

# “Predictors of incubation of small, micro and medium-sized businesses in Gauteng Province, South Africa”

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## SECTION 1. Macroeconomic processes and regional economies management

Zelege Worku (South Africa)

### Predictors of incubation of small, micro and medium-sized businesses in Gauteng Province, South Africa

#### Abstract

This article is a result of a 5-year long follow-up study (2007 to 2012) of a random sample of 349 small, micro and medium-sized business enterprises (SMMEs) that operate in and around the City of Tshwane in South Africa. Data were gathered from each of the businesses on socioeconomic factors that are known to affect the long-term survival of small businesses. The objective of the study is to identify and quantify key predictors of viability and long term survival. The study finds that 188 of the 349 businesses that took part in the study (54%) are not viable, and that the long-term survival and viability of small businesses is adversely affected by lack of entrepreneurial skills, lack of supervisory support to newly established businesses, and inability to operators running newly established businesses to acquire relevant vocational skills.

**Keywords:** Tshwane, SMMEs, survival analysis, entrepreneurial skills, hazard ratio.

**JEL Classification:** C5, M21.

#### Introduction and background

A 5-year long study (2007 to 2012) of a random sample of 349 small, micro and medium sized enterprises (SMMEs) conducting business in and around the city of Pretoria, South Africa in which factors responsible for failure in SMMEs were investigated by using panel data analysis. At the end of the study, 188 of the 349 small businesses were not financially viable. The purpose of the study is to identify and quantify key variables that were responsible for failure in the 188 businesses that were not viable. This is the first study of its kind in the City of Tshwane. The study is exploratory in nature, and describes the current state of SMMEs that are operating in and around the City of Tshwane in South Africa.

According to the South African Small Enterprise Development Agency (2013), 60% of South African small businesses fail within their first year of operation. The agency has found that although the South African Department of Trade and Industry provides incentives and support to small and medium sized enterprises, the degree of support provided to newly established small businesses is grossly inadequate. As a result, small and medium sized enterprises are seen failing in a number of areas of specialization (the South African Chamber of Commerce and Industry, 2013; the South African Department of Trade and Industry, 2013; the South African Small Enterprise Development Agency, 2013; Ladzani & Netswera, 2009). The purpose of this research was to identify factors that affect the growth and development of small enterprises that conduct business in and around Pretoria. The South

African Chamber of Commerce and Industry (2013, pp. 2-3) has reported that more than 30% of the total gross domestic product of South Africa is attributed to small and medium-sized enterprises. Also, 20% of all units exported by South Africa are produced by small and medium-sized enterprises. It is impossible to grow the South African national economy on a sustainable basis without simultaneously achieving sustained growth and development in small and medium-sized enterprises (Saru, 2007). Swanson (2007) has reported that realizing sustained growth and development in small and medium-sized enterprises is a critical requirement for achieving sustained growth and development at the national level. Failure in small and medium-sized enterprises amounts to failure in the national economy according to Zheng, O'Neill and Morrison (2011), Friedman, Miles and Adams (2000) and Nieman (2001). This particular study is essential for finding out the root causes of failure in small and medium-sized enterprises that are conducting business in the Pretoria region of South Africa. Very few studies have been conducted so far in and around the city of Pretoria. For this reason, this study carries significant weight and importance. Future researchers can use findings from this study for conducting large scale studies at other regions of South Africa. Small businesses and enterprises make a significant contribution to the South African national economy. The growth and development of national economies is dependent on the rate at which small enterprises grow. In recognition of this fact, the South African National Government supports and actively promotes the growth and development of small businesses in South Africa (South African Parliament, 2008). However, the failure rate of newly established small businesses in South Africa is high.

## 1. Objectives of study

The overall objective of this study was to identify key predictors of failure in small enterprises in Pretoria, and to propose feasible remedial actions so that support could be provided to struggling small business enterprises. The study had the following specific objectives:

- ◆ To describe the characteristics of small enterprises conducting business in and around Pretoria;
- ◆ To identify factors that adversely affect sustained growth and viability in small enterprises in Pretoria; and
- ◆ To propose suitable and feasible remedial actions that could assist small and medium-sized enterprises in Pretoria.

## 2. Research questions

This study aims to provide adequate answers to the following research questions:

- ◆ What are the socioeconomic characteristics of small business enterprises operating in and around the city of Pretoria?
- ◆ What are the key factors that adversely affect long-term viability in newly established small enterprises operating in and around the city of Pretoria?

## 3. Literature review

According to the South African Small Enterprise Development Agency (2013), although the South African Government promotes the growth and development of small and medium-sized enterprises by massively investing in local institutions such as the South African Centre for Small Business Promotion (CSBP), Ntsika Enterprise Promotion Agency and Khula Enterprise Finance, the failure rate in newly established South African small, micro and medium-sized enterprises is as high as 60%. The study conducted by Ladzani and Netswera (2009) has found that small and medium-sized enterprises often fail due to lack of access to finance and lack of entrepreneurial skills. At the national level, South African small and medium-sized enterprises in all economic sectors are characterized by an acute shortage of entrepreneurial and technical skills and difficulty in raising finance from micro-lending institutions at favorable rates (South African Small Enterprise Development Agency, 2013). According to research conducted by the South African Chamber of Commerce and Industry (2013), the situation at the Pretoria region is not different from the situation at the national level. The purpose of the study is to identify and quantify key factors that are responsible for failure in small and

medium-sized enterprises operating in the Pretoria region. Findings obtained from the study conducted by the South African Small Enterprise Development Agency (2013) show that 60% of all newly established small businesses in South Africa fail within their first year of operation. According to the report, although the South African Department of Trade and Industry provides incentives and support to small and medium sized enterprises, the degree of support provided is grossly inadequate. As a result, small and medium sized enterprises are seen failing in a number of areas of specialization (the South African Chamber of Commerce and Industry, 2013; the South African Department of Trade and Industry, 2013; the South African Small Enterprise Development Agency, 2013; Ladzani & Netswera, 2009). According to Zheng, O'Neill and Morrison (2011), Friedman, Miles and Adams (2000) and Nieman (2001), it is essential to develop small and medium-sized business enterprises in order to develop national economies.

To date, very few studies have been conducted in the Pretoria region to identify and quantify the key factors that are responsible for failure in small and medium-sized enterprises. Small Businesses are often regarded as high risk operations locally and globally due to the presence of factors that are difficult to predict adequately (Thomas, 2000). According to Useem (2001), it is essential to support and guide small business enterprises in the early stage of establishment by providing them with supervisory and skills-related support and supervision. White (2005) has found that small and medium-sized enterprises often experience costly bureaucratic and administrative challenges. In South Africa, small and medium-sized enterprises are set up with minimal support and guidance from the national Government although the duty of the national Government is to create an enabling economic environment. The study was conducted against the background of the need to obtain vital information that explains why more than half of all newly established small and medium-sized enterprises fail in the first three years of their establishment in Pretoria. Findings from the study are valuable for providing meaningful assistance to businesses that operate in Pretoria.

According to Lawal (2002) and Joseph (2005), small, micro and medium-sized enterprises are defined as an enterprise with a maximum asset base of about 10 million Rand excluding land and working capital in which between 10 and 300 employees work. According to Oboh (2004), small, micro and medium-sized enterprises are defined as an enterprise that has an asset of between 2,500 and 20 million Rand excluding the cost of land and

working capital. According to the National Small Business Act of South Africa (the South African Department of Trade and Industry, 2013), small, micro and medium-sized enterprises are defined as follows:

- ◆ *Micro enterprises:* with growth potential that involves the owner and family members or at the most four employees and whose turnover is below 150,000 Rand, the threshold for VAT registration.
- ◆ *Small enterprises:* with 5 to 100 employees and are owner-managed and fulfill all the trappings associated with formality.
- ◆ *Medium-sized enterprises:* with 100 to 200 employees which are still owner-managed and fulfill all the trappings associated with formality.

Small, micro, medium-scale enterprises (SMMEs) are also defined as enterprises with a minimum asset base of 25 million Rand excluding the cost of land and working capital by the South African Department of Trade and Industry (2013).

The rapid increase in consumer expenditure by residents in the Pretoria region since the early 1990s and the fact that the overwhelming majority of township dwellers have chosen to stay in their townships has enabled small businesses to set up shops with a view to render essential services to residents in the Pretoria region of Gauteng Province. The importance of small and medium-sized enterprises is well documented in terms of economic development, competitiveness, and innovation. The contribution and importance of small enterprises to the national economy is based on the ability of the sector to create employment opportunities to the masses, utilization of local resources, output expansion, transformation of traditional and local technology, the production of intermediate goods, the promotion of an even development, the reduction of income disparities, and its ability to increase the revenue base for the South African Government. Small, micro and medium-sized enterprises (SMMEs) are of a great importance in the area of low capital and output ratio, optimal utilization of local inputs and other multiplier effect per unit of investment. The SMME sector is viewed by the South African Department of Trade and Industry (2003) as the key element in fostering economic growth among the unemployed masses in urban and semi-urban parts of Pretoria. Small and medium-sized enterprises often use locally made and available technologies for operation, growth in SMMEs amounts to growth in local and indigenous technology. The SMME sector is crucially needed for achieving overall economic growth and for the

alleviation of poverty among the masses. The SMME sector is supported by the South African Government as a means of building capacity in local entrepreneurs and to promote the use of local raw materials, technologies and manpower.

The SMME sector plays a critical role in job creation, skills development, technology transfer, and the alleviation of poverty among the unemployed. As a result, the South African Government regards the SMME sector as an engine of growth and economic expansion. The SMME sector in South Africa is similar to the SMME sectors in other Sub-Saharan African countries, and is exposed to high failure rate, lack of entrepreneurial skills, lack of resources, lack of access to finance and lack of modern technology. Although growth in the SMME sector is essential for establishing sustained growth in the overall economy, the sector is characterized by high failure rate due to lack of entrepreneurial and technical skills that are essential at the market place (Hashim, Ahmad and Leng, 2006).

According to the South African Department of Trade and Industry (2003), small, micro and medium-sized enterprises (SMMEs) contribute around 40% of South Africa's gross domestic profit, and employ more than half of the private sector work-force. It is estimated that as much as 80% of new jobs in world economies are being created by SMMEs, and this makes the SMME sector a key player in the national economy. There are more than 1.5 million self-employed people in the SMME sector, and they contribute about 40% of the total remuneration in South Africa. The South African Department of Trade and Industry (2003, pp. 4-5) promotes small businesses by implementing a number of key initiatives. Examples of such initiatives are the Centre for Small Business Promotion (CSBP), Ntsika Enterprise Promotion Agency and Khula Enterprise Finance. The CSBP implements and administers the aims of the national strategy, which includes job creation. The DTI has recently signed an agreement with the European Union which will see the EU donating R550m to start a risk capital fund for SMMEs. The fund will be administered by the Industrial Development Corporation (IDC) and the European Investment Bank, and 90 enterprises will benefit. The IDC allocates 75% of new business loans to SMMEs. The South African Women's Entrepreneur Network was rolled out countrywide in 2002, alongside manufacturing advisory centres in all provinces. Non-governmental organizations include the Small Enterprise Foundation, which has a microcredit program aimed at micro-enterprises, and the Tshumisano credit program that specifically supports and promotes female entrepreneurs. The

NTSIKA program provides non-financial support services to the SMME sector, tackling issues like management development, marketing and business development services. The agency also helps with research and inter-business linkages. Khula offers financial support mechanisms to the sector. The financial products include loans, the national credit guarantee system, grants and institutional capacity building. The KHULA program provides micro-lending to newly established businesses. The BRAIN program (Business Referral and Information Network) offers basic information and essential service links to entrepreneurs. The BRAIN website includes information about the government's incentives and SMME support agencies, as well as links to business centres. The Franchise Advice and Information Network (FRAIN) program strives to supply high quality information and support services to individuals and small businesses in order to promote growth and improvement in franchise businesses. The FRAIN program is implemented by NAMAC (National Coordinating Office for Manufacturing Advisory Centres) with assistance from the Council for Scientific and Industrial Research (CSIR). The Namac program has developed an extensive delivery structure across South Africa that serves as a channel for the application of new tools, information, products and projects, thus enabling the effective delivery of solutions aimed at SMMEs. The emphasis is on Historically Disadvantaged Individuals' (HDI) businesses. The Business Partners Limited (BPL) program provides assistance to small and medium enterprises financially. The programme provides financial assistance at a cost of between 150, 000 Rand and 15 million Rand. The Tourism Enterprise Program (TEP) supports small businesses in the tourism industry financially and technically. The main objectives of the program are to encourage and facilitate the growth and expansion of small and medium enterprises in the tourism economy, resulting in job creation and revenue generating opportunities. Primary emphasis is placed on historically disadvantaged entrepreneurs and enterprises. For example, at the World Parks Congress the TEP was instrumental in facilitated deals which provided employment for its beneficiaries. The National Small Business Office (NSBO) in SARS is the custodian of all small business tax and customs policy matters within SARS. The office exists to maximize compliance among small businesses while at the same time finding ways to reduce the compliance burden faced by these businesses in South Africa.

There are various business structures that are suitable for small businesses. The structure of the business determines the legal status of the business enterprise. Depending on the nature of the business,

the number of people involved, management capabilities, personal risk and future business plans, a suitable business structure can be chosen for a newly established company. A sole-trading company is suitable for running a business that has no fixed assets. The owner is the sole employee. Income accrues directly to the owner and there are no complicated statutory returns other than meeting basic legal and tax requirements. The disadvantage is that the business is not a separate legal entity, so the owner is liable for, and can be sued for the business's debts. If the owner of the business dies, the business ceases to exist. A business based on partnership enables 20 or fewer partners to operate a business by pooling their resources and skills together. By South African law, a closed corporation or CC company is allowed to operate as a business without fulfilling the formalities indicated in the South African Companies Act that governs (Pty) Ltd companies in South Africa. This structure is ideal for a business that purchases stock on credit. A closed corporation can have between one and 10 members, each of whom owns an agreed percentage of the business and who is liable for managing it properly. A closed corporation cannot be owned by a company or be a subsidiary of another closed corporation. A closed corporation, rather than its members, can sue and be sued. All closed corporations in South Africa are governed by the Closed Corporations Act, which is administered by the Companies and Intellectual Property Registration Office (CIPRO).

A review of the literature shows that small and medium-sized enterprises are often beset by a host of factors that curtail their survival. In the majority of Sub-Saharan African countries, the most notable obstacles to sustained growth and development are lack of access to finance (Clemens, 2006), the acute shortage of entrepreneurial skills (Chromie, 2000), poor infrastructural development (Cooper and Schindler, 2006) and heavy bureaucracy and legislative obstacles (Bosworth, 2009). The study conducted by Chapman (2000) has found that superior and well-proven entrepreneurial skills are essential for establishing viable small, micro and medium enterprises globally, and that business operators who lack entrepreneurial skills must aspire to improve their capacity of business leadership constantly. Globally, all national governments of the world's leading economies actively support the small, micro and medium enterprises (SMME) sector globally (Fuller and Tian, 2006). Support is provided to the SMME sector in various ways. One commonly used method of providing SMMEs with support is the adoption of tax-related policies that provide preferential treatment to newly established small

businesses (Gilmore, Carson and Grant, 2001). The study by Hussey and Eagan (2007) has shown that small and medium enterprises that thrive to protect the environment are often granted tax breaks in view of their contribution to values that are deemed important to the national economy. The other commonly used method of supporting small and medium-sized enterprises is the provision of skills-based and entrepreneurial trainings free of charge (Jenkins, 2006). Small and medium-sized enterprises that spend significant resources in promoting basic innovation and research and development are often provided with adequate support by national governments as a means of promoting science and technology in the economic sector. In this regard, the most notable examples are small and medium-sized enterprises in countries such as China, South Korea, Singapore and Japan (Jones, 2010). The rationale of providing such support is motivated by the desire to use the SMME sector as a driver of national technological advancement (Khade, 2003).

Based on findings from the study conducted by Porter and Tanner (2004), the world's most successful and vibrant small businesses and enterprises are characterized by service excellence, dedication for satisfying their customers, research, innovation and development, and attention to quality. In this regard, small and medium-sized enterprises in Sub-Saharan African countries including South Africa are characterized by lack of entrepreneurial skills and relatively lower professional standards. The authors argue that service excellence often leads to a solid and sustainable customer base, and that dedication for rendering quality services is a requirement for sustained growth and development at the market place. The level of skills possessed by the majority of business operators in newly established businesses is often poor. As such, operators working in newly established businesses must be dedicated for achieving service excellence and reliable clientele. However, it is impossible to secure reliable clientele without demonstrating devotion for service excellence (Chen, Papazafeiropoulou and Dwivedi, 2010). The study by Chetty and Stangl (2010) has found that dedication for service excellence is a key requirement for credibility at the marketplace, and that newly established businesses cannot survive without possessing solid reputation and credibility at the market place. This assessment is consistent with findings reported by Bekele and Worku (2008), Carroll and Wagar (2010), Cooper and Schindler (2006) and Bosworth (2009). According to Abor and Adjasi (2007), the vast majority of newly established businesses that fail in their first three years of establishment are characterized by poor reputation and low entrepreneurial skills in the eyes of potential

customers, and often struggle to establish credibility. This explains why service excellence is critically needed in newly established small and medium-sized enterprises in the Pretoria region of Gauteng Province. It follows that newly established firms need to allocate enough resources for the acquisition of essential entrepreneurial and technical skills in their first three years of establishment. Workers employed in business enterprises where the leadership is autocratic in style are less efficient and productive in comparison with workers employed in business enterprises where the leadership is democratic (Isaksson, 2006). The styles of managerial leadership towards subordinate staff and the focus of power can be classified into three categories. The authoritarian style of leadership is autocratic, and the focus of power is with the manager and all interactions within the group move towards the manager. The manager alone exercises decision-making and authority for determining policy, procedures for achieving goals, work tasks and relationships, control of rewards or punishment (Mullins, 2007).

#### 4. Methods and materials of study

The study design of the research is longitudinal (01 January 2007 to 31 December 2012) and descriptive. Data were gathered from a random sample of 349 small and medium-sized business enterprises conducting business in and around the city of Pretoria. Data were gathered on a large number of socioeconomic variables that affect the long-term survival of businesses. Data were gathered regularly from each of the 349 enterprises selected for the study on socioeconomic variables such as duration of operation, amount of startup capital, level of education of business operators, level of skills of business operators, suitability of business premises, level of support provided by the South African Department of Trade and Industry to small businesses, source of finance, amount of loan borrowed by business operators, profit made, total revenue, operational cost, access to training opportunities on business operations, supervisory assistance, tax amount, method used for tax assessment, access to supplies needed by businesses, demand for goods and services in the local market, perception on level of assistance provided by the government, etc. Data collection was made on a monthly basis during the period of study by a Doctoral student enrolled at the Business School of Tshwane University of Technology in Pretoria.

Statistical data analysis was done by using Pearson's chi-square tests of association (Dawson and Trapp, 2004), binary logistic regression analysis (Hosmer and Lemeshow, 2002) and the Cox Proportional Hazards Model (Cleves, Gould & Gutierrez, 2004). Some of the 349 businesses in the study were right

censored. Odds ratios were estimated by performing binary logistic regression analysis under the random effects assumption. Hazard ratios were estimated by performing panel data analysis based on the Cox Proportional Hazards Model. Estimated odds ratios and hazard ratios were used as a measure of effect, and for ranking influential predictors of viability and survival in order of their strength. Kaplan-Meier survival probability curves were used for comparing viable and non-viable businesses with regards to the most influential predictor variable (level of entrepreneurial skills). Descriptive and summary statistics were also obtained. The adequacy of the fitted Cox regression model was assessed using the likelihood ratio test and Akaike's information criterion (AIC) statistic. The fulfilment of the proportional hazards assumption was tested by use of log-minus-log plots. Data analysis was done using the statistical package STATA version 12 (STATA Corporation, 2011). The duration of survival of businesses was measured for each of the 349 enterprises in the study by using 01 January 2007 as the starting point. Enterprises that were still operational at the end of the study period (31 December 2012) were considered right-censored observations as their exact durations of survival could not be measured due to administrative censoring (inability to measure the survival times of businesses beyond the date at which the study came to an end) at the end of the study period. For enterprises that ceased operation prior to 31 December 2012, survival time was defined as the number of days of operation between 01 January 2007 and the date of closure.

The Cox Proportional Hazards Model takes censored observations into account, and this property of the model makes it quite attractive in comparison with other models used for panel data analysis in economic studies (Cleves, Gould & Gutierrez, 2004; Kleinbaum, 1996). In Cox regression, hazard ratios are used as an econometric measure of effect. Key predictors of survival are identified and estimated

based on hazard ratios. Kaplan-Meier survival probability curves were used for comparing businesses that survived the 5-year study period (viable businesses) with businesses that did not survive the study period (non-viable businesses) with regards to key predictors of survival. Kaplan-Meier survival probability curves were used for comparing viable businesses with non-viable businesses graphically. At the 5% level of significance, influential predictors of survival are characterized by hazard ratios that differ from 1 significantly, 95% confidence intervals of hazard ratios that do not contain 1, and *p*-values that are smaller than 0.05.

### 5. Results of data analysis

Table 1 shows the distribution of factors that affect the long-term survival of enterprises for viable and non-viable businesses. The table provides frequency proportions for 6 key predictors of viability and long-term survival for viable and non-viable businesses. In the 5-year study period, 188 of the 349 businesses in the study (54%) failed while the remaining 161 businesses (46%) managed to survive. The table shows that 68% of viable businesses possessed adequate entrepreneurial skills whereas only 26% of non-viable businesses did the same. Viable businesses managed to acquire adequate supervisory support when they were newly established (51%). The corresponding figure for non-viable businesses was 27%. The level of vocational skills possessed by viable businesses (77%) was relatively higher than the level of vocational skills possessed by non-viable businesses (38%). Viable businesses were able to secure loans relatively easily (74%) in comparison with non-viable businesses (37%). Viable businesses were operated by managers with relatively higher levels of formal education (71%) in comparison with non-viable businesses (43%). Non-viable businesses were characterized by a past history of bankruptcy (58%). The corresponding figure for viable businesses was only 11%.

Table 1. Group proportions with regards to the financial viability of small businesses

Predictor variable	Viable (n = 161)	Not viable (n = 188)
Level of entrepreneurial skills	Adequate: 68% Inadequate: 32%	Adequate: 26% Inadequate: 74%
Acquisition of supervisory support by newly established small businesses	Adequate: 51% Inadequate: 49%	Adequate: 27% Inadequate: 73%
Level of relevant vocational skills acquired by business operator	Adequate: 77% Inadequate: 33%	Adequate: 38% Inadequate: 62%
Ability to secure loan needed for operation	Easy: 74% Difficult: 26%	Easy: 37% Difficult: 63%
Level of formal education acquired by business operator	College level or above: 71% Below college level: 29%	College level or above: 43% Below college level: 57%
Past history of bankruptcy	Yes: 11% No: 89%	Yes: 58% No: 42%

Source: Worku (2013).

Table 2, below, shows adjusted odds ratios estimated from binary logistic regression analysis in which the random effects model was used. It can be seen from the table that viability in small businesses is significantly influenced by 4 predictor variables. The 4 influential predictor variables are lack of entrep-

reneurial skills, lack of supervisory support to newly established small businesses, inability to acquire relevant vocational skills, and low initial capital, in a decreasing order of strength. The most influential predictor variable affecting long-term viability and survival is lack of entrepreneurial skills.

Table 2. Adjusted odds ratios estimated from binary logistic regression analysis

Variable	*Adjusted Odds Ratio	p-value	95% C.I.
Lack of entrepreneurial skills	3.86	0.000	(1.43, 6.02)
Lack of supervisory support to newly established small businesses	3.54	0.000	(1.71, 5.96)
Inability to acquire relevant vocational skills	3.27	0.000	(1.77, 5.81)
Low initial capital	2.03	0.004	(0.35, 3.42)

Note: \* Adjustment was done for geographical location, age of owner and gender.

The percentage of overall correct classification for the fitted logistic regression model was equal to 89.07%. The p-value for the Hosmer-Lemeshow goodness-of-fit test was equal to 0.1076 > 0.05, thereby indicating that the fitted logistic regression model was theoretically reliable. Hazard ratios estimated from the Cox Proportional Hazards Model are shown below in Table 3. It can be seen from the table that viability in

small businesses was significantly influenced by 3 factors. The 3 influential predictor variables are lack of entrepreneurial skills, lack of supervisory support to newly established small businesses, and inability to acquire relevant vocational skills, in a decreasing order of strength. The most influential predictor variable affecting long-term viability and survival is lack of entrepreneurial skills.

Table 3. Adjusted hazard ratios from the Cox Proportional Hazards Model

Variable	*Adjusted Hazard Ratio	p-value	95% C.I.
Lack of entrepreneurial skills	3.87	0.000	(1.44, 6.01)
Lack of supervisory support to newly established small businesses	3.55	0.000	(1.72, 5.94)
Inability to acquire relevant vocational skills	3.29	0.000	(1.79, 5.83)

Note: \* Adjustment was done for geographical location, age of owner and gender.

It can be seen from Tables 2 and 3 that hazard ratios estimated from the Cox Proportional Hazards Model were fairly similar to odds ratios estimated from binary logistic regression analysis. In view of the fact that the design of the study is longitudinal, and not cross-sectional, hazard ratios estimated from the Cox Proportional Hazards Model carry more weight theoretically in comparison with odds ratios estimated from binary logistic regression model. As such, interpretation of results will be made based on hazard ratios.

The hazard ratio of the variable “**Lack of entrepreneurial skills**” is 3.87. This shows that businesses that are run by operators who do not have adequate entrepreneurial skills are 3.87 times more likely to fail in comparison with businesses that are run by operators who have adequate entrepreneurial skills. It can be seen from Table 1 that 68% of the 161 viable businesses in the study were run by operators who had adequate entrepreneurial skills, whereas only 26% of the 188 non-viable businesses

in the study were run by operators who had adequate entrepreneurial skills. The hazard ratio of the variable “**Lack of supervisory support to newly established small businesses**” is 3.55. This shows that newly established businesses that had inadequate supervisory support were 3.55 times as likely to fail in comparison with businesses that enjoyed adequate supervisory support. The hazard ratio of the variable “**Inability to acquire relevant vocational skills**” is 3.29. This shows that businesses that were run by operators with poor vocational skills were 3.29 times as likely to fail in comparison with businesses that were run by operators with adequate vocational skills. Adjustment was done for three potential confounding variables: geographical location of business in the city, age of owner and gender of owner. Unadjusted and adjusted hazard ratios did not differ much. This shows that none of the three variables used for adjustment was a confounding or effect modifying variable. The adequacy of the fitted Cox model was assessed using log-minus-log plots, the likelihood

ratio test and the AIC (Akaike's Information Criterion) as diagnostic procedures. All log-minus-log plots were parallel, showing that the assumption of proportional hazards was satisfied. The  $p$ -value from the likelihood ratio test was small ( $0.0001 < p < 0.01$ ), thereby showing that the 6 variables constituting the fitted Cox model were jointly efficient in explaining variability in long term survival at the 1% level of significance. The estimated value of the AIC statistic was also small (10.01), thereby showing that the discrepancy

between the fitted and true models was insignificant (Verbeek, 2000).

Kaplan-Meier survival probability plots were used for comparing the survival probabilities of viable and non-viable businesses with regards to entrepreneurial skills. The plot shows that businesses that were run by operators with adequate entrepreneurial skills have a relatively larger probability of survival in comparison with businesses that were run by operators with inadequate entrepreneurial skills.

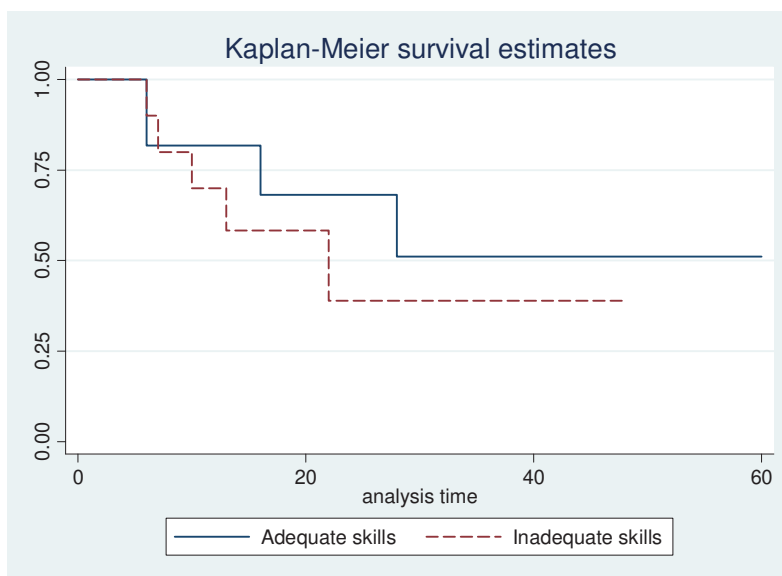


Fig. 1. Kaplan-Meier survival probabilities by level of entrepreneurial skills

## 6. Discussion of results

The study has found that 188 of the 349 businesses that took part in the study (54%) were not viable, and that the long-term survival and viability of small businesses was adversely affected by lack of entrepreneurial skills, lack of supervisory support to newly established businesses, and inability to operators running newly established businesses to acquire relevant vocational skills. The 188 non-viable businesses in the study (46%) were characterized by low level of entrepreneurial skills, low level of supervisory support, lack of relevant vocational skills, difficulty in securing loans, low level of formal education, and a past history of bankruptcy. The study has shown that businesses that were run by operators with adequate entrepreneurial skills have survived much better than those that were run by operators who did not possess adequate entrepreneurial skills. Results obtained from Pearson's chi-square tests of associations ( $p < 0.05$ ) showed that businesses fail due to lack of initial capital, failure to utilize finance in accordance with business plan, high labor cost, shortage of entrepreneurial skills that are needed for operating business, adverse market conditions,

difficulty in securing loans needed for business, inability to pay fees that are required for renting business premises, inability to draw up business plans, inability to do bookkeeping, the practice of selling on credit, the status of business being operated, and lack of training opportunities that are relevant to the business being operated. Businesses that failed were characterized by loss of money, inability to draw up business plans, inability to do book-keeping, inability to acquire technical and vocational skills due to shortage of finance. The key findings of this study are in agreement with results reported by Jiang & Peng (2011), Globerman, Peng & Shapiro (2011), Zoogah, Vora, Richard & Peng (2011), Peng, Rabi & Sea-Jin (2010) and Daley-Harris (2011). The South African educational curriculum does not prepare potential entrepreneurs adequately for the task of operating newly established businesses. The content of the curriculum for vocational training at the high school and undergraduate level is vastly inadequate and irrelevant to the specific needs of young graduates who aspire to thrive in business. This failure constitutes a major obstacle to the growth and development in small and medium-sized businesses and enterprises in South Africa.

The study has shown that the failure to utilize finance in accordance with business plan is detrimental for viability, and that non-viable businesses are characterized by a past history of bankruptcy. Similar findings have been reported in other Sub-Saharan African and South-East Asian countries in which it has been found that successful businesses are often run by operators with sound entrepreneurial skills and fiscal discipline (Kumar, Antony, Madu, Montgomery and Park, 2008). Successful operators improve their managerial, vocational and technical skills incrementally. Managerial ability was assessed in terms of the ability of owners or operators to produce sound business plans, perform standard bookkeeping, auditing and record-keeping duties, introducing appropriate technologies and expertise, acquiring innovative business skills from rival enterprises, degree of motivation and commitment in sharing useful experience with employees, commitment in terms of empowering employees, investing in skills related training opportunities for employees, ability in resolving business related disputes amicably, etc. Successful businesses and enterprises were associated with managers who enjoyed what they were doing, whereas unsuccessful businesses and enterprises were associated with managers with little or no motivation and commitment.

Newly established businesses seek financial assistance from financial institutions such as the Industrial Development Corporation (IDC), Business Partners Limited (BPL), Khula Enterprise Finance Limited (KFL), as well as the big four South African commercial banks (Amalgamated Bank of South Africa (ABSA), First National Bank (FNB), Standard Bank and Nedbank). Although the commercial banks have adequate funds to lend, their lending policies are quite stringent, and are based on collateral. The other microfinance institutions do not have adequate funds to satisfy the needs of newly established firms. Also, their lending rates are quite high, and are not affordable to small enterprises. Qian, Theodore, Peng & Zeming (2010) have found that it is quite difficult and unaffordable for the majority of small enterprises to borrow money on unfavorable terms from financial institutions conducting business. Basically, these financial institutions have limited resources, and impose rather stringent repayment conditions on borrowers. This condition exacerbates the plight of newly established firms (Smedlund). Newly established firms often lack the ability to utilize borrowed money wisely and according to plan. They have poor auditing, managerial and entrepreneurial skills. They do not report their progress at the workplace regularly to financial institutions that choose to lend them money. As a result, the majority of commercial banks and micro-lending financial institutions are often reluctant to lend monies to newly established small

and medium-sized enterprises conducting business in the Pretoria region of Gauteng Province.

The academic curriculum used in South African tertiary level academic institutions needs a fundamental overhaul and review in order for young graduates to acquire entrepreneurial and technical skills that are essential for operating businesses successfully. Studies conducted by Bekele and Worku (2008) and Zoogah, Vora, Richard and Peng (2011) have found that the failure of tertiary level academic institutions to equip young graduates with skills that are relevant to the actual needs of society is the key reason why young graduates in the world's least developed nations are virtually unemployable.

### Recommendations

Based on findings obtained from the study, the following recommendations are made to the South African Department of Trade and Industry, the South African Department of Higher Education and Training, and the South African Chamber of Commerce and Industry with a view to improve viability in small and medium-sized enterprises operating in the Pretoria region of Gauteng Province. The recommendations have the potential for improving the plight of struggling small and medium-sized enterprises in the region.

- ◆ It is necessary to design relevant and tailor-made skills based training programs on vocational and entrepreneurial activities in which young matric graduates can be equipped with the skills they need to run businesses successfully;
- ◆ It is necessary to provide mentorship and supervisory assistance to newly established small and medium-sized enterprises for a period of at least three years or more;
- ◆ It is vital to encourage academic and research institutions to create academic programs in which trainees can acquire experiential training by working for businesses and industries as part of their academic training in South African institutions of higher learning. Such programs should be jointly coordinated and funded by the South African Department of Higher Education and Training, the South African Department of Trade and Industry, and the South African Chamber of Commerce. Doing so has the potential for producing graduates who possess skills that are relevant to the actual needs of business, industry and government.

It is necessary to monitor and evaluate the viability of newly established small businesses on a monthly basis. This task falls under the ambit of the South African Department of Trade and Industry. Such an intervention has the potential for minimizing the rate at which newly established small businesses fail in and around the city of Pretoria.

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