005 [0.006]
Indirect measures of skills	
Skill – marketing	0.012 [0.009]
Skill – IT	0.006 [0.010]
Skill – accounting	-0.004 [0.008]
Skill – administrative	-0.005 [0.011]
Skill – HR	0.004 [0.011]
Skill – legal	-0.002 [0.010]
Firm characteristics	
Firm size (1 employee)	-0.002 [0.007]
Firm size (2–4 employees)	0.010 [0.006]
Firm size (5–9 employees)	0.017* [0.010]
Firm size (10–19 employees)	0.036*** [0.010]
Firm size (20–49 employees)	0.033* [0.017]
Firm size (50 plus employees)	0.075*** [0.026]
Formality	0.018*** [0.006]
Financial record	0.004 [0.005]
Computerised financial records	0.013 [0.011]
Advertises	0.014*** [0.005]

Variables	Marginal effects
BEE status	-0.007 [0.009]
Access to formal credit sources	0.033** [0.014]
Access to informal credit sources	-0.007 [0.017]
Observations	5,169

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises.

2. The data are weighted.

3. Standard errors in parentheses.

4. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

5. The omitted categories are for informal sector own-account enterprises in the retail (no value-add) sector that do not keep financial records, are owned by single black foreign females with no education, and are located in a former Bantustan area in the Eastern Cape with no permanent location of business.

equipping these smaller SMMEs with the information and skills needed to develop cooperative agreements may allow them to access the tender market.

The access to credit variables suggest that access to formal sources of credit positively impact on the probability of a firm submitting a tender application. We also control for access to informal credit sources and find that the estimated coefficient is not statistically significant.³¹ This result may suggest that in order to meet the scale of production or services demanded by tenders, firms need to have access to formal credit sources that will allow them to expand the scope of their operations. From a skills development perspective, this may point to the possibility of a multipronged strategy of enhancing the performance of SMMEs. For instance, there may be scope for skills development initiatives that include the involvement of private credit providers in the training processes. This may unlock constraints faced by SMMEs in accessing credit.

The coefficients of the variables controlling for skills are not statistically significant and suggest that these skills do not affect the probability of a firm submitting a tender application. However, the dummy variable controlling for whether a firm advertises is statistically significant and suggests that firms that advertise have a higher probability of submitting tender applications. As alluded to above, if one assumes that the action of advertising points towards marketing skills, then one can deduce from the regression results that marketing skills matter for tender applications. However, tender applications require no direct marketing. It may be that this variable is controlling for the same motivation that drives firms to market themselves – the motivation to bring in business – which, in this case, is to go and get business.

In light of the analysis in Sections 4 and 5, the next section discusses possible policy interventions that the DHET could implement with regard to courses and curricula offerings to the SMME sector.

³¹ It must be noted that we control for access to credit in the firm performance regressions but we do not report the estimates in the main text. The estimates are in Appendix Table 7 and suggest that access to credit (formal or informal) does not explain firm performance.

6. POLICY CONCLUSIONS

A key premise of this paper is that by analysing the role played by varying types of skills in determining SMME performance, a number of skills-focused policy recommendations can be deduced. This section discusses these recommendations. It must be noted that although the analysis above focuses on SMMEs across both the formal and informal sectors, the recommendations below are geared towards firms at the lower end of the continuum of firms (i.e. small and micro enterprises in the informal sector).³²

The first key issue is that of raising levels of education and literacy. It is clear from the econometric analysis that even after controlling for formality, higher levels of education of firm owners are associated with improved firm performance. Adams et al. (2013) emphasise the importance of formal education by arguing that the ability of individuals to acquire new skills is highly dependent upon a good foundation in formal education. Therefore, collaboration between higher education institutions and the Department of Education to design 'finishing school' curricula structured and designed around the constraints faced by these entrepreneurs (although not restricted to them) is an important step in the skills development process.

In a related point, Adams et al. (2013) argue for the multiskilling of entrepreneurs and workers in the informal sector, because multiple skills are needed for them to perform the numerous tasks required of them in their daily business activities. It can be

argued that the econometric results do corroborate this argument, because the indirect measures of skills and other firm characteristics suggest that accounting, marketing and IT skills are important for determining firm performance.

The descriptive and econometric results also point to the importance of on-the-job training and practical, work-related experience. A key policy thrust targeting practical, work-related experience focuses on the notion of training with production – for instance, the provision of post-schooling courses with a high practical content linked to apprenticeships or learnerships. The notion of training with production is important from the perspective of informal sector SMMEs because they are constrained by a high opportunity cost of training and low cash flow, which limits their ability to provide training. Training with production initiatives minimises these constraints.

It is also evident from the econometric results that the levels of education with the greatest impact on firm performance are matric, apprenticeship, and post-matric qualifications. A university degree qualification is associated with increased firm performance, but not to the same extent. The implication is that higher education skills provision need not place emphasis on time-intensive tertiary courses. Rather, focus should be placed on short, modular, competency-based training courses, which reduce the time – and, hence, the opportunity cost – of training. The results suggest that these short, modular courses should be high in practical content and focus on marketing, basic accounting skills and market access skills (e.g. preparing tender application documents and BEE status acquisition).

³² The FinScope data suggests that the majority of SMMEs fall within this lower end of the continuum. The FinScope data show that 89% of SMMEs are located in the informal sector and that 96% of them employ fewer than five employees.

Another channel from which to assist in the development of skills in these firms is to provide business-support services. The econometric results suggest that being able to maintain financial records, acquire BEE status and advertise are positively associated with higher levels of firm performance. Linkages with the DTI to provide business-support services to these firms are another possible intervention. A key area of focus is business-support initiatives aimed at enabling firms

to access markets – e.g. submitting tender applications and acquiring BEE status.

A final issue is creating an awareness of the benefits of training and skills development. Policy initiatives aimed at improving the skills of the owners and workers in these firms will not reach those individuals, resulting in low take-up if there is no attempt to inform them of these initiatives and their benefits.

7. CONCLUSION

In light of South Africa's high levels of unemployment and relatively small informal sector, enabling and supporting growth of SMMEs in the informal sector is a key policy priority. The associated benefits of SMME growth, such as employment creation, enhancement of economic growth and poverty alleviation, provide further motivation for the prioritisation of this sector. Therefore, the development of SMMEs in the informal sector is of key developmental importance.

As such, this paper has focused on which factors determine SMME performance and growth, with particular emphasis on education and skills. It is evident that education and skills play an important role in the financial performance of SMMEs and their

ability to access market opportunities. In light of this finding, Section 6 details the possible policy interventions that may facilitate the development of skills of workers and entrepreneurs in SMMEs in the informal sector.

However, it is important to note that the development of SMMEs is not solely influenced by their level of human capital. A range of other factors such as location, industry, social capital and financial capital influences the performance and success of SMMEs.³³ Therefore, it is important to bear in mind that skills development should only form a component of a wider policy framework aimed at facilitating the development of SMMEs.

³³ It must be noted, however, that financial and social capital do not significantly determine firms' financial performance and ability to access markets.

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APPENDIX A

Sample design and sample weighting for the FinScope South Africa Small Business Survey (2010)

Sample design

A key challenge facing the small business surveys is that in most developing countries, there exists no sampling framework (i.e. there are no records of all small businesses, both formal and informal). Establishing of a universe of small businesses is important for statistically valid sampling purposes. Therefore, the following methodology was implemented in order to develop a small business listing before the survey was conducted (see FinMark Trust 2010):

- Identifying the geographical areas of the country where the survey will be conducted – i.e. drawing a sample of enumerator areas (EAs) representative at national, urban-rural and regional level;
- Identifying all small business owners per geographical area/creating the universe of small business owners per geographical area – i.e. listing demographic details for every member of every household in each of the sampled EAs and, at the same time, identifying small business owners; and
- Drawing a random sample of small business owners for the purpose of interviewing per geographical area from the universe created – i.e. drawing a random sample of small business owners to be interviewed (using the listing information) for each of the sampled EAs.

The survey administrators drew a sample of 1 000 EAs from an EA sampling frame based on the 2001 population census and benchmarked to Statistics South Africa's released 2009 mid-year estimates of population numbers per province, race, five-year age groups, and gender. The survey administrators used 'EA type' and 'province' as stratification variables. Within each of the strata, EAs were selected based on probability proportionate to size, with size being determined by the number of households in the EA (FinMark Trust 2010).

The survey administrators applied a negative binomial listing approach to identify six qualifying households per sampled EA. Qualifying households were identified as those with one or more small business owners. Small business owners are defined as individuals (FinMark Trust 2010):

- who were 16 years or older;
- who were self-perceived business owners; and
- who employed fewer than 200 people.

Sample weighting

The survey administrators combined the following three components to ensure that the weighted data is a true reflection of the South African small business sector (FinMark Trust 2010):

- The inclusion probability of an EA in the small business sample;
- The inclusion probability of a household in an EA; and
- The inclusion probability of a small business owner in a household.

APPENDIX B

The Quarterly Labour Force and FinScope surveys are nationally representative and thus provide estimates on the total number of small businesses in the South African economy. However, a paper by Gasealahwe (2013) shows that these estimates differ substantially across the two surveys, and investigates what may be driving these differences. The QLFS estimates for the number of small businesses in South Africa is 1.1 million, whereas the FinScope Survey estimates this number to be 5.6 million – hence a difference of roughly 4 million.

Gasealahwe (2013) cites two major drivers of the differences in estimates across these two national surveys. First, the FinScope Survey includes non-South African citizens (17% of the sample)

whereas the QLFS is restricted to South African citizens. In this case, the QLFS may be underestimating the number of small businesses in South Africa. Second, Gasealahwe (2013) questions the appropriateness of the negative binomial sampling approach and its impact on the calculations of the sampling weights for the FinScope Survey. Gasealahwe (2013) states that the FinScope estimates may be overstated due to disproportionately large sampling weights. Nevertheless, even after accounting for these differences, the differential persists and thus Gasealahwe (2013) concludes by stating that the 'true' number of small business in South Africa in 2010 lies somewhere between two and six million.

APPENDIX C

Definition of the sector variables

The sector variables do not follow the same composition as the Standard Industrial Classification (SIC) scheme typically followed by Statistics South Africa when determining the industry breakdown of employment in the Quarterly Labour Force Survey. The FinScope Survey questionnaire does not allow for the derivation of an SIC-type classification. Therefore, in this paper, we generate an alternative sector classification based on Question A3 (81) of the FinScope questionnaire (see Appendix Table 1).

Appendix Table 1: Alternative sector classification scheme

What does this business mainly do?	Classification in this paper
<ul style="list-style-type: none"> Sell something in the same form that I buy from someone else (don't add value, e.g. cigarettes) Sell something that I collect from nature, e.g. herbs, firewood, charcoal, thatch, sand, stone Sell something that I get for free, e.g. second-hand clothes, scrap metal 	Retail (no value-add)
<ul style="list-style-type: none"> Sell something that I buy but add value to, e.g. repackage, cook, etc. Sell something that I make e.g. crafts, clothes, furniture, bricks 	Retail (value added)
<ul style="list-style-type: none"> Rear livestock/poultry and sell e.g. chickens Sell by-products of animals e.g. meat, eggs, milk Grow something and sell, e.g. fruit, vegetables, plants (like a nursery) 	Agriculture
<ul style="list-style-type: none"> Render a professional service e.g. doctor, lawyer, accountant, engineer, consultant 	Professional services
<ul style="list-style-type: none"> Render a skilled service e.g. mechanic, plumber, hair salon, barber, painting, landscaping 	Artisan services
<ul style="list-style-type: none"> Render building/construction services 	Construction services
<ul style="list-style-type: none"> Render tourism-related services e.g. accommodation/hotel/B&B/guest house, tour operators 	Tourism services
<ul style="list-style-type: none"> Render other services e.g. car wash, garden services, transport (taxi services), catering 	Other services

Source: FinScope (2010)

APPENDIX D

The distribution of the self-employed across the three datasets

It is worth taking note of variation in the characteristics of the self-employed (owners) and their businesses across the three datasets. Data on these characteristics across the three datasets is provided in Appendix Table 2.

Appendix Table 2: Distribution of the self-employed across the FinScope, QLFS and Diepsloot datasets

Characteristic	FinScope 2010	QLFS 2010:2	Diepsloot 2012
Owner characteristics			
15–24	12%	5%	8%
25–34	22%	24%	50%
35–44	29%	30%	28%
45–54	21%	24%	10%
55–64	11%	13%	3%
65 plus	5%	3%	1%
Male	40%	58%	
Female	60%	42%	
Black	82%	70%	
Coloured	6%	5%	
Indian	4%	4%	
White	8%	21%	
Eastern Cape	15%	11%	
Free State	7%	5%	
Gauteng	24%	27%	
KwaZulu-Natal	13%	21%	
Limpopo	11%	10%	
Mpumalanga	7%	9%	
Northern Cape	3%	1%	
North West	13%	5%	
Western Cape	9%	10%	
Firm characteristics			
0 employees	67%	66%	40%
1 employee	14%	6%	31%
2–4 employees	15%	14%	27%
5–9 employees	3%	6%	3%
10 plus employees	1%	8%	
Formal sector	11%	34%	9%
Informal sector	89%	66%	91%

Source: FinScope (2010), Diepsloot (2012) and QLFS (2009: 3)

In terms of owner age, the FinScope and QLFS distributions are similar, whereas the distribution of business owner age in the Diepsloot Survey is skewed towards younger individuals.

In terms of gender, the FinScope Survey is picking up more female-owned firms whereas the QLFS is capturing more male-owned firms. With respect to the racial distribution of firm owners, the main difference between the FinScope Survey and the QLFS relates to black and white firm owners. The FinScope Survey captures fewer white firm owners relative to that in the QLFS. The Diepsloot survey does not contain race and gender information for firm owners.

The distribution in terms of provincial location is similar across the FinScope Survey and the QLFS. The Diepsloot Survey is restricted to the Diepsloot Township in the northern part of Johannesburg, Gauteng.

With respect to firm size, the QLFS is picking up a greater share of larger firms, whereas the FinScope Survey is capturing a greater share of smaller firms. The Diepsloot Survey is mainly capturing smaller firms. The FinScope Survey is also capturing a greater share of informal sector firms than the QLFS, although slightly less than the share of informal sector firms in the Diepsloot Survey.

Based on the evidence in Appendix Table 2, the FinScope Survey seems to be capturing a larger share of firms that are small, female-owned, and informal, relative to the QLFS. These are characteristics associated with firms of a relatively marginal nature and hence poor financial performance.

Appendix Table 3: Construction of dependent variables

Variable	Location	Construction
Log of monthly net profit	Q.17 (239)	Net profit data is captured by category. The mid-point of each category and double the end category is taken as the measure of net profit. Net profit is provided at daily, weekly, monthly or annual levels. These data are converted to their monthly levels by adjusting for time.
Log of monthly turnover	Q.17 (237)	Similarly, as in the case of FinScope data for net profit above.
Log of Productivity	C.1b	Convert monthly turnover into annual turnover. Number of workers provided in Question C.1b. Own-account enterprises are given the value of one for number of workers. Divide annual turnover by number of workers.
Size of firm	C. 1b	Number of workers provided in Question C.1b.
Tender (yes/no)	D.4	Question D.4 provides data on whether an enterprise submitted A tender proposal in the last 12 months – yes or no.

Source: FinScope (2010)

Appendix Table 4: Construction of human capital variables

Variable(s)	Source	Location	Construction
Education	FinScope (2010)	Q.10 (232)	Construct dummies for 'no schooling', 'some primary', 'complete primary', 'some secondary', 'matric', 'apprenticeship', 'post-matric' and 'degree'. The reference dummy in the regressions is 'no schooling'.
	Diepsloot (2012)	B.14	Similar to construction to that applied to FinScope data.
	SESE (2009)	QLFS (2009: 3)	Similar to construction to that applied to FinScope data.
Experience	FinScope (2010)	Q.5 & O.1	Q.5 allows for the construction of a continuous variable measuring owner's age. We also construct an age-squared variable. O.1 asks for the most important source of skills for the owner. We create a dummy for work experience if the owner answers positively to this option.
Skills	FinScope (2010)	A.13, O.2 & O.3	These questions allow one to infer the possession of various skills of the owner and create the associated dummy variable. We create dummy variables that control for the following skills: IT, accounting, Administrative, human resource, marketing and legal.

Source: FinScope (2010), Diepsloot (2012) and SESE (2009)

Appendix Table 5: Owner's level of education by sector

Education category ^{1,2}	QLFS			FinScope		Diepsloot	
	Formal self-employed	Formal wage	Informal	Formal	Informal	Formal	Informal
No formal education	1.3	1.3	8.8*	0.7	2.9*	2.4	4.9
Some primary	6.7	11.4	33.5*	2.2	8.8*	14.6	13.2
Complete primary	1.7	4.5	8.0*	2.6	12.3*	9.8	10.0
Some secondary	13.2	17.4	25.1*	23.1	44.7*	34.1	39.1
Matric	33.4	35.2	18.0*	38.0	24.4*	31.7	27.6
Vocational	3.9	2.3	0.8*			4.9	3.2
Some university						2.4	2.0
Apprenticeship				4.4	1.2*		
Post-matric	17.5	16.9	3.2*	15.4	4.8*		
University degree	20.8	9.8	1.0*	13.5	1.1*		
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: QLFS 2009: 3, FinScope Enterprise Survey (2010), World Bank Diepsloot Enterprise Survey (2012)

Notes:

1. These results pertain to the level of education of the owner of the enterprise, except in the case of the QLFS results where the results for the informal sector pertain to the owner of the enterprise but the results for the formal sector pertain to the wage employees in the formal sector.
2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero. For the QLFS estimates, this refers to the mean difference between 'Formal wage' and 'Informal'.

Appendix Table 6: Owner characteristics by sector

	Formal	Informal ²	Ratio of informal to formal sector proportions ³
Age	43.949 (0.987)	40.291* (0.396)	
Black	0.523 (0.032)	0.860* (0.009)	1.64
Coloured	0.091 (0.015)	0.053* (0.005)	0.58
Indian	0.067 (0.016)	0.036* (0.005)	0.54
White	0.319 (0.027)	0.051* (0.006)	0.16
Male	0.527 (0.032)	0.387* (0.019)	0.73
Female	0.473 (0.032)	0.613* (0.019)	1.30
Married	0.643 (0.032)	0.461* (0.022)	0.72

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises. The data are weighted. Standard errors are in parentheses.
2. * Indicates that the mean difference between formal and informal is statistically significantly different to zero.
3. These data show the ratio of the proportion of informal sector owners relative to the proportion of formal sector owners by owner characteristic. The higher the number, the greater the proportion of informal sector owners relative to formal sector owners who exhibit each specific characteristic.

Appendix Table 7: Determinants of business success – regression estimates

Variables	(1) Log of monthly turnover	(2) Log of monthly net profit	(3) Log of productivity
Owner characteristics			
Age	0.019 [0.015]	0.015 [0.019]	-0.008 [0.034]
Age ²	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Coloured	0.183 [0.170]	0.104 [0.263]	-0.004 [0.297]
Indian	0.143 [0.137]	0.433** [0.185]	0.569*** [0.177]
White	0.169 [0.172]	-0.004 [0.175]	0.042 [0.209]
Male	0.079 [0.083]	0.113 [0.097]	0.119 [0.124]
Married	0.190** [0.095]	0.070 [0.142]	0.123 [0.177]
Cohabit	0.164 [0.127]	0.249 [0.154]	0.559*** [0.217]
Widowed/divorced	0.094 [0.145]	-0.014 [0.166]	-0.228 [0.244]
Owner South African	-0.726*** [0.195]	-0.440* [0.257]	-0.230 [0.303]
Direct measures of skills			
Some primary	0.646** [0.285]	0.822 [0.623]	1.078* [0.566]
Primary	0.700** [0.343]	1.199* [0.679]	0.530 [0.554]
Some secondary	0.934*** [0.284]	1.320** [0.631]	1.286*** [0.475]
Matric	1.370*** [0.289]	1.571** [0.634]	1.496*** [0.492]
Apprentice	1.408*** [0.471]	2.054** [0.821]	1.026* [0.596]
Post-matric	1.366*** [0.322]	1.841*** [0.635]	1.465*** [0.526]
Degree	1.060*** [0.395]	1.469** [0.668]	1.329** [0.557]
Previous experience	0.194 [0.164]	0.335** [0.151]	0.388 [0.256]
Indirect measures of skills			
Skill – marketing	0.393* [0.216]	0.336 [0.245]	0.391* [0.219]
Skill – IT	-0.045 [0.292]	-0.282 [0.272]	-0.024 [0.271]
Skill – accounting	-0.055 [0.177]	0.240 [0.158]	0.257 [0.190]
Skill – administrative	-0.004 [0.260]	0.484 [0.344]	-0.254 [0.286]
Skill – HR	-0.155 [0.332]	0.067 [0.261]	0.005 [0.323]
Skill – legal	0.196 [0.502]	-0.289 [0.387]	0.180 [0.533]
Firm characteristics			
Retail (value-added)	-0.083 [0.125]	-0.207 [0.188]	0.082 [0.199]
Professional services	1.043* [0.594]	0.232 [0.263]	1.492** [0.642]
Artisan services	-0.182	-0.055	-0.019

Variables	(1) Log of monthly turnover	(2) Log of monthly net profit	(3) Log of productivity
	[0.136]	[0.140]	[0.207]
Construction services	-0.264	-0.284	-0.344
	[0.205]	[0.227]	[0.298]
Tourism services	0.270	-0.673	0.500
	[0.493]	[0.678]	[0.517]
Other services	-0.312**	-0.344*	-0.172
	[0.156]	[0.187]	[0.231]
Firm size (1 employee)	0.170	0.074	1.229***
	[0.129]	[0.129]	[0.442]
Firm size (2–4 employees)	0.581***	0.590***	1.123**
	[0.126]	[0.148]	[0.449]
Firm size (5–9 employees)	0.948***	0.637**	0.869*
	[0.254]	[0.264]	[0.463]
Firm size (10–19 employees)	1.233***	1.193**	0.566
	[0.380]	[0.463]	[0.510]
Firm size (20–49 employees)	1.490***	0.925**	
	[0.353]	[0.384]	
Firm size (50 plus employees)	2.969***	1.081	0.270
	[0.837]	[0.757]	[0.996]
Formality	0.350***	0.519***	0.522***
	[0.120]	[0.132]	[0.147]
Firm established post-2008	-0.103	-0.123	-0.083
	[0.078]	[0.101]	[0.142]
Financial records	0.219**	0.237**	0.184
	[0.088]	[0.110]	[0.152]
Computerised financial records	0.485*	0.500	0.351*
	[0.252]	[0.313]	[0.210]
Advertises	0.263**	0.125	0.164
	[0.109]	[0.131]	[0.142]
BEE status	0.672**	0.504	0.705**
	[0.315]	[0.350]	[0.357]
Home-based premises	0.052	-0.200	0.361
	[0.127]	[0.166]	[0.245]
Market premises	0.334*	0.263	0.741
	[0.196]	[0.264]	[0.487]
Commercial premises	0.790***	0.649***	1.113***
	[0.196]	[0.248]	[0.296]
Access to formal credit sources	-0.173	0.119	-0.425
	[0.208]	[0.171]	[0.275]
Access to informal credit sources	-0.245	-0.141	-0.536*
	[0.150]	[0.143]	[0.303]
Business network	0.415*	0.271	0.364*
	[0.229]	[0.195]	[0.199]
Constant	6.807***	5.513***	7.068***
	[0.456]	[0.721]	[1.058]
Observations	2,567	2,563	880
R-squared	0.407		0.414

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises.
2. The data are weighted.
3. Standard errors in parentheses.
4. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

The omitted categories are for informal sector own-account enterprises in the retail (no value-add) sector that do not keep financial records, are owned by single black foreign females with no education, and are located in a former Bantustan in the Eastern Cape with no permanent location of business.

6. The regressions (1) and (3) use OLS, while regression (2) uses the Tobit estimator.
7. Dependent variables in natural log form.
8. The productivity regression is restricted to firms with one employee or more.

Appendix Table 8: Determinants of tender access

Variables	Marginal effects
Age	0.003** [0.001]
Age ²	-0.000** [0.000]
Coloured	0.004 [0.009]
Indian	-0.011 [0.013]
White	-0.012* [0.007]
Male	-0.000 [0.005]
Married	-0.002 [0.006]
Cohabit	-0.001 [0.010]
Unmarried	-0.009 [0.009]
Owner South African	0.003 [0.025]
Some primary	0.009 [0.014]
Primary	0.026* [0.013]
Some secondary	0.023* [0.013]
Matric	0.022* [0.013]
Apprentice	0.043** [0.017]
Post-matric	0.041*** [0.016]
Degree	0.027 [0.017]
Previous experience	-0.005 [0.006]
Skill – marketing	0.012 [0.009]
Skill – IT	0.006 [0.010]
Skill – accounting	-0.004 [0.008]
Skill – administrative	-0.005 [0.011]
Skill – HR	0.004 [0.011]
Skill – legal	-0.002 [0.010]
Retail (value-added)	0.015*** [0.005]
Professional services	-0.010 [0.013]
Artisan services	0.002 [0.007]

Variables	Marginal effects
Construction services	0.042*** [0.012]
Tourism services	-0.012 [0.015]
Other services	0.036*** [0.008]
Firm size (1 employee)	-0.002 [0.007]
Firm size (2–4 employees)	0.010 [0.006]
Firm size (5–9 employees)	0.017* [0.010]
Firm size (10–19 employees)	0.036*** [0.010]
Firm size (20–49 employees)	0.033* [0.017]
Firm size (50 plus employees)	0.075*** [0.026]
Formality	0.018*** [0.006]
Firm established post-2008	-0.011** [0.005]
Financial records	0.004 [0.005]
Computerised financial records	0.013 [0.011]
Advertises	0.014*** [0.005]
BEE status	-0.007 [0.009]
Home-based premises	-0.009 [0.006]
Market premises	-0.001 [0.010]
Commercial premises	-0.026** [0.011]
Access to formal credit sources	0.033** [0.014]
Access to informal credit sources	-0.007 [0.017]
Business network	0.007 [0.008]
Observations	5,169

Source: FinScope Enterprise Survey (2010)

Notes:

1. Sample restricted to non-agricultural enterprises.
2. The data are weighted.
3. Standard errors in parentheses.
4. *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.
5. The omitted categories are for informal sector own-account enterprises in the retail (no value-add) sector that do not keep financial records, are owned by single black foreign females with no education, and are located in a former Bantustan area in the Eastern Cape with no permanent location of business.



LABOUR MARKET
INTELLIGENCE PARTNERSHIP

The Role of Skills and Education in Predicting Micro-enterprise Performance

This report provides policy guidance concerning skills development initiatives to the SMME sector, by examining the determinants of SMME performance in South Africa and, in particular, the role played by education and skills in driving firm performance.

We do this firstly by using direct and indirect measures of skills to generate a human capital profile of SMME owners across both the formal and informal sectors. Secondly, we use econometric analysis to examine the factors determining firm performance along two dimensions: financial performance, and the ability to access market opportunities.

Results show that formal education is a key factor driving SMME performance. Higher levels of education are associated with higher returns to self-employment. Previous experience, and marketing, accounting and IT skills positively affect firm performance.

However, because SMME performance is influenced by a wide range of factors, skills policy interventions should form part of a wider policy initiative aimed at enabling and supporting SMME growth in South Africa. Skills interventions in the informal sector are of developmental importance and a policy priority.

About the LMIP

The Labour Market Intelligence Partnership (LMIP) is a collaboration between the Department of Higher Education and Training, and a Human Sciences Research Council-led national research consortium. It aims to provide research to support the development of a credible institutional mechanism for skills planning in South Africa. For further information and resources on skills planning and the South African post-school sector and labour market, visit <http://www.lmip.org.za>.

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