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Notes from the Editors

The Journal of Creativity, Innovation and Social Entrepreneurship (JCISE) is a peer reviewed research journal belonging to Tshwane University of Technology (TUT). The JCISE is published annually by TUT. The journal welcomes and actively encourages postgraduate level students, supervisors and academics alike to publish their research findings once a year. The task of soliciting and reviewing research manuscripts is a core responsibility of the South African Research Chair Initiative (SARChI) in Innovation Studies. Most of the manuscripts published in the journal are a result of research work carried out by postgraduate level students and their supervisors at TUT. Significant assistance is provided to this effort by the Research & Innovation (R & I) Directorate of Tshwane University of Technology (TUT). Social entrepreneurship entails efforts made by various start-up business enterprises to create, fund and implement solutions to social, cultural or environmental issues. A particular emphasis is made on socioeconomic factors that are known to affect the long-term viability and survival of start-up enterprises in Sub-Saharan African countries. The journal hopes to promote the exchange of valuable and innovative ideas and concepts on issues that are vital for the alleviation of poverty and underdevelopment in African countries. The journal is set up in order to foster the exchange of innovative ideas and the creation of economically enabling environments in developing nations. This journal will serve to stimulate and inspire knowledge creation on how social
entrepreneurship promotes the free flow and exchange of innovative ideas, principles and novelty among all Africans with a view to realise a better future for all Africans.

TUT-JCISE aspires to be a publishing outlet for researchers within and outside TUT. To this end, contributions are solicited from all parts of the world. All submissions are peer-reviewed anonymously by suitably qualified and independent subject matter specialists and experts. TUT-JCISE is a young journal with great potential for growth in the next several years. TUT-JCISE welcomes contributions in the following areas of research:

1. Original research papers
2. Topical and relevant research notes
3. Book reviews
4. Case studies on entrepreneurial activities, innovation and development
5. Extracts from postgraduate level dissertations

**Themes of TUT-JCISE**

The following themes are a strategic priority of the journal:

- Social innovation for ensuring inclusive development;
- Social entrepreneurship for eradicating poverty, unemployment and inequality;
- Transformation from linear stages of economic growth to evolutionary economics;
- Wealth creation with social and environmental benefits and gains;
- Utilisation of frugal innovation for ensuring economic development;
- Utilisation of creativity, innovation and social entrepreneurship for ensuring additive and multiplicative wellbeing among humans and the general environment;
- Social Innovation for linking the quadruple helices: Government, private sector, universities and civil society and communities;
- Innovation for validating economic gain through the inclusion of social and environmental gain;
- Innovation Systems for Economic Development through Social Entrepreneurship;
- The promotion of science, technology, mathematics and engineering for ensuring sustainable development;
- Utilisation of social entrepreneurship as a tool for promoting diffusion creativity, innovation and technology in low income economies; and
- Utilisation of social entrepreneurship and African values for ensuring integrated African development.

Enjoy your reading
FACTORS THAT AFFECT THE GROWTH AND DEVELOPMENT OF SMALL, MICRO AND MEDIUM-SIZED BUSINESS ENTERPRISES IN THE VAAL TRIANGLE REGION OF GAUTENG PROVINCE IN SOUTH AFRICA

By

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Abstract

A review of the literature shows that small, micro and medium-sized enterprises (SMMEs) that conduct business in the Vaal Triangle region of Gauteng Province are characterized by a high rate of failure. This study was conducted in order to identify and quantify factors that are responsible for the high rate of failure in SMMEs in the Vaal Triangle region. The study was based on a stratified random sample of size n=133. Stratified random sampling was used for collecting data by using a structured, pre-tested and validated questionnaire of study. Five strata were used (central, east, west, north and south) for conducting the study in the Vaal Triangle. A combination of quantitative and qualitative methods of data collection and analyses were used in the study. The variables used for quantitative analysis were socioeconomic variables that were associated with the viability of SMMEs operating in the Vaal Triangle region of Gauteng Province. Statistical analyses were performed by applying standard methods such as descriptive analyses, graphical methods of presenting data, exploratory methods, one and two-sample tests on the mean and proportion, Pearson’s chi-square tests of associations among pairs of categorical variables, and factor analysis. Eigen values estimated from factor analysis were used as a measure of effect.
Based on results obtained from factor analysis, 28 of the 133 businesses (21%) were found to be not viable financially. The study also showed that viability in small and medium-sized enterprises in the Vaal Triangle area was adversely influenced by three factors. These three factors were: difficulty in securing loans, lack of training opportunities, and shortage of entrepreneurial skills, in a decreasing order of strength. Results obtained from in-depth interviews showed that difficulty in securing loans on favourable terms from micro lending institutions was a key obstacle among SMMEs operating in the Vaal Triangle region of Gauteng Province. A recommendation has been made to the Department of Trade and Industry that SMMEs operating in the Vaal Triangle region should be supported by instituting comprehensive mentorship and monitoring and evaluation programmes.

**Key Words:** SMMEs, Vaal Triangle, Entrepreneurial skills, Access to loans, Factor analysis

**Introduction**

Small businesses and enterprises are a key to the growth and development of any society including South Africa (Abor and Adjasi, 2007: 111-112). The South African National Government supports and actively promotes the growth and development of small businesses in South Africa (South African Parliament, 2008: 1-3). In the Vaal Triangle geographical region, the role played by small and medium sized enterprises is prominent in view of the fact that the sector creates employment opportunities to hundreds of thousands of young and old South Africans. The livelihoods of ordinary South Africans are intertwined with the growth and development of small and medium sized enterprises. In order for small and medium sized enterprises to grow and develop, it is essential to have an economically enabling environment.

The purpose of this research was to identify factors that affect small and medium sized enterprises that conduct business in the Vaal Triangle. The study is exploratory in nature, and describes the state of small businesses that are operating at the Vaal Triangle region. The study was based on data gathered from a random sample of n=133 small and medium sized enterprises currently operating in the Vaal Triangle. The key objective of the study was to identify and quantify key predictors of viability in small and medium sized enterprises conducting business in the Vaal Triangle region of Gauteng Province.
The principal method of data collection and analysis was quantitative although a few qualitative methods of study were also used in the study. As part of the quantitative aspect of study, data was collected from each of the 133 businesses that were selected for the study by using a validated, pre-tested and structured questionnaire of study. Quantitative methods of data analysis such as frequency tables, Pearson’s chi-square tests of association or cross-tab analyses (Dawson and Trapp, 2004: 159) and factor analysis (Field, 2010) were used. Eigen values estimated from factor analysis were used as a measure of effect for the purpose of identifying influential predictors of viability. In addition to quantitative methods, qualitative in-depth interviews were conducted with 5 owners of small businesses in the Vaal Triangle region.

The study has led to the identification of key predictors of viability in small and medium-sized enterprises conducting business in the Vaal Triangle region of Gauteng Province.

**Background to study**

According to Zheng, O’Neill and Morrison (2011: 175-176), Friedman, Miles and Adams (2000: 325-327) and Nieman (2001:445-446), it is essential to develop small and medium-sized business enterprises in order to develop national economies. The study conducted by Van Praag (2003: 1-17) has found that the world’s leading economies rely on the growth and development of small and medium-sized enterprises for the creation of employment opportunities and sustained growth at the national level. A report published by the South African Small Enterprise Development Agency (2013: 1-3) states that 60% of all small businesses fail within the 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: 1-4; the South African Department of Trade and Industry, 2013: 1-5; the South African Small Enterprise Development Agency, 2013: 1-5; Ladzani & Netswera, 2009: 14-21).

The key aim of this study is to identify key predictors of failure in small and medium sized enterprises in the Vaal triangle region of Gauteng Province, and to propose feasible remedial
actions so that support could be provided to small and medium-sized enterprises. According to the South African Small Enterprise Development Agency (2013: 1-5), 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 and medium-sized enterprises is as high as 60%. The study conducted by Ladzani and Netswera (2009: 17-19) 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 favourable rates (South African Small Enterprise Development Agency, 2013: 4). According to research conducted by the South African Chamber of Commerce and Industry (2013: 2-3), the situation at the Vaal Triangle 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 Vaal Triangle region.

**Rationale of study**

According to a report issued by the South African Chamber of Commerce and Industry (2013:2-3), 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: 36-38). Swanson (2007: 101) 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: 175-176), Friedman, Miles and Adams (2000: 325-327) and Nieman (2001:445-446). 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 Vaal Triangle region of South Africa. Very few studies have been conducted so far in the Vaal Triangle region. 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.

**Research problem**

Findings obtained from the study conducted by the South African Small Enterprise Development Agency (2013: 1-3) 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: 1-4; the South African Department of Trade and Industry, 2013: 1-5; the South African Small Enterprise Development Agency, 2013: 1-5; Ladzani & Netswera, 2009: 14-21).

To date, very few studies have been conducted in the Vaal Triangle 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: 287). According to Useem (2001: 297), 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: 41-42) 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 the Vaal Triangle region. Findings from the study
are valuable for providing meaningful assistance to businesses that operate in the Vaal Triangle region of Gauteng Province.

**Objectives of study**

The primary objective of this study was to identify and quantify factors that affect viability in small and medium-sized enterprises operating in the Vaal Triangle region of Gauteng Province. The study has the following specific objectives:

- To describe the characteristics of small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province;
- To estimate the percentage of newly established small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province that fail in their first three years of establishment;
- To identify factors that adversely affect sustained growth and viability in small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province;
- To propose suitable and feasible remedial actions that could assist small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province;

**Research questions**

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

- What are the socioeconomic characteristics of small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province?
- How large is the proportion of newly established small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province that fail in their first three years of establishment?
What are the key factors that adversely affect sustained growth and viability in small and medium-sized enterprises in the Vaal Triangle region of Gauteng Province?

**Literature review**

Defining what is meant by a small business is of great consequence because policies are often formulated to assist these enterprises, given the crucial role that they play in growing the economy and reducing unemployment. For example in the European Union, a business enterprise will only qualify for special assistance and funding if it is classified as a small business (Deakins & Freel, 2003:38). In South Africa, policies are also formulated to allow small businesses special dispensations in respect of certain legislative compliance matters and in so doing encourage the proliferation of SMMEs. For example, BEE Codes of Good Practice measure the BEE status of small businesses differently to that of large businesses. The BEE Codes of Good Practice applies a different scorecard to an enterprise if it rates as a qualifying small enterprise in terms of the set criteria. A separate scorecard for small firms is termed the Qualifying Small Enterprise Scorecard. The Generic Scorecard applies to all other enterprises (Business Map Foundation, 2006). Small businesses do have features in common with large businesses but they also have unique elements reflected in the manner in which they are organized and managed. Small firms differ from large businesses with respect to serving niche markets, customer service and innovation. Organisational structure in large businesses is determined by their business activities. In small businesses, the elaborate hierarchies of top, middle and lower management that normally exist in large businesses are not present.
Labours markets are sharply dependent on a relatively small private sector in which large unions bargain with large firms, setting high wages that in many cases are extended to other firms in the sector by bargaining councils. This, in turn, puts smaller firms at a disadvantage and deters entry (OECD, 2013:30). Further still, Magruder (2012) cited in the OECD (2013:31) argues that sectoral bargaining agreements in South Africa decreases employment in affected industries to 8-13% with losses concentrated among small firms. When market competition prevails, businesses compete for sales as customers have a wider choice of selection of products and services. A low level of competition may cause manufacturers to set high product prices, withhold technological developments, exclude competitors or abuse their position (monopoly) of power (Kirzner, 1997:33). Small firms compete with large firms, forcing the large organisations to become more efficient and responsive to customer needs. This improves the nature of the competitive environment in the economy.

**Methods and materials of study**

**Study design**

The design of this study is descriptive and cross-sectional. It is descriptive because the study aims to explain and describe factors that affect the growth and development of small and medium-sized enterprises operating in the Vaal Triangle region of Gauteng Province. The study is cross-sectional because data is collected from the 133 participants who took part in the study once only. According to Babbie (2005:44), a descriptive study design is suitable for an exploratory study of this kind.

**Sample size of study**

A random sample of size n=133 small and medium-sized businesses was selected for the study. Eligible businesses were selected from the various parts of the Vaal Triangle by using stratified
random sampling by region (North, West, South, East, and Central parts of the Vaal Triangle). The sample of the size and the sampling technique are both appropriate for an exploratory study of this kind according to Hussey & Hussey (2003:56).

**List of variables of study**

Data collection was done on variables of study that affect viability in small and medium-sized enterprises conducting business in the Vaal Triangle region of Gauteng Province. These variables are: loss making, amount of initial capital of business, the question of whether the business operator has formal entrepreneurial skills, the cost of labour, market condition, failure in securing a loan required for business, ownership of business premises, the ability to draw up business plan, the ability to perform bookkeeping tasks, the practice of selling goods and services to clients on credit, the legal status of business, the question of who the founder of the business is, the question of who the owner of the business is, the age of business in years, the type of business, the gender of the business operator, the age of the business operator in years, the level of education of business operator, the average net monthly income of business, and attending a business-related training with a view to perform better at business. The variables of study listed above are all highly relevant to the study. Each of the variables of study was selected for the study based on a review of the relevant literature.

**Validity and reliability of measurements**

The study uses nominal and ordinal variables. The majority of the variables were nominal. A few of the variables were ordinal. In nominal variables, order does not matter. An example of a nominal scale is gender (male, female). The order between males and females does not matter. It only matters that males and females are different. In a few cases, ordinal variables with 5 categories were used in which category 1 represented the lowest score, and category 5 represented the highest score. An example of an ordinal scale is the degree of agreement. The respondent can provide any of five possible answers. These are: 1 (Strongly agree), 2 (Agree), 3 (Indifferent), 4 (Disagree), and 5 (Strongly disagree). In ordinal scales, order matters.

Validity is a technique in which one makes sure that the study measures variables that need to be measured in order to provide adequate answers to the research questions in the study. In this
study, validity was ascertained by using face validity techniques as outlined by Golafshani (2003:597-607). The data collection instrument used in the study was pre-tested in order to ensure reliability. The Cronbach-Alpha test (Dawson and Trapp, 2004:128) was used for ensuring internal consistency of the 5-point ordinal scales used for the measurement of variables. Various sources of evidence, past records, as well as a review of the literature were used for ensuring validity.

**Methods of data analyses**

Data capturing, coding and analysis were all done in the statistical package STATA version 13 (STATA Corporation, 2012). The following statistical tests were used for data analysis:

- Descriptive statistics and frequency tables
- Cross-tab analysis with Pearson’s chi-square tests of associations (Dawson and Trapp, 2004)
- Factor analysis (Field, 2010)
- Qualitative in-depth interviews

**Results of data analysis**

The study showed that 28 of the 133 businesses that were selected for the study (21%) lost money, and hence were not viable.

**Table 4.1.5: Types of businesses**

<table>
<thead>
<tr>
<th>Type of business</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>6</td>
<td>4.51%</td>
</tr>
<tr>
<td>Automotive</td>
<td>5</td>
<td>3.76%</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
<td>Percentage</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Barber shop or hairdresser</td>
<td>5</td>
<td>3.76%</td>
</tr>
<tr>
<td>Construction</td>
<td>3</td>
<td>2.26%</td>
</tr>
<tr>
<td>Dry cleaning</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Electronic repair shop</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Food outlet</td>
<td>23</td>
<td>17.29%</td>
</tr>
<tr>
<td>Footwear shop</td>
<td>11</td>
<td>8.27%</td>
</tr>
<tr>
<td>Furniture</td>
<td>3</td>
<td>2.26%</td>
</tr>
<tr>
<td>Hotel</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Internet café</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Mini supermarket or convenience store</td>
<td>36</td>
<td>27.07%</td>
</tr>
<tr>
<td>Music or video store</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Newspaper or media outlet</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Pharmacy of clinic</td>
<td>2</td>
<td>1.50%</td>
</tr>
<tr>
<td>Photography</td>
<td>4</td>
<td>3.01%</td>
</tr>
<tr>
<td>Printing or books</td>
<td>4</td>
<td>3.01%</td>
</tr>
<tr>
<td>Professional services</td>
<td>2</td>
<td>1.50%</td>
</tr>
<tr>
<td>Textile shop</td>
<td>15</td>
<td>11.28%</td>
</tr>
<tr>
<td>Tour operator</td>
<td>1</td>
<td>0.75%</td>
</tr>
<tr>
<td>Transportation services</td>
<td>4</td>
<td>3.01%</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>2.26%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>133</td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Table 4.1.7 shows a comparison between businesses that lost money (non-viable businesses) and businesses that did not lose money (viable businesses) with regards to key variables of study. It can be seen from the table that businesses that lost money are characterized by low level of initial capital, low level of entrepreneurial skills, low level of net monthly income, low level of formal education, the habit of selling on credit, poor access to loan grants, operating under adverse market conditions, poor auditing skills, high labour cost, failure to draw up business plans, and lack of opportunities with regards to acquiring training on entrepreneurial skills that are valuable for conducting business.

**Table 4.1.7: Comparison between viable and non-viable businesses**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Viable businesses (n=105)</th>
<th>Non-viable businesses (n=28)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 50,000 Rand:</td>
<td>1.90%</td>
<td>53.57%</td>
</tr>
<tr>
<td>&gt; 50,000 Rand:</td>
<td>98.10%</td>
<td>46.43%</td>
</tr>
<tr>
<td><strong>Labour cost</strong></td>
<td>Fair: 83.81%</td>
<td>Fair: 28.57%</td>
</tr>
<tr>
<td></td>
<td>High: 16.19%</td>
<td>High: 71.43%</td>
</tr>
<tr>
<td><strong>Entrepreneurial skills</strong></td>
<td>Adequate: 82.86%</td>
<td>Adequate: 32.14%</td>
</tr>
<tr>
<td></td>
<td>Poor: 17.14%</td>
<td>Poor: 67.86%</td>
</tr>
<tr>
<td>Category</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Market conditions</td>
<td>Fair: 81.90%</td>
<td>Fair: 7.14%</td>
</tr>
<tr>
<td></td>
<td>Adverse: 18.10%</td>
<td>Adverse: 92.86%</td>
</tr>
<tr>
<td>Access to loan</td>
<td>Yes: 87.62%</td>
<td>Yes: 39.29%</td>
</tr>
<tr>
<td></td>
<td>No: 12.38%</td>
<td>No: 60.71%</td>
</tr>
<tr>
<td>Business premises</td>
<td>Own: 42.86%</td>
<td>Own: 64.29%</td>
</tr>
<tr>
<td></td>
<td>Rent: 57.14%</td>
<td>Rent: 35.71%</td>
</tr>
<tr>
<td>Business plan</td>
<td>Available: 77.14%</td>
<td>Available: 60.71%</td>
</tr>
<tr>
<td></td>
<td>Not available: 22.86%</td>
<td>Not available: 39.29%</td>
</tr>
<tr>
<td>Book-keeping skills</td>
<td>Yes: 74.29%</td>
<td>Yes: 53.57%</td>
</tr>
<tr>
<td></td>
<td>No: 25.71%</td>
<td>No: 46.43%</td>
</tr>
<tr>
<td>Selling on credit</td>
<td>Yes: 1.90%</td>
<td>Yes: 53.57%</td>
</tr>
<tr>
<td></td>
<td>No: 98.10%</td>
<td>No: 46.43%</td>
</tr>
<tr>
<td>Gender of business operator</td>
<td>Male: 76.19%</td>
<td>Male: 82.14%</td>
</tr>
<tr>
<td></td>
<td>Female: 23.81%</td>
<td>Female: 17.86%</td>
</tr>
<tr>
<td>Training on entrepreneurial skills</td>
<td>Yes: 8.57%</td>
<td>Yes: 7.14%</td>
</tr>
<tr>
<td></td>
<td>No: 91.43%</td>
<td>No: 92.86%</td>
</tr>
</tbody>
</table>
Results from cross-tab analyses

The Pearson chi-square test of association (cross-tab analysis) is used for assessing the strength of association or interdependence between two or more categorical variables. At the 5% level of significance, the strength of association between two categorical variables is said to be statistically significant if the P-value is smaller than 0.05. If the P-value is greater than or equal to 0.05, it is said that the two variables are independent of each other at the 5% level of significance. In this study, all expected cell frequencies were greater than 5. As such, results of data analysis obtained from Pearson’s chi-square tests of association were all valid.

Table 4.2.1, below, shows significant two-by-two associations obtained from Pearson’s chi-square tests of associations. At the 5% level of significance, significant associations have large observed chi-square values and P-values that are smaller than 0.05. Significant results obtained from Pearson’s chi-square tests of associations (P < 0.05) showed that businesses fail due to lack of initial capital, high labour 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 do bookkeeping, the practice of selling on credit, the status of business being operated, the age of the business being operated (young businesses are exposed to loss more than old businesses are), and lack of training opportunities that are relevant to the business being operated.

Table 4.2.1: Results obtained from Pearson’s chi-square tests of associations
### List of variables significantly associated with financial loss in businesses

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low amount of initial capital</td>
<td>0.000</td>
</tr>
<tr>
<td>High cost of labour</td>
<td>0.000</td>
</tr>
<tr>
<td>Lack of entrepreneurial skills</td>
<td>0.000</td>
</tr>
<tr>
<td>Adverse market conditions</td>
<td>0.000</td>
</tr>
<tr>
<td>Difficulty in securing loan needed for business</td>
<td>0.000</td>
</tr>
<tr>
<td>Inability to pay fee needed for renting business premises</td>
<td>0.044</td>
</tr>
<tr>
<td>Inability to do bookkeeping</td>
<td>0.034</td>
</tr>
<tr>
<td>Selling on credit</td>
<td>0.000</td>
</tr>
<tr>
<td>Status of business</td>
<td>0.040</td>
</tr>
<tr>
<td>Age of business</td>
<td>0.031</td>
</tr>
<tr>
<td>Lack of training opportunities</td>
<td>0.000</td>
</tr>
</tbody>
</table>

P-values that are obtained from Pearson’s chi-square tests of associations are theoretically less reliable than those obtained from factor analysis (Field, 2010).

### Results obtained from factor analysis

Factor analysis is a data reduction technique used to reduce a large number of variables to a smaller set of underlying factors that summarize the essential information contained in the variables (Field, 2010:134). The following procedures were followed while performing factor analysis:

- Computation of the correlation matrix for all variables
- Extraction of initial factors
Rotation of the extracted factors as a terminal solution

Factor analysis was used for reducing the number of factors that had to be analyzed. The method produced 3 influential predictor variables that influenced viability in small businesses. Factor analysis is useful in cases where the correlation among the variables of study is significant. The correlation matrix in this study showed that several pairs of variables had correlations exceeding 0.3, thereby showing that factor analysis was appropriate. In this study, a cutoff point of 0.3 was used as is recommended by Field (2010:138). The variables found to be highly significant with viability were as follows:

- Difficulty in securing loans needed for business
- Lack of training opportunities
- Lack of entrepreneurial skills

The Cronbach Alpha test for internal consistency was used for testing the suitability of the 20-item structured questionnaire of study. The test gave a value of 0.792 and an associated level of significance that was smaller than 0.001. Furthermore, Bartlett’s test of Sphericity was used for testing the adequacy of the correlation matrix, and gave an estimate of 0.811, a figure that was greater than the cut-off point of 0.5, thereby confirming the suitability of factor analysis.

| Table 4.3.1: Estimates obtained from the Kaiser-Meyer-Olkin and Bartlett's test |
|------------------------------------------|------------------|
| Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy | 0.811 |
| Observed value of chi-square statistic for KMO test | 1049.48 |
Bartlett’s Test of sphericity degrees of freedom | 212
---|---
P-value for Bartlett's Test of sphericity degrees of freedom | 0.000

The factor analysis shows in Table 4.3.1 a Total Variance Explained output. This presents the number of common factors computed, the Eigen values associated with the factors, the percentage of total variance accounted for by each factor, and the cumulative percentage of total variance accounted for by the factors. Using a criterion of retaining only factors with Eigen values of 1 or greater, the first 3 factors were retained.

The total variance explained by these 3 factors is shown below as follows:

<table>
<thead>
<tr>
<th>Extracted factor</th>
<th>Eigen value</th>
<th>Percentage of explained variance in viability</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in securing loan needed for business</td>
<td>4.371</td>
<td>47.267</td>
<td>47.267</td>
</tr>
<tr>
<td>Lack of training opportunities</td>
<td>3.586</td>
<td>25.361</td>
<td>72.628</td>
</tr>
<tr>
<td>Lack of entrepreneurial skills</td>
<td>2.856</td>
<td>16.132</td>
<td>88.760</td>
</tr>
</tbody>
</table>

The results in Table 4.3.2 provide estimates for the percentage of variance explained by the 3 factors that were extracted by using the principal axis factoring method. Each of the 3 extracted
factors has an Eigen value of magnitude greater than 1, thereby indicating its level of importance in terms of accounting for viability in business. The 3 extracted factors collectively account for 88.760% of the total variability in viability (the dependent variable of study). Based on the estimates shown in Table 4.3.2 above, it can be concluded that viability in small businesses operating in the Vaal Triangle region of Gauteng Province is significantly and adversely affected by the following 3 factors. These three factors were: difficulty in securing loans, lack of training opportunities, and shortage of entrepreneurial skills, in a decreasing order of strength.

The 3 factors listed above accounted for 88.76% of total variability. This figure is above 75%.

**Results obtained from in-depth interviews**

Qualitative interviews were conducted with 5 respondents (one from each of the 5 strata of the study) by using 1-hour interviews. Interviews were tape-recorded and transcribed later. Results obtained from in-depth interviews showed that difficulty in securing loans on favourable terms from micro lending institutions was a key obstacle among SMMEs operating in the Vaal Triangle region of Gauteng Province.

The key results obtained from in-depth interviews are summarized as follows:

**Lack of access to finance**

The difficulty in accessing finances for the business was a major problem cited by many of the respondents. The majority of the respondents complained about the long procedures of getting
sufficient loans from well-established financial institutions. The challenges faced by small enterprises in securing access to finance are described as being severe.

**Lack of entrepreneurial skills**

The actual shortage of entrepreneurial skills was also identified as a major factor. The majority of the respondents admitted not to have initial experience or training in business management but had the urge to take part in tourism-related activities. It was evident that their poor entrepreneurial skills put them at a disadvantage. Kaplan (2010) has pointed out that shortage of entrepreneurial skills in SMMEs pose a real threat to the survival of small enterprises in South Africa, and has emphasized that the National Skills Development System should be implemented with vigour as a means of alleviating this major problem.

**Lack of mentorship, monitoring and evaluation programmes**

The respondents indicated that there is a dire need for mentorship, monitoring and evaluation programmes from the South African National Department of Trade and Industry as a means of supporting and promoting small enterprises. Coltman (2013) argues that mentorship programmes are essential for ensuring long-term viability in small enterprises. Rogerson (2012) has also pointed out that skills-related mentorship programmes are essential for ensuring viability in small enterprises. One key area of need is auditing and financial management. Financial management and marketing are specialised skills that require a particular level of education. If local communities are left to acquire these skills and operate small businesses on their own, their competitive level will remain low, as is currently the case.
Discussion of results

This is a study based on a random sample of n=133 small and medium-sized enterprises conducting business in the Vaal Triangle region of Gauteng Province. The purpose of the study was to identify key predictors of financial loss in small and medium-sized enterprises operating in the Vaal Triangle region. Four sets of results were obtained from data analysis.

Results obtained from frequency tables showed that non-viable businesses were characterized by low level of initial capital, low level of entrepreneurial skills, low level of net monthly income, low level of formal education, the habit of selling on credit, poor access to loan grants, operating under adverse market conditions, poor auditing skills, high labour cost, failure to draw up business plans, and lack of opportunities with regards to acquiring training on entrepreneurial skills that are valuable for conducting business.

Results obtained from Pearson’s chi-square tests of associations (P < 0.05) showed that businesses fail due to lack of initial capital, high labour 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.
Results obtained from factor analysis showed that the loss of money in small and medium-sized enterprises was significantly influenced by lack of entrepreneurial skills and lack of access to finance on favourable terms.

Results obtained from in-depth interviews showed that the loss of money in small and medium-sized enterprises was significantly influenced by lack of entrepreneurial skills and lack of access to finance on favourable terms.

The study has shown that viability in small and medium-sized enterprises operating in the Vaal Triangle region of Gauteng Province is adversely influenced by lack of entrepreneurial skills and lack of access to finance. The study has also shown that non-viable businesses have difficulties and structural challenges such as low level of initial capital, low level of entrepreneurial skills, low level of net monthly income, low level of formal education, the habit of selling on credit, poor access to loan grants, operating under adverse market conditions, poor auditing skills, high labour cost, failure to draw up business plans, and lack of opportunities with regards to acquiring training on entrepreneurial skills that are valuable for conducting business. The study has managed to reveal challenges that persist to deny small and medium-sized enterprises room towards sustainable development and prosperity in the Vaal Triangle region. Results obtained from Pearson’s chi-square tests of associations have shown that the viability of small and medium-sized enterprises in the SMME sector of Vaal Triangle is adversely affected by an acute shortage of entrepreneurial skills and lack of access to finance from micro lending institutions. Non-viable small enterprises lack vision for business. They also lack clear strategy for business. They are synonymous with poor productivity or inefficiency, lack of project management skills
and lack of entrepreneurial skills. Socioeconomic factors such as adverse political environment and lack of transparency in tender processes are known to affect small and medium-sized enterprises.

Based on the key findings of the study, feasible measures should be taken in order to improve the plight of small and medium-sized enterprises operating in the Vaal Triangle region of Gauteng Province. The South African Department of Trade and Industry needs to support newly established small businesses by providing them with training and supervision on business skills. The current regulatory framework governing operations conducted by small enterprises allows the South African Government to provide such assistance to small enterprises. It is also equally important to create an economically enabling environment for newly established businesses.

The roll out of capacity building programmes directed at small and medium-sized enterprises must be intensified. The study has found that small and medium-sized enterprises are in dire need of entrepreneurial and technical skills. Enough resources must be made available for training and capacity building programmes so that small and medium-sized enterprises can be assisted better. The study has found that agencies that are established for providing assistance to small and medium-sized enterprises are seriously underfunded. As a result, they are not providing small and medium-sized enterprises with the assistance they require in order to compete more favourably with well established businesses. It is necessary for the South African Department of Trade and Industry to make more resources available for supporting agencies that are established for assisting SMMEs.

The study has found that the curriculum used in South African tertiary level academic institutions does not educate small and medium-sized entrepreneurs on how to acquire and
improve their entrepreneurial skills. The curriculum must be revised so that small and medium-sized entrepreneurs can be educated on how to develop business plans, how to grow their business, how to formulate long-term strategy for business, how to conduct audits, and how to write progress reports. It is essential to encourage potential entrepreneurs to enter the SMME sector by providing clear incentives. One method in which this can be done is by promoting openness and transparency in the procedures and regulations governing tender processes. Government tenders should be conducted in a transparent manner so that projects are awarded to the most deserving competitors. In order to ensure transparency, feedbacks should be provided to participants at the different stages of the tender assessment procedure. Failure to address this will require a holistic approach to ensure that government objectives are met.

Supervisory assistance should be provided to newly established businesses in their first three years of operation. Newly established firms often lack the capacity to do inventory, take stock, utilize their finance appropriately and prudently, and refrain from selling items on credit. By providing small enterprises with supervisory assistance, it will be possible to reduce the current high failure rate of failure in newly established business enterprises in the Vaal Triangle region.

Unemployed youth should be encouraged to attend vocational training programmes at tertiary level academic institutions. Such programmes can easily be offered by the Vaal University of Triangle (VUT) in collaboration with the South African Department of Trade and Industry. The curriculum for training can easily be worked out by the two institutions. Such collaboration has the potential for reducing the current unemployment rate among the youth who have been unable to find jobs.
Although there is an understanding that the SMME sector has the potential for contributing to the growth of the national economy, the sector needs to be supported by the national Government. The study conducted by Kumar, Antony, Madu, Montgomery and Park (2008: 878) has shown that the sustained growth of the national economy depends on the sustained growth of the SMME sector. This is especially true in developing economies such as South Africa. Klotz, Horman, Bi and Bechtel (2008: 623) have found that all tender procedures that might benefit small businesses and enterprises must be administered with adequate transparency as a means of supporting the SMME sector. Joseph (2005: 11-12) has reported that strategic partnerships between national and provincial Governments as well as academic institutions benefit the SMME sector in terms of producing workable plans of actions. Rumiler and Brache (2004: 2-3) have reported that business processes that aim to benefit small, micro and medium enterprises must be free from bureaucratic procedures and bottlenecks in order to enable small businesses to reach their full potential in the SMME sector of the economy. In Vaal Triangle, black-owned enterprises need tangible support in order to grow and make a sustainable contribution to job creation and the alleviation of poverty among the masses.

The strategic benefit of entrepreneurial and managerial skills for the long term survival of small and medium-sized enterprises has been Rummler and Brache (2004: 2-3) and Smith and Fingar (2003: 12-19). Both authors have found that the lack of entrepreneurial and managerial skills constitutes a major obstacle to the development of SMMEs. These findings have been corroborated by Yuki (2002: 19-21) in which it has been found that the acute shortage of entrepreneurial and technical skills has become one of the key reasons why newly established small and medium-sized enterprises fail to grow on a sustainable basis.
The constant shortage of entrepreneurial skills in small and medium-sized enterprises is further exacerbating the plight of emerging firms in Vaal Triangle. The shortage of such skills is responsible for the high rate of failure of newly established companies. According to Clemens (2006: 494), it is strategically important to have access to skills-based programmes of training if newly established companies are to bridge the skills gap in the SMME sector. Business programmes that are offered by South African universities are not relevant to the survival needs of small and medium-sized enterprises. The absence of accredited training programmes in this regard has aggravated problems that arise from the lack of technical skills.

Due to the nature of the SMME sector, access to finance remains vital because projects can get delayed in cases where contractors fail to raise adequate working capital for the project being done. Since contractors are expected to utilize initial capital before claiming for work done, the extent to which they are able to access financial backing is fundamental. Under financial constraints, small and medium-sized enterprises are likely to perform poorly on a contract. According to Curran and Blackburn (2001: 78), the key reason why the majority of newly established firms go out of business in the first three years following establishment is their inability to raise the finance needed for the completion of projects.

There are a few financial institutions operating in Vaal Triangle. Examples of such institutions are the Industrial Development Compotation (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. Clemens (2006: 495) has reported that it is quite difficult and unaffordable for the majority of small enterprises to borrow money on unfavourable 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 in the Vaal Triangle. The authors have also reported that 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 Vaal Triangle region of Gauteng Province.

**Recommendations**

Based on findings obtained from the study, the following recommendations are made to the South African National Department of Trade and Industry with a view to improve viability in small and medium-sized enterprises operating in the Vaal Triangle region of Gauteng Province. The recommendations have the potential for improving the plight of struggling small and medium-sized enterprises in the region.
• The provision of tailor-made skills based training programmes on vocational and entrepreneurial activities in which young matric graduates are targeted specifically;
• The provision of supervisory and monitoring and evaluation assistance to small and medium-sized enterprises;
• Involving Vaal University of Triangle in the creation of an academic programme in which tangible assistance is offered to young matric level graduates who have failed to find employment opportunities in the Vaal Triangle region of Gauteng Province; and
• The provision of financial support to newly established small enterprises in the Vaal Triangle region of Gauteng Province.

List of references


WASTE GENERATION BY COMMERCIAL BUSINESSES OPERATING IN THE TSHWANE OF SOUTH AFRICA

by

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Abstract

Objective. The objective was to investigate factors that affect the efficient management of solid waste produced by commercial businesses operating in the City of Pretoria, South Africa. Methods. Data was gathered from 1,034 businesses. Efficiency in solid waste management was assessed by using a structural time-based model designed for evaluating efficiency as a function of the length of time required to manage waste. Data analysis was performed using statistical procedures such as frequency tables, Pearson’s chi-square tests of association and binary logistic regression analysis. Odds ratios estimated from logistic regression analysis were used for identifying key factors that affect efficiency in the proper disposal of waste. Results. The study showed that 857 of the 1,034 businesses selected for the study (83%) were found to be efficient enough with regards to the proper collection and disposal of solid waste. Based on odds ratios estimated from binary logistic regression analysis, efficiency in the proper management of solid waste was significantly influenced by 4 predictor variables. These 4 influential predictor variables are lack of adherence to waste management regulations, wrong perception, failure to provide customers with enough trash cans, and operation of businesses by employed managers, in a decreasing order of importance.

Key words: Solid waste, businesses, waste management, efficiency, odds ratio
1. Introduction

The City of Tshwane is the capital of South Africa. According to Statistics South Africa, the population size of the City of Tshwane in 2011 was roughly equal to 3 million. The city is home to over 5,000 businesses out of which 1,603 businesses operate within the Central Business District of Tshwane, known as Pretoria [1]. According to the annual report issued by the City of Tshwane Metropolitan Municipality for the budget year 2010-2011, about 1,734,295 tons of solid waste is collected each year from businesses operating in the city [2]. The solid waste produced by businesses in the city includes trash or garbage such as wood, product packaging, empty bottles, used tyres and car parts, and cans, garden refuse, furniture, clothing, leftover food, newspapers, wires, grease, appliances, paint, pieces of metal, broken containers, sheet metal, used medicine, and the like. These businesses produce massive volumes of solid and liquid waste on a daily basis. Taxi ranks, bus stations, open flea markets, food outlets, and small businesses located in Pretoria are synonymous with litter, uncontrolled solid and liquid waste, as well as lack of capacity in the efficient management of waste. The annual report released by the City of Tshwane Metropolitan Municipality for the year 2011 shows that massive waste is accumulated during strike action by municipal workers responsible for the removal of waste from households and businesses [2]. The collection, disposal and processing of waste produced by businesses and households is regulated by legislative policies set out and enforced by the Municipality of Tshwane and the South African National Department of Environmental Affairs and Tourism [2, 3]. The use of an integrated municipal solid waste management system [4 - 7] has been shown to be essential for improving overall efficiency in municipal waste management in almost all developed nations of the world. In order for an integrated waste management system to perform efficiently, all relevant stakeholders of the waste chain must play a mutually collaborative role in
the collection, disposal, processing and management of waste. A review of the relevant literature shows that such a measure is essential for reducing the overall cost of waste management, and for the protection of the environment [8-10]. Overall efficiency in the management of waste depends on adherence to municipal acts on waste disposal and management [11-13]. Research work carried out in several developing nations of the world has shown that health education on environmental sanitation and primary health care [14], socioeconomic incentives [15] as well as a strict enforcement of municipal bylaws [16] are all needed for ensuring overall environmental cleanliness and the efficient management of waste in metropolitan cities such as Tshwane.

The study was conducted against the background of a host of factors that are well known to undermine overall efficiency in the management of solid waste in almost all metropolitan cities of the developing world. These background factors are lack of infrastructural capacity required for the efficient management and processing of solid waste [2, 3, 17, 18], poor awareness about the benefits of proper waste management [19], lack of socioeconomic incentives to stakeholders relevant to the waste management chain [20], failure to adequately utilize modern waste management and processing technology [21, 22], failure to vigorously enforce municipal bylaws [2, 3], and the absence of an integrated waste management system in Tshwane [23, 24]. The study aims to identify and quantify the key predictors of inefficiency in the management of solid waste in the City of Tshwane. With a view to ensure optimal efficiency in the management of solid waste, this research work will assess the degree to which municipal bylaws and regulations that are relevant to solid waste management are adhered to by businesses conducting business in the City of Tshwane. The bylaws and regulations are relevant to all stages of the waste management chain (sorting of waste at source, collection, treatment, disposal and processing).
The model considers 4 categories of solid waste (municipal, organic, plastics, electronic), and is designed for realizing a sustainable and optimally efficient solid waste management system for the City of Tshwane. The model is accompanied by a comprehensive monitoring and evaluation plan that could be used for assessing the current status-quo, and for assessing and evaluating efficiency in waste management at each stage of the waste management chain. Norms and standards set out by the South African National Department of Environment and Tourism are used for benchmarking [4].

Municipal bylaws that are relevant to waste management are not enforced with full vigour. Although more than 25% of small and medium-sized businesses as well as informal traders operating in the City of Tshwane generate waste in the course of conducting routine business [2, 3, 17], the pace at which such waste is properly collected and disposed of by municipal workers employed by the City of Tshwane is significantly lower than the pace at which waste is generated. This situation is exacerbated at times of civil action carried out by municipal workers responsible for routine waste collection and disposal. Taxi ranks, the various sources of solid and liquid waste and pollution, bus stations, liquor stores, petrol stations, schools, shops, open markets, garages, etc are well known contributors for the generation of high volume of solid and liquid waste in the CBD of Pretoria. There is room for improvement of the current level of efficiency in the management of waste produced by the various sources of solid and liquid waste and pollution. In terms of the strategic plan adopted by the South African Department of Environmental Affairs and Tourism (DEAT) to improve efficiency in the management of waste, the various sources of solid and liquid waste and pollution are a major stakeholder, and no
progress can be made unless otherwise the various sources of solid and liquid waste and pollution are involved in the implementation of the plan drawn up by the DEAT [4, 17].

There is a significant accumulation of solid waste especially in townships such as Mamelodi and Marabastad, and at the various taxi ranks in and around the City of Pretoria. There is a shortage of essential facilities such as trash cans, seats, shelters, public toilets and clean tap water at taxi ranks and public gathering arenas. Some of the various sources of solid and liquid waste and pollution do not have properly functioning toilets and washrooms although the proper functioning of such facilities is an essential requirement for business. The various sources of solid and liquid waste and pollution, taxi ranks and public gathering arenas are often characterized by bad smell and a large accumulation of solid and liquid waste. Such places are conducive for the spread of communicable diseases such as food poisoning and diarrhoea unless they are controlled and managed efficiently by the CTMM. Not enough is known so far about the extent to which efficiency in waste disposal can be improved in view of the fact that there is lack of empirical evidence in this area of research interest. Not enough research has been done in the CBD of Pretoria to assess and identify factors that affect efficiency in proper waste disposal. There is a shortage of empirical evidence based on a properly designed multivariate modelling in areas related to the quantification of factors that contribute to poor environmental sanitation and the accumulation of solid and liquid waste in the CBD of Pretoria. Low level of awareness in areas related to recycling, classification of waste at source and composting plays a major role in compounding the current lack of efficiency in the efficient utilization of resources such as broken bottles, empty cans, used goods, plastic bags, etc. Far from being put to economic use, broken
bottles are harming pedestrians and school children in addition to polluting the environment and
decreasing the beauty of the City in the eyes of visitors and residents. Ratepayers are disgusted
with the level of incompetence, inefficiency and indifference. Some irresponsible inhabitants of
the city and visitors who travel to the city from outside do not have adequate respect for
environmental sanitation, and demonstrate total disregard for cleanliness of the streets of the city.
Such irresponsible inhabitants and visitors often throw away rubbish on the streets. Examples of
such rubbish are beer bottles, empty cans and used food packages. Empty bottles break into
harmful pieces as they are thrown onto the streets from moving taxis and private cars. There is a
need to have irresponsible inhabitants and visitors educated and disciplined so that they show
respect for environmental sanitation and cleanliness. Experience drawn from large municipalities
in Sweden, the United States and Kenya shows that these deeply ingrained problems could be
addressed adequately by enforcing the relevant municipal bylaws with vigour [18], by promoting
health and environmental education, and by providing socioeconomic incentives to stakeholders
and role-players in the waste management chain [19].

A review of the literature shows that in cities as big as Tshwane, modern waste treatment
technologies such as composting, incineration, landfills, recycling, and window composting
should be used for solid waste management [20-23]. Modern solid waste management techniques
such as landfills, incineration, recycling, biological processing, energy recovery, radio frequency
identification tags, global positioning system tracking integrated software packages, rear vision
cameras, and the like are used in cities such as Geneva and Stockholm [18]. Examples of
advanced solid waste treatment technologies that are suitable for the city are anaerobic digestion,
ethanol production, biodrying, gasification, in-vessel composting, mechanical biological
treatment, mechanical heat treatment, plasma arc waste disposal, pyrolysis, sewage treatment and
tunnel composting are also highly appropriate technologies for the city [19, 20]. In the City of
Tshwane, the management of solid waste involves collection, transportation, processing or
disposal, management and monitoring of waste materials. The South African Department of
Environmental Affairs and Tourism [4] promotes the use of modern technologies and evaluation
techniques that are necessary for the efficient management of waste although advanced
technologies that are used for waste management and evaluation are poorly utilized in South
African cities including the City of Tshwane [2].

Globally, diverse methods have been used for improving efficiency in the collection and disposal
of solid waste. The most commonly used methods are designed for ensuring efficiency in solid
waste management, and are outlined in the UN-Habitat’s Third Global Report of 2010 [21]. In
the world’s cleanest cities, the following methods are used: integrated sustainable waste
management, the enforcement of municipal bylaws, the promotion of primary health care
services and environmental sanitation, the promotion of health education on proper waste
management, financial sustainability, institutional framework, good governance, community
based campaigns of awareness, the provision of incentives for good performance in the
collection of solid waste, process flow diagrams, as well as monitoring and evaluation
programmes designed for the assessment of municipal service delivery programmes [22-25].

In this study, assessment of efficiency in waste management was made by using the classic
structural time-based model constructed by Tchobanoglous, Theisen and Vigil [26] as well as
adherence to municipal bylaws. The City of Tshwane uses the model for assessing overall
efficiency in the collection of solid waste by municipal service providers. The model is suitable
for assessing efficiency in the collection of solid waste from fixed containers that are used for depositing solid waste by businesses and ordinary residents. The model assesses overall efficiency as a function of time taken for the management of waste.

The aim of this research is to identify and quantify factors that affect overall efficiency in the management of solid waste generated by businesses that operate in the City of Tshwane. Based on data collected from a random sample of \( n = 1,034 \) businesses operating in the City of Tshwane, the research article aims to:

1. Assess the current state of solid waste management with regards to type of wastes and quantities of waste generated,
2. Identify key factors that affect efficiency in the management of solid waste, and
3. Assess the degree to which businesses adhere to norms and standards that are recommended for businesses in terms of solid waste disposal.

2. Methods

2.1. Data. Data was collected in 2010 from a random sample of 1,034 businesses operating in the City of Tshwane. Eligible businesses were identified based on a sampling frame belonging to Statistics South Africa [1]. Managers and owners of the businesses as well as employees were asked a total of 89 questions related to the type of business they were operating, the type and volume of waste generated, how waste was collected, sorted out, disposed of and managed, the extent of cleanliness and sanitation at the workplace, their socioeconomic and demographic
characteristics, as well as their personal opinion on the benefits of the proper management of waste.

2.2. Statistical Analyses. Efficiency in solid waste management was assessed by using the model proposed by Tchobanoglous, Theisen and Vigil [26] for estimating the median time required for the collection of solid waste from the businesses that took part in the study. The model measures efficiency in the collection of solid waste from fixed locations and containers based on the mathematical expression shown below in (1):

$$E = 1 - A + B \quad \ldots (1)$$

In (1), $A$ denotes an off-route factor, and $B$ is a measure of off-route activity time by individuals collecting waste. In cases where $A = B$, the collection of solid waste becomes perfectly efficient. The larger the difference between $A$ and $B$, the less efficient becomes the waste collection procedure. The time required per trip is given by the expression shown below in (2):

$$t = \frac{t_1 + t_2 + Y}{1 - A} \quad \ldots (2)$$

In (2),

$t$ is the time required for waste collection from a fixed site per trip

$t_1$ is equal to pick up time of container at the site of collection

$t_2$ is equal to on-site time per trip

$Y$ denotes the total haul time during waste collection

$X$ denotes the average round-trip haul distance per trip
Since the relationship between $Y$ and $X$ follows simple linear regression, we have

$$Y = \beta_0 + \beta X \quad .... (3)$$

In (3), $\beta_0$ is the constant term in the simple linear regression of $Y$ on $X$, and $\beta$ is the regression coefficient in the simple linear regression of $Y$ on $X$. In cases where waste is collected from fixed sites, the time required to collect waste per trip follows a stationary model, and is expressed by the expression shown below in (4):

$$t_1 = P + Q + R \quad .... (4)$$

In (4), $P$ is the time taken to pick up a container that is full of solid waste; $Q$ is the time taken to unload an empty container; and $R$ is the time taken for driving from one container to the next container.

The number of trips per day is given by the expression shown below in (5):

$$n = Y(1 - A) - \frac{(t_3 + t_4)}{t} \quad .... (5)$$

In (5), variable $t$ is the time required for waste collection from a fixed site per trip; $t_3$ is the time required to drive from dispatch station to first container location to be served by the day; and $t_4$ is the time required to drive from the last container location to be served by the day to the dispatch station.

The time taken per trip is given by the expression shown below in (6):

$$t_5 = \frac{t_6 - t}{Y} \quad .... (6)$$
In (6), variable $t_6$ is the number of trips made in a week. The number of trips made per week is given by the expression shown below in (7):

$$t_6 = \frac{K}{RQ} \quad \text{(7)}$$

In (7), variable $K$ is a measure of the volume of waste generated in a week in cubic meters per kg; $R$ is the average size of the container in cubic meters per kg; and $Q$ is the weighted average container utilization factor.

Since $t = \frac{t_1 + t_2 + Y}{1 - A}$ as shown above in (2), it follows that $t_1 + t_2 + Y = (1 - A)t$ \ldots \quad (8)

Efficiency can thus be measured by the following relationship:

$$E = \frac{Y + t_1 + t_2 + Bt}{t} = \frac{(t_1 + t_2 + Y) + Bt}{t} = \frac{(1 - A)t + Bt}{t} = 1 - A + B \quad \text{(9)}$$

Values of $E$ in the expression $E = 1 - A + B$ were calculated for each of the 1,034 businesses that took part in the study. Businesses for which values of $E$ fell below the median were used for identifying businesses in which efficiency in waste management was inadequate. Businesses for which values of $E$ were greater than or equal to the median were used for identifying businesses in which efficiency in waste management was deemed adequate. That is,

$$\text{Overall efficiency} = \begin{cases} \text{Inadequate} & \text{if score is below the median of } E \\ \text{Adequate} & \text{if score is greater than or equal to the median of } E \end{cases}$$

Pearson’s chi-square tests of association [27] were used for the screening of variables. This was done by performing two-by-two tests of associations between overall efficiency in the management of waste and the various socioeconomic, demographic, sanitary, environmental and
health related variables on which data was gathered as part of the study. At the 5% level of significance, an association was deemed significant if the P-value was below 5%. The dependent variable of study is a measure of overall efficiency in the management of waste. The variable has only 2 possible values (Inadequate, Adequate). Since the dependent variable of study is dichotomous, binary logistic regression analysis [28] was used in order to identify key predictors of inefficiency in the management of waste. Multilevel analysis [29] was used in order to estimate the extent of variation with regards to efficiency in the management of waste by geographical zone and category of business enterprise. Multilevel analysis is a statistical procedure that enables planners and policy makers to allocate resources that are needed for intervention based on the extent of variation observed at various hierarchical levels. In this study, the two hierarchical levels depending on which efficiency in waste management varies are geographical location and category of business.

The degree of adherence to municipal bylaws and guidelines for the disposal of solid waste was measured by using a 2-point scale. The guidelines used for measuring adherence were the ISO 14000 and ISO 14031 guidelines for environmental management and performance monitoring in the management of waste and the environment [30 - 32]. At each of the 1, 034 businesses selected for the study, the degree of adherence to municipal bylaws and procedures recommended for solid waste management by businesses by the City of Tshwane was graded based on ISO 14000 and ISO 14031 guidelines. That is, at each business enterprise, binary grades (Adequate, Not adequate) were allocated as a measure of compliance according to criteria stipulated in ISO 14000 and ISO 14031 guidelines. The binary variable created for assessing degree of adherence to ISO guidelines or municipal bylaws was used as one of the predictor
variables of study. Category 1 of the binary variable represented inadequate adherence to ISO guidelines or municipal bylaws. Category 2 of the binary variable represented adequate adherence to ISO guidelines or municipal bylaws.

The purpose of conducting binary logistic regression analysis was to identify influential predictors of inefficiency in the management of waste among businesses operating in the City of Tshwane. The use of binary logistic regression analysis was appropriate as the dependent variable of study had only 2 possible values (1, 0). In binary logistic regression analysis, odds ratios were used as an epidemiological measure of effect. At the 5% level of significance, influential predictors of inefficiency in waste management are characterized by estimated odds ratios that differ from 1 significantly, P-values that are smaller than 0.05, and 95% confidence intervals of odds ratios that do not contain 1. The adequacy of the fitted logistic regression model was assessed by using standard diagnostic procedures such as the classification table, the Hosmer and Lemeshow goodness-of-fit test, receiver operating characteristics (ROC) plots, and sensitivity/specificity plots [28].

3. Results

Table 1 shows a comparison between businesses that were efficient with regards to solid waste management with those that were not. It can be seen from the table that 857 of the 1,034 businesses (83%) were efficient, while the remaining 177 businesses (17%) were inefficient. The table shows that a significant percentage of businesses located in the central and western parts of the city were inefficient, whereas businesses located in the eastern and northern parts of the city
were by and large efficient. The table shows that 76% of operators who managed businesses that were efficient with regards to waste management have acquired formal education at college level or better. In general, businesses that are inefficient in the management of waste are relatively younger, poor in personal hygiene and cleanliness of premises, and are by and large commercial. The majority of old businesses (6 years or more) are efficient in waste management. Businesses that are operated by owners are more efficient in comparison with businesses that are operated by employed managers. Utilization of private contractors for waste removal and management, regular inspection of premises by municipal workers, familiarity with the South African White Paper on waste management, source reduction of waste, good perception on the benefits of proper waste management, and adherence to waste management regulations recommended by the municipality are much more common among businesses that are efficient in waste management.

(Table 1 here)

Two-by-two Pearson chi-square tests of associations [27] was used for performing a preliminary screening of influential factors that were significantly associated with inefficient management of waste. Table 2 shows a list of 15 factors that are significantly associated with poor or less than satisfactory waste disposal at the 0.001 level of significance. In each of the tests, the outcome variable of study, Y, was defined as follows:

\[
\text{Overall efficiency} = \begin{cases} 
\text{Inadequate if score is below the median of } & E \\
\text{Adequate if score is greater than or equal to the median of } & E 
\end{cases}
\]

At the 0.001 level of significance, significant associations are characterized by large observed chi-square values and P-values that are smaller than 0.001. Table 2 provides a list of 15 variables that are significantly associated with inefficient waste management.
At the 0.001 level of significance, all 15 variables shown in Table 2 are significantly associated with overall efficiency in the management of waste. It can be seen from the table that the top 5 significant variables are: lack of adherence to municipal bylaws and regulations, wrong perception on the potential benefits of proper waste management, failure of businesses to provide customers with enough trash cans, the status of the business operator (owner or employee), and the frequency at which business premises are inspected by municipal sanitation and health workers, in a decreasing order of strength.

Results from binary logistic regression analysis are theoretically more reliable than results from Pearson’s chi-square tests of association [28]. This is because the measure of effect in binary logistic regression is the odds ratio, and not two-by-two significant associations. Logistic regression analysis allows multivariate analysis involving several variables that are influential over waste disposal. It is also possible to assess the reliability of the fitted logistic regression model based on highly reliable diagnostic tests such as the classification table, the likelihood ratio test, the Hosmer-Lemeshow goodness-of-fit test, as well as receiver operating characteristic (ROC) and sensitivity/specificity plots [28].

At the 0.05 level of significance, influential predictor variables are characterized by estimated odds ratios that differ from 1 significantly, P-values that are smaller than 0.05, and 95% confidence intervals of odds ratios that do not contain 1. Accordingly, it can be seen from Table
3 that all 4 predictor variables are significant at the 0.05 level. The results show that efficiency in the proper management of solid waste is significantly influenced by 4 predictor variables. These 4 influential predictor variables are lack of adherence to municipal bylaws and regulations \([\text{OR}=9.17; \ 95\% \ C. \ I. = (6.42, \ 12.54)]\), wrong perception \([\text{OR}=8.81; \ 95\% \ C. \ I. = (6.01, \ 11.35)]\), failure to provide customers with enough trash cans \([\text{OR}=3.15; \ 95\% \ C. \ I. = (1.46, \ 5.87)]\), and the operation of businesses by employed managers \([\text{OR}=2.69; \ 95\% \ C. \ I. = (1.66, \ 4.32)]\), in a decreasing order of importance.

(Table 3 here)

The adjusted odds ratio of the variable poor adherence is 9.17. This shows that a business that is managed by an operator who fails to adhere to guidelines set out for waste management by the City of Tshwane is 9.17 times as likely to be inefficient in the proper management of solid waste in comparison with a business that is managed by an operator who adheres to recommended guidelines. The adjusted odds ratio of the variable wrong perception is 8.81. This shows that a business operator who has the wrong perception on the benefits of proper management of solid waste is 8.81 times as likely to be inefficient in comparison with another business operator with the correct perception on the benefits of proper waste management. The adjusted odds ratio of the variable failure to provide customers with enough trash cans is 3.15. This shows that a business in which there are not enough trash cans for customers is 3.15 times as likely to be inefficient in the management of solid waste in comparison with a business in which enough trash cans are provided to customers. The adjusted odds ratio of the variable status of operator is 2.69. This shows that an outlet that is operated by someone who does not own the business being operated is 2.69 times as likely to be inefficient in the proper management of solid waste in
comparison with an outlet that is operated by someone who actually owns the business. Adjusted
odds ratios are more reliable than unadjusted odds ratios in epidemiological studies of this kind.
In this study, the estimated odds ratios were adjusted for two potential confounding variables
(level of education of business operator and the physical location of business). The adjusted odds
ratios did not differ much from the unadjusted odds ratios, thereby showing that none of the
variables used for adjustment was a confounding variable. There was no effect modifying
variable.

**Goodness-of-fit tests**

The reliability of the fitted logistic regression model was assessed using standard goodness-of-fit
tests suitable for binary logistic regression analysis [28]. The classification table showed that the
fitted model had an overall percentage of correct classification of 88.78%, a percentage
sensitivity of 57.06%, and a percentage specificity of 95.33%. This shows that the fitted model is
highly reliable in accurately classifying observations. The Hosmer-Lemeshow goodness-of-fit
test gave a P-value of 0.0701, a figure which is greater than 0.05, thereby showing that there was
no reason to doubt the reliability of the fitted logistic regression model. Figure 1 below shows a
plot of sensitivity/specificity versus probability cut-off point. The two plots cross each other
fairly close to the vertical axis. This shows that the fitted model is adequately sensitive and
specific.

(Figure 1 here)
Figure 2 below shows a Receiver Operating Characteristic (ROC) plot. The magnitude of the area that lies under the ROC plot is a measure of variation explained by the fitted logistic regression model. In this case, the area under the ROC plot is 88.82%, a figure that is significantly above 75%. The unexplained proportion of variation is equal to 11.18%. The large proportion of explained variation and the small proportion of unexplained variation show that the fitted model is highly reliable in explaining variability in waste disposal as a function of the explanatory variables used for logistic regression analysis.

(Figure 2 here)

The likelihood ratio test is used for assessing the collective efficiency of the 8 predictor variables used for performing binary logistic regression analysis. At the 5% level of significance, a P-value that is smaller than 0.05 shows that the 8 predictor variables used for performing binary logistic regression analysis are jointly efficient. In this case, the P-value from the likelihood ratio test is equal to 0.000, a figure that is smaller than 0.05. This small P-value shows that the 8 predictor variables used for binary logistic regression analysis are collectively efficient in accounting for failure in the proper disposal of waste.

Multilevel analysis [29] was used in order to estimate the extent of variation with regards to efficiency in the management of waste by geographical zone and category of business enterprise. Table 1 provides frequency distributions for each of the 7 categories of business (agricultural, commercial, construction, industrial, institutional, municipal, and processing and manufacturing) as well as 5 geographical locations (central, east, west, north, south) of the City of Tshwane that were considered in performing multilevel analysis. Results obtained from multilevel analysis
showed that there were significant differences among the 7 categories of waste. The results showed that 23.05% of the total variation in efficiency is due to differences among the 7 categories of waste produced by business enterprises operating in the City of Tshwane. The results also showed that businesses within the same category of waste and geographical location were equally efficient in the management of solid waste.

4. Discussion

The key objective of research was to identify and quantify factors that affect efficiency in the management of solid waste by businesses that are operated in the City of Tshwane. The study has shown that efficiency in the management of solid waste is significantly influenced by 4 key predictor variables of study. These 4 influential predictor variables are lack of adherence to municipal bylaws and regulations, wrong perception on the potential benefits of proper waste management, failure to provide customers with enough trash cans for waste disposal, and the practice of operating businesses by employed managers, in a decreasing order of importance. In the City of Tshwane, municipal solid waste consists of everyday items such as product packaging, empty bottles and cans, grass clippings, furniture, clothing, left-over food, newspapers, appliances, paint, batteries, pieces of metals, etc. Such solid waste is generated by businesses, households, schools, hospitals, and visitors travelling into the city on foot or by other modes of transport such as cars, train, taxi or bus. The Health Department of the City of Tshwane [2] has a municipal bylaw that stipulates how solid waste should be packaged, sorted, collected and disposed of by inhabitants of the city. The bylaw encourages inhabitants of the city to practice source reduction of solid waste, recycling, and composting (collecting organic waste such as left-over food and garden refuse, storing these wastes under conditions that are designed
to help them break down naturally, and then use the resulting compost as a natural fertilizer).
According to the South African National Department of Environmental Affairs and Tourism [4],
the disposal and combustion of municipal solid waste is conducted by the use of landfills, the
conversion of non-recyclable waste materials into useable heat, electricity, or fuel, combustion,
and transfer stations. Although the use of such mechanisms is consistent with the municipal
bylaw in the City of Tshwane, the mechanisms have been poorly utilized mostly due to lack of
infrastructural development and technical skills.

Findings from this study are not surprising. The results are expected from a typical Sub-Saharan
African country in which poverty, unemployment, massive immigration into urban centres
prevail. Environmental hazards arising from the decomposition of solid waste under
oversaturated conditions [35] and dumping of solid waste in illegal landfills often causes sludge
[36]. Such problems are particularly evident in suburbs of Tshwane such as Mamelodi and
Marabastad. In this regard, the City of Tshwane can be viewed as a combination of clean white
suburbs and dirty black townships. Generally, awareness and regard for environmental sanitation
is poor in black suburbs. The other key environmental hazard is caused by arbitrary landfill sites
that dot the peripheries of the City of Tshwane. Green waste from landfills produces potentially
harmful gasses such as methane and leachates. Such products pollute water reservoirs in the city.
The study by Snyman and Vorster [17] has found that composting and the pre-treatment of
municipal waste before landfilling are viable options for the City of Tshwane. Silva, Dezotti &
Sant’Anna [37] as well as Wiszniowski, Surmacz-Górska, Robert & Weber have found that
composting and pre-treatment of municipal waste before landfilling significantly reduces the
volume of solid waste and contributes for overall environmental sanitation [38]. At the moment,
the City of Tshwane does not have adequate capacity for large scale composting, and there is an acute need for addressing this shortcoming.

The study has shown that a combination of technical and administrative solutions is required in order to improve efficiency in the management of solid waste in the City of Tshwane. To separate waste generated at the various businesses, it is necessary to provide businesses with custom-made containers that are suitable. It is equally important to enforce municipal bylaws in order to ensure compliance. The frequency of collecting waste should be balanced with the volume of waste generated by the various businesses. Studies conducted in various parts of the developed world [39] have shown that there are economic benefits in outsourcing the collection and disposal of recyclable waste to the informal sector, and that sanitary landfills should be used for the final disposal of solid waste. In addition to enforcing the law with vigour, it is equally important to provide community based health education on environmental sanitation by collaborating with the Department of Health. Awareness campaigns and socioeconomic incentives could be provided by civic society and non-governmental organizations that have a vested interest in improving environmental sanitation and cleanliness. Since most of the waste generated in the City of Tshwane is organic, it is recyclable. As such, the provision of incentives and education at the grass-roots level carries a clear socioeconomic merit. Composting is a form of aerobic treatment, and is suitable for treating organic waste in the City of Tshwane. According to Barlaz [40], facilities used for storage and collection of waste must be compatible with each other. Waste disposal and processing sites must be located strategically so that the cost of waste collection, disposal and processing becomes optimal. The City of Tshwane needs to make the necessary initial investment available in order to benefit from composting in the long-run.
Extensive waste management research conducted in various parts of China [41] has shown that educating rural as well as urban people on how to produce compost by using low technology has long-term economic benefits to big metropolitan municipalities such as Tshwane. Large scale compost activities require massive infrastructural investment and skills based training. Research conducted in Nigeria [42] has shown that strategic partnerships and collaboration among academic and research institutions and municipalities have the potential for enhancing overall efficiency in waste management, skills development and the creation of employment opportunities in municipalities such as Tshwane. One particular area of waste that stands to benefit out of such partnership is the management and processing of plastic and e-waste. This is because unprocessed plastic waste has almost no economic benefit. The collection and recycling of plastic waste is characterized by serious challenges and difficulties in the City of Tshwane. The City of Tshwane has no coherent policy on the collection of e-waste. Neither does it provide clear incentives to entrepreneurs who wish to collect, classify and process e and plastic waste. Since e-waste could be hazardous, there is a dire need to build capacity in the classification of e-waste into one of two categories (harmful or hazardous), and processing each category of waste by utilizing an appropriate form of technology. There is an acute need for providing incentives, enforcing municipal bylaws, the provision of health and sanitary education, and a comprehensive monitoring and evaluation programme for assessing the progress made in this regard regularly. A well-functioning integrated solid waste management system can only be realized in the City of Tshwane by providing clear incentives for good practice and behaviour, and by severely penalizing irresponsible behaviour in the city. Liua, Shia, Qianc, Hud and Penge [43] have found that the provision of direct socioeconomic incentives, clear guidelines on the collection, disposal and processing of e and plastic waste, as well as a strict enforcement of municipal bylaws is
required for improving overall efficiency in the management of e and plastic waste in the City of Tshwane.

The efficient management of solid waste produced by enterprises that conduct business in the various parts of the City of Tshwane has numerous economic, sanitary and health-related benefits to the inhabitants of the city. Disposing of waste in landfills is much better than using open dumps. Up until recently, emphasis has been placed on waste disposal, and not on management, recycling and composting. Poor management of waste has an adverse impact on the environment and public health, particularly in townships such as Mamelodi, Marabastad, Soshanguve and Attridgeville. In these townships, waste is managed poorly, and landfills are inappropriately sited, designed, managed and operated. Until recently, the management of waste generated by businesses operating in the city has not been given due consideration. The waste management that took place focused mainly on waste disposal and was reactive in that it addressed needs as they occurred. Holistic, integrated waste management planning was poorly done. The low priority that was historically accorded to waste management has resulted in waste impacting detrimentally on the South African environment and on human health. Standards for medical waste incinerators are generally inadequate in comparison with international best practice.

Efficient waste disposal is a process that requires the full collaboration of all stakeholders on a community based collaborative approach. In addition to providing sanitary education and inspection services to the businesses, clear incentives must be provided to ensure maximum success. The enforcement of regulations, the provision of incentives, adequate logistical
resources, additional manpower, financial rewards, public-private partnerships and awareness campaigns are all essential.

The treatment of waste produced by the businesses in the City of Tshwane is similar to waste produced in a typical developing nation in the sense that treatment of this waste involves simply a reduction of its volume by use of methods such as baling or shredding although incineration and composting is practiced at a small scale. The emphasis remains on disposal of general waste by landfill without treatment as the lowest cost disposal option, as landfill airspace is still available in South Africa. The lack of pre-treatment of general waste before disposal is therefore currently not regarded as a problem in South Africa. Incineration of general waste and hazardous waste is not acceptable to many stakeholders due to the poor operation of many existing facilities and non-compliance with existing by-laws. Incineration is not economically feasible in South Africa since its warm climate limits the market for the energy derived from the incineration process. The majority of operating incinerators in South Africa are used for the treatment of infectious medical waste.

Increasing general awareness about the benefits of proper waste disposal is a key requirement for success. The number of waste disposal sites is limited, and the disposal of waste is expensive. Since there are not enough of these facilities, hazardous waste is often transported over long distances, resulting in increased risks of accidents and higher transport costs. Some other helpful steps are to undertake an integrated plan in which waste is gathered and disposed of efficiently based on mutual collaboration among stakeholders, Strengthen the technical, financial, administrative and operating capacity of the institutions in the basic environmental sanitation
sector, encouraging health education and community promotion activities, which are basic to the success of waste collection and disposal, especially at taxi ranks and the streets at the central business district of Pretoria, to provide clear incentives to businesses that improve the quality of waste collection and disposal based on generally accepted standards. Technical cooperation among stakeholders must be directed toward the strengthening of institutions in the basic environmental sanitation sector and emphasis should be given to the following activities: operation and maintenance, community promotion, training, administration and management, the preparation of plans and studies helpful for efficient waste disposal, and the application of technologies that are helpful for efficient waste disposal.

The need for inspection becomes acute during rainy seasons and prolonged civil actions. In-depth interviews conducted with some of the managers of the 1,034 businesses that took part in the study have revealed that the businesses suffer enormously during prolonged strike actions. Waste material gets vandalized by scavengers as a result of delay in collection by service providers. It is too risky to leave waste uncollected during rainy seasons as waste could easily be mixed up with excreta that could be washed away by rain-water, ending up in wells and streams. The germs in the excreta could then easily contaminate drinking or washing water. In such situations, diarrhoeal diseases can spread from one person to another. Failure to dispose of waste can have a significant effect on the health of communities. Where refuse is not disposed of properly, it can lead to pollution of surface water, as rain washes refuse into rivers and streams. There may also be a significant risk of groundwater contamination. Refuse disposed of in storm drains may cause blockages and encourage fly and mosquito breeding. It is therefore very important that household waste is disposed of properly. All business premises operating in the City of Tshwane must be inspected for environmental sanitation and cleanliness regularly with a
view to encourage and reward good practice, and to penalize irresponsible behaviour. Municipal bylaws on the collection, disposal and management of waste must be enforced with enough vigour and commitment. Failure to do so can easily result in frustration among businesses that obey municipal guidelines and regulations on waste management.

5. Conclusions

The study showed that 17% of the 1,034 businesses were not efficient enough with regards to the proper collection, disposal and management of solid waste. The study has shown that efficiency in the management of solid waste is adversely affected by lack of adherence to municipal bylaws and regulations on proper waste management, wrong perception on the potential benefits of proper waste disposal, failure to provide customers with enough trash cans at business premises, and the operation of businesses by employed managers, in a decreasing order of importance. Lack of adherence to municipal bylaws and regulations that are essential for proper waste management constitutes a key challenge in the City of Tshwane. The presence of wrong perception on the potential benefits of waste disposal is also a well-known hurdle. To rectify this issue, a combination of three interventions is necessary. The first intervention is to enforce municipal bylaws with vigour. The second intervention is to provide incentives to businesses that manage solid waste properly in accordance with guidelines provided by the City of Tshwane. Regulatory and legislative actions must be taken against those who fail to respect municipal bylaws that are related to cleanliness and proper waste management. The efficient disposal of waste generated by businesses operating in the city has direct economic benefits to all inhabitants of the city. Accordingly, waste should be gathered efficiently, and disposed of in accordance with the waste collection and management plan produced by the City of Tshwane.
Management of waste must start at the lowest level. The third intervention is to actively promote an education campaign in all parts of the City of Tshwane with a view to ensure the full collaboration of businesses conducting business in the City.

Based on findings of this particular study, the following recommendations are made to the City of Tshwane in order to improve overall efficiency in the management of solid waste that is generated by businesses operating in the city:

- The City of Tshwane must produce and implement an integrated plan for the management of solid waste in collaboration and partnership with the relevant stakeholders in the city so that each of the role players in the waste management chain can investment adequately in basic environmental sanitation.

- An initial infrastructural investment needs to be made by the City of Tshwane in order to build adequate capacity for commercial composting. This should be done in collaboration with business enterprises so that they can share the financial burden at the initial stage, and benefit from compost-related business opportunities in the long-run.

- The City of Tshwane must strive to increase awareness about the potential benefits of proper waste collection and disposal by promoting health education on environmental sanitation and techniques that are useful for collecting and sorting waste. Incentives must be provided to businesses that do a good job in terms of the proper collection and disposal of solid waste. The City must support community-based health promotion activities undertaken by non-governmental organizations. The City must also support research initiatives conducted by academic and research institutions in areas that are
related to waste management, environmental sanitation, and personal hygiene by funding them partially or fully.

- The City of Tshwane must improve the conditions of employment of municipal workers responsible for waste collection and disposal.
- The City of Tshwane and Gauteng Department of Health must provide technical assistance to businesses that do not have their own waste management plans so that such businesses can contribute for overall efficiency in environmental sanitation.

Conflict of Interests

The authors have no conflict of interests to disclose.

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Table 1: Comparison with regards to overall efficiency in waste management

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Efficient (n=857)</th>
<th>Inefficient (n=177)</th>
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<tbody>
<tr>
<td>Category of business</td>
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<tr>
<td>Agricultural:</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Commercial:</td>
<td>71%</td>
<td>83%</td>
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<tr>
<td>Construction:</td>
<td>6%</td>
<td>3%</td>
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<td>3%</td>
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<tr>
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<td>5%</td>
</tr>
<tr>
<td>Manufacturing:</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>Geographical location of business in the City of Tshwane</td>
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<td></td>
</tr>
<tr>
<td>Central:</td>
<td>31%</td>
<td>41%</td>
</tr>
<tr>
<td>East:</td>
<td>21%</td>
<td>13%</td>
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<td>West:</td>
<td>19%</td>
<td>23%</td>
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<tr>
<td>North:</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>South:</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Age of business in years</td>
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<td></td>
</tr>
<tr>
<td>Less than a year:</td>
<td>5%</td>
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</tr>
<tr>
<td>1 to 2 years:</td>
<td>6%</td>
<td>35%</td>
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<tr>
<td>3 to 5 years:</td>
<td>29%</td>
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<tr>
<td>6 years or more:</td>
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<td>16%</td>
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<tr>
<td>Status of business operator</td>
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<tr>
<td>Owner:</td>
<td>76%</td>
<td>31%</td>
</tr>
<tr>
<td>Manager:</td>
<td>24%</td>
<td>69%</td>
</tr>
<tr>
<td>Level of education of operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College level or better:</td>
<td>76%</td>
<td>39%</td>
</tr>
<tr>
<td>High school level or less:</td>
<td>24%</td>
<td>61%</td>
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<tr>
<td>Gender of operator</td>
<td></td>
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</tr>
<tr>
<td>Male:</td>
<td>76%</td>
<td>73%</td>
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<tr>
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<tr>
<td>Use of private contractor for waste management</td>
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<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>No:</td>
<td>77%</td>
<td>84%</td>
</tr>
<tr>
<td>Sorting waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes:</td>
<td>76%</td>
<td>45%</td>
</tr>
<tr>
<td>No:</td>
<td>24%</td>
<td>55%</td>
</tr>
<tr>
<td>Adherence to waste management regulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes:</td>
<td>95%</td>
<td>52%</td>
</tr>
<tr>
<td>No:</td>
<td>5%</td>
<td>48%</td>
</tr>
<tr>
<td>Category</td>
<td>Range</td>
<td>Yes</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Personal hygiene</strong></td>
<td>Excellent: 9%  Very good: 43%  Satisfactory: 37%  Less than satisfactory: 10%  Poor: 1%</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Excellent: 0%  Very good: 21%  Satisfactory: 41%  Less than satisfactory: 33%  Poor: 5%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Perception on the benefits of proper waste management</strong></td>
<td>Excellent: 3%  Very good: 56%  Satisfactory: 35%  Less than satisfactory: 5%  Poor: 1%</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td>Excellent: 1%  Very good: 6%  Satisfactory: 29%  Less than satisfactory: 55%  Poor: 9%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Source reduction of waste</strong></td>
<td>Yes: 80%  No: 20%</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>Yes: 52%  No: 48%</td>
<td>52%</td>
</tr>
<tr>
<td><strong>Amount of waste generated in 1,000 kg per week</strong></td>
<td>≤ 0.9: 25%  1 to 1.9: 46%  2 to 4.9: 27%  5 to 9.9: 2%  ≥ 10: 0%</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>≤ 0.9: 49%  1 to 1.9: 42%  2 to 4.9: 8%  5 to 9.9: 1%  ≥ 10: 0%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Enough trash cans available for customers</strong></td>
<td>Yes: 77%  No: 23%</td>
<td>77%</td>
</tr>
<tr>
<td></td>
<td>Yes: 46%  No: 54%</td>
<td>46%</td>
</tr>
<tr>
<td><strong>Regular inspection of premises by municipality</strong></td>
<td>Yes: 84%  No: 16%</td>
<td>84%</td>
</tr>
<tr>
<td></td>
<td>Yes: 41%  No: 59%</td>
<td>41%</td>
</tr>
<tr>
<td><strong>Familiarity of operator with White Paper on Waste Management</strong></td>
<td>Yes: 86%  No: 14%</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>Yes: 28%  No: 72%</td>
<td>28%</td>
</tr>
</tbody>
</table>
Table 2: List of top 15 significant associations from Pearson’s chi-square tests of associations with overall efficiency in waste disposal (P < 0.001)

<table>
<thead>
<tr>
<th>Variable of study associated with overall efficiency in waste management</th>
<th>Observed chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adherence: Degree of adherence to waste management regulations</td>
<td>716.04</td>
<td>0.0000</td>
</tr>
<tr>
<td>Perception: Perception on the benefits of proper waste management</td>
<td>705.99</td>
<td>0.0000</td>
</tr>
<tr>
<td>Trashcan: Availability of enough trash cans for customers</td>
<td>701.42</td>
<td>0.0000</td>
</tr>
<tr>
<td>Status: Status of person operating business (owner or employee)</td>
<td>469.21</td>
<td>0.0000</td>
</tr>
<tr>
<td>Frequency: Frequency at which business premises are inspected by municipality</td>
<td>299.57</td>
<td>0.0000</td>
</tr>
<tr>
<td>Hygiene: Personal hygiene of employees at business premises</td>
<td>251.72</td>
<td>0.0000</td>
</tr>
<tr>
<td>Maintenance: Degree of maintenance of trash bins and their environment in business premises</td>
<td>167.09</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cleanliness: Degree to which business premises are kept clean</td>
<td>139.88</td>
<td>0.0000</td>
</tr>
<tr>
<td>Education: Level of education of business operator</td>
<td>127.52</td>
<td>0.0000</td>
</tr>
<tr>
<td>Inspection: Regular inspection of premises by municipal workers</td>
<td>115.14</td>
<td>0.0000</td>
</tr>
<tr>
<td>Volume: Volume of waste generated</td>
<td>109.59</td>
<td>0.0000</td>
</tr>
<tr>
<td>Contractor: Use of private contractors for waste management</td>
<td>104.44</td>
<td>0.0000</td>
</tr>
<tr>
<td>White Paper: Familiarity with White Paper on waste management</td>
<td>103.87</td>
<td>0.0000</td>
</tr>
<tr>
<td>Implement: Degree to which a waste management plan is implemented</td>
<td>100.11</td>
<td>0.0000</td>
</tr>
<tr>
<td>Sort: Sorting waste generated at source</td>
<td>93.12</td>
<td>0.0000</td>
</tr>
</tbody>
</table>
Table 3: Odds Ratios estimated from binary logistic regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unadjusted OR and 95% C.I.</th>
<th>P-value</th>
<th>Adjusted* OR and 95% C.I.⁺</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor adherence</td>
<td>9.18 (6.43, 12.55)</td>
<td>0.000</td>
<td>9.17 (6.42, 12.54)</td>
</tr>
<tr>
<td>Wrong perception</td>
<td>8.84 (6.02, 11.36)</td>
<td>0.000</td>
<td>8.81 (6.01, 11.35)</td>
</tr>
<tr>
<td>Failure to provide customers with enough trash cans</td>
<td>3.17 (1.48, 5.89)</td>
<td>0.000</td>
<td>3.15 (1.46, 5.87)</td>
</tr>
<tr>
<td>Status of operator (Owner, manager)</td>
<td>2.71 (1.69, 4.35)</td>
<td>0.000</td>
<td>2.69 (1.66, 4.32)</td>
</tr>
</tbody>
</table>

*Adjustment was done for level of education, gender and location of business

⁺ C. I. = Confidence Interval
Fig 1: Plot of sensitivity/specificity versus probability cut-off point
Area under ROC curve = 0.8882

Fig 2: Area under the Receiver Operating Characteristic (ROC) plot
Small businesses operating in the City of Tshwane are characterized by shortage of entrepreneurial skills. The purpose of the study was to highlight the impact of shortage of entrepreneurial skills on the long-term survival and economic viability of small, micro and medium-sized enterprises (SMMEs) that operate in and around the City of Tshwane in Gauteng Province, South Africa. The research was based on a 5-year follow-up study (2007 to 2012) of a random sample of 349 small and medium-sized business enterprises that operate in and around the City of Tshwane in South Africa. Data was gathered from each of the businesses on socioeconomic factors that are known to affect the long-term survival of small, micro and medium-sized businesses. The objective of the study was to identify and quantify key predictors of viability and long term survival. The design of the study was descriptive and longitudinal. Econometric methods such as panel data analysis, Kaplan-Meier survival probability curves, life tables, and logit regression analysis were used for data analyses. Hazard ratios estimated from the Cox Proportional Hazards Model were used as an econometric measure of effect. The study found that 188 of the 349 businesses that took part in the study (54%) were not viable. Based on hazard ratios estimated from the Cox Proportional Hazards Model, the long-term survival and viability of SMMEs was significantly and adversely affected by lack of entrepreneurial skills, lack of supervisory support to newly established businesses, and inability of operators running newly established businesses to acquire relevant vocational skills.

Keywords: SMMEs, Entrepreneurial skills, Vocational skills, Panel data analysis, Odds ratio, Hazard ratio
SMMEs are regarded as the major GDP contributors and usually create more jobs quantified at about 60% by Business Partners Limited (Bharadwaj, 2013: 169-196). Countries classified as emerging economies, namely Brazil, Israel, India, Ireland and South Africa have realized that it is essential to support and promote the development of SMMEs as a means of growing the national economy and alleviating unemployment and poverty among the masses. Several studies have pointed out the strategic importance of SMMEs to the national economy and GDP (Adams & Mehran, 2003: 123-142). The growth of SMMEs is closely linked to the growth of national economies and GDPs. Job creation in the formal sector frequently takes place at a far lower rate than growth in the labour force (Ligthelm & Van Wyk, 2004:1-4). South African SMME environment is not unique to this assertion. Many reasons are given for business failure, inter alia with, lack of managerial planning skills, ineffective working capital management, inability to manage the competitive environment and growth over-expansion(Rankhumise, 2009; Netswera and Ladzani, 2009).

The South African Government strives to create a conducive environment for SMMEs to participate in the mainstream of the economy and growth through job creation and introduction of innovative products and services. They created DTI Agents to focus on SMME development. Table 1 illustrates how the South African Government has prioritised the SMME development through support programmes.

**Table 1: Prioritisation of support programmes for SMMEs**

<table>
<thead>
<tr>
<th>Market segment</th>
<th>Support programme</th>
<th>Degree of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-formation</td>
<td>Co-operatives Promotion and Awareness Support Programme</td>
<td>Highest significance</td>
</tr>
<tr>
<td>Survivalist co-operatives (Revenue &lt;R300 000)</td>
<td>Micro Finance (through SAMAF) Start-Up Grant (Through Co-operatives Incentive Scheme by TEO)</td>
<td>Highest significance</td>
</tr>
<tr>
<td>Micro co-operatives (Revenue between R300 000 and R5 million)</td>
<td>Micro Finance (through SAMAF) Start-Up Grant (Through Co-operatives Incentive Scheme by TEO) Infrastructure Support Programme (Through Municipalities)</td>
<td>Higher significance</td>
</tr>
<tr>
<td>Small co-operatives (Revenue between R5</td>
<td>Start-Up Grant (Through Co-operatives Incentive Scheme by TEO)</td>
<td>High significance</td>
</tr>
</tbody>
</table>
SMMEs have their perception about the South African Government support systems. See the table below depicting the situation.

**Table 2. Perception by SMMEs on Government programmes for supporting SMMEs**

<table>
<thead>
<tr>
<th>Government programme</th>
<th>Degree of utilization of programme</th>
<th>Perception about programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBBEEE</td>
<td>Low response</td>
<td>Not aware. Do not see value adding to their businesses. Interpreted to be for the wealthy or educated</td>
</tr>
<tr>
<td>Training</td>
<td>Low response</td>
<td>Affect income generating business activities</td>
</tr>
<tr>
<td>Business registration processing</td>
<td>High response</td>
<td>Red – tape coupled with administration inefficiencies affect the turnaround time</td>
</tr>
<tr>
<td>Business linkage</td>
<td>Low response</td>
<td>Tend to benefit a few. Regulatory</td>
</tr>
<tr>
<td>Incentives</td>
<td>Low response</td>
<td>Not binding to comply in Tax returns and VAT Registration and see no benefit to their business operations</td>
</tr>
<tr>
<td>------------</td>
<td>--------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tender Participation</td>
<td>High response</td>
<td>Positive hope to be considered for job opportunities</td>
</tr>
<tr>
<td>Data base registration</td>
<td>High response</td>
<td>Positive hope to be considered for job opportunities</td>
</tr>
<tr>
<td>Vulnerable</td>
<td>High response</td>
<td>Government does not provide protection and training</td>
</tr>
<tr>
<td>Stakeholder facilitation for deregulating access to finance</td>
<td>Low response</td>
<td>Government does not assist to make the private sector understand the language of SMME financing. Financing model suitable to Large Corporate and SMEs</td>
</tr>
<tr>
<td>SMME Conditions</td>
<td>Low response</td>
<td>Government reluctant to assist. Administration corrupt and inefficient.</td>
</tr>
</tbody>
</table>

SMME operational needs are often misinterpreted by the important stakeholders in the SMME sector. Hence a study was undertaken to review the factors that affect the survival and growth of this sector, which to large extent is said to be informal. The study was based on a 5-year long follow-up (2007 to 2012) of a random sample of 349 small, micro and medium-sized enterprises (SMMEs) conducting business in and around the City of Tshwane in which factors responsible for failure in small businesses 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 was to identify and quantify key variables that were responsible for failure in the 188 businesses that were not viable.
Theoretical issues about South African SMMEs

Several studies have been undertaken on SMMEs as they are said to be the biggest creators of jobs with ease and contribute more to the GDP yet 75% fail within their 3yr of operation (Ladzani, Ligthelm & Brilal, 2012: 43-46). Majority of survivalist businesses are said to be necessity driven entities as well as lack the necessary basic business skills and entrepreneurship, capacity and resources needed for business growth and expansion, access to markets amongst others. Rankhumise (2010) also cited lessons and challenges faced by Small Business Owners in running their Businesses linked to lack of skills, capacity constraint, access to finance amongst others.

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 (South African Chamber of Commerce and Industry, 2013: 1-7; South African Department of Trade and Industry, 2013: 2-5; South African Small Enterprise Development Agency, 2013: 2-5; Ladzani & Netswera, 2009: 11-13).

Sustained growth in the SMME sector resulted in employment opportunities in most of the world’s developed economies. The growth of SMMEs is closely linked to the growth of national economies and GDPs. South African SMME environment is not unique to this assertion. SMMEs in South Africa are characterized by shortage of technical and entrepreneurial skills. The study by Barney (2012: 99-120) has shown that the presence of an economically enabling environment is a key requirement for the sustained growth of the SMME sector of the economy.

The industry environment in which a business operates has a strong influence on its economic performance (Ghemawat, 1999:19). The growth of SMMEs depends on economic and administrative policies of national governments. The South African Government has established DTI Agents to support the growth of the SMME sector through financial and non-financial programmes, amongst others - SEDA, Khula, Sefa, etc. Their mandate are categorized as financial and non-financial support programmes, where SEDA focuses on non-financial programmes and financial programmes are facilitated by Khula.

Definition of SMMEs

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).

SMME Environmental challenges

In South Africa, a series of procedures need to be followed in order to set up a small business. Government regulatory policies created an environment that hampers early-stage entrepreneurial activity within the SMME sector. (Herrington & Kelley, 2012: 15). Newly established businesses must be registered with the South African Department of Trade and Industry (DTI) and the South African Receiver of Revenues (SARS, 2004). The registration of closed corporations (CC companies) is governed by the Closed Corporations Act. The Act is administered by the Companies and Intellectual Property Registration Office (CIPRO). The establishment of private companies (PTY) or Limited Companies (Ltd) is also governed by an Act in South Africa. Such companies need to be audited annually. For this reason, auditing skills are essential in setting up PTY or Ltd companies.

Predominantly there are three main types of businesses operating in a typical township in South Africa, namely: retail (+ 85%), services (+ 14%), manufacturing and other (+ 1%). The following figure 1 depicts the township environment of the City of Tshwane Townships.

Figure 1. Three main business types operating in the townships (n=349)
According to Herrington and Kelley (2012: 8-12), the following factors are well known obstacles to the growth and development of SMMEs, namely:-

- Lack of Basic Business Skills including innovation, training and education
- Legal and Regulatory challenges
- Lack of conducive environment for Business Operations
- Challenges of access to financial services and Government Support Services
- Cash flow management
- Capacity for expansion,
- Crime and vulnerability, etc

According to Herrington and Kelley (2012), SMMEs operating in South Africa are confronted with a myriad of socioeconomic and developmental factors that affect their survival.

**Entrepreneurship**

SMMEs are more innovative and entrepreneurial in nature. Ligthelm (2004) states that the South Government approach should be supportive and create an enabling environment. This will lead to growth and long term survival. Lack of formal entrepreneurship training hampers their survival and growth. Entrepreneurial skills are the most important and essential Basic Business Skills requirement for steering small businesses in a manner that leads to profitable and viability of the organization. Table 3 shows a summary of such factors.

**Table 3. Mean score of the entrepreneurial environment**

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to physical infrastructure and services</td>
<td>2.89</td>
</tr>
<tr>
<td>Access to professional and commercial infrastructure</td>
<td>2.95</td>
</tr>
<tr>
<td>Internal market dynamics</td>
<td>2.81</td>
</tr>
<tr>
<td>Concrete government policies, entrepreneurship priority and support</td>
<td>2.63</td>
</tr>
<tr>
<td>Cultural and social norms</td>
<td>2.57</td>
</tr>
<tr>
<td>Vocational, professional and tertiary level entrepreneurship education</td>
<td>2.53</td>
</tr>
<tr>
<td>Internal market openness</td>
<td>2.31</td>
</tr>
<tr>
<td>Financial environment and support</td>
<td>2.49</td>
</tr>
<tr>
<td>Government policies: taxes, bureaucracy</td>
<td>1.88</td>
</tr>
<tr>
<td>Government programmes</td>
<td>2.10</td>
</tr>
<tr>
<td>Research and development transfer</td>
<td>2.16</td>
</tr>
<tr>
<td>Primary and secondary level entrepreneurship education</td>
<td>1.81</td>
</tr>
</tbody>
</table>

**Source:** Herrington and Kelley (2012:24)

Entrepreneurial skills are needed for implementing strategic decisions in an effective manner, leading to the long term survival of the small businesses. Hence, majority are profitable and viable and even survive over a long term. A good entrepreneur has good leadership skills. Table 4 provides comparable definitions of entrepreneurship by different scholars.
<table>
<thead>
<tr>
<th>Author</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schumpeter (1934)</td>
<td>Entrepreneurship is seen as new combinations, including the doing of new things that are already being done in a new way. New combinations include: Introduction of new goods, New method of production, Opening of new markets, New source of supply, New organizations</td>
</tr>
<tr>
<td>Kirzner (1973)</td>
<td>Entrepreneurship is the ability to perceive new opportunities. This recognition and seizing of the opportunity will tend to “correct” the market and bring back to equilibrium.</td>
</tr>
<tr>
<td>Drucker (1985)</td>
<td>Entrepreneurship is the act of innovation that involves endowing existing resources with new wealth capacity</td>
</tr>
<tr>
<td>Stevenson, Roberts &amp; Grousbeck (1985)</td>
<td>Entrepreneurship is the pursuit of an opportunity without concern for current resources or capabilities</td>
</tr>
<tr>
<td>Rumelt (1987)</td>
<td>Entrepreneurship is the creation of new business: a new business meaning that they do not exactly duplicate existing business but have some element of novelty</td>
</tr>
<tr>
<td>Low &amp; MacMillan (1988)</td>
<td>Entrepreneurship is the creation of new enterprise</td>
</tr>
<tr>
<td>Gartner (1988)</td>
<td>Entrepreneurship is the creation of organisations: the process by which new organisations come into existence</td>
</tr>
<tr>
<td>Timmons (1997)</td>
<td>Entrepreneurship is a way of thinking, reasoning and acting that is opportunity obsessed, holistic in approach, and leadership balanced</td>
</tr>
<tr>
<td>Venkataraman (1997)</td>
<td>Entrepreneurship research seeks to understand how opportunities bring into existence future goods and services are discovered. Created, and exploited, by whom and with what consequences</td>
</tr>
<tr>
<td>Morris (1998)</td>
<td>Entrepreneurship is the process through which individuals and teams create value by bringing together unique packages of resource inputs to exploit opportunities in the environment. It can occur in any organizational context and can result in a variety of possible outcomes, including new ventures, products, services, processes, markets, and technologies.</td>
</tr>
<tr>
<td>Sharma &amp; Chrisman (1999)</td>
<td>Entrepreneurship encompasses acts of organizational creation, renewal, or innovation that occur within or outside an existing organization</td>
</tr>
</tbody>
</table>

Source: Herrington and Kelley (2012: 21-23)
Judge and Piccolo (2004:756 – 758) have found that good entrepreneurs have good business leadership skills. Effective leadership provides the building block for organizational performance. Such leadership skills and the ability to make the right choices enable small businesses to thrive under difficult circumstances. Leadership skills are key attributes of successful companies locally and globally (Tarabishy, Solomon, Fernald and Sashkin, 2005: 24). Yuki (2002: 102). It was also found that superior leadership skills and entrepreneurial success are inseparable internationally. This is also applicable to the South African SMME environment. GEM (2004) report also highlighted the importance of entrepreneurship in the South African environment.

**Education**

A skills labour force is more productive. A business owned and managed by a skilled owner is likely to survive over a longer period. Educational Institutions Planners and Managers are aware that SMME Development is critical for making a meaningful contribution to GDP. Hence, SMME Development Programmes must enable SMMEs to grow and develop on a sustainable basis. In a South Africa, the Government has established institutions such as SEDA, NTSIKA, the National Youth Development Agency (NYDA) and KHULA Enterprises with a view to promote the growth and development of SMMEs in all economic sectors. In addition to address skills shortage the South African Government established the Sector of Education and Training Authority (SETA).

The study found that 55.87% of the 349 businesses that took part in the study were run by operators who possessed adequate formal education for the businesses they were operating. 44.13% had collapsed. Figure 2 shows a graphical depiction of this finding.

**Figure 2. Owner – Manager Business with formal education Training**

![Pie chart showing distribution of operators with adequate formal education](image)

Distribution of operators with adequate formal education (n = 349)
Cashflow management

Newly established small businesses often do not have the skills to manage their cash flow and perform auditing exercises. The study conducted by McGrath and Macmillan (2000: 43-44) indicates that auditing and accounting skills are essential for viability in small and medium-sized enterprises. According to the researchers, newly established firms are often characterized by over-spending, wastage of scarce resources such as time, failure to take stock and inventory, failure to order items that are needed in time and in good quantity, and lack of skills in welcoming constructive suggestions from potential customers. Lynn (2003: 4-5) has reported that failure to manage or control finances according to approved business plans is a differential factor that adversely affects business processes in newly established firms globally, and that such problems are rampant in the world’s poorly developed economies. Poor cash flow is one of the major causes of failure in small businesses. Businesses may be profitable. However, if they fail to manage cash flow issues efficiently, they could easily go bankrupt. The ability to manage cash flow enables business owners and operators to forecast their cash flow. Cash flow problems are abundant in South African small and medium-sized enterprises due to lack of formal education in the preparation of business plans, forecasting, auditing and accounting among business owners and operators. In this regard, the problem in the Tshwane region of Gauteng Province is not so different from the problem in all South African metropolitan cities.

Access to information

Information empowers the Small Business owners to identify business opportunities needed for business operations, strategic planning and manage their business effectively. Access to information also assists the SMMEs to compete on an informed footing hence effective resources utilization for business growth, management and long term survival. All SMMEs interviewed experienced limited access to business information as they have to belong to an association and pay a nominal fee to access such information or participate in such organization to access information. 89.61% stated that they cannot afford membership that requires annual subscription for accessing business information. Figure 3. Depicts access to information.
Free information is usually not valued and is often misinterpreted to be not useful for operations and strategic planning by the SMMEs interviewed.

**Vulnerability**

97.83% of the 349 SMMEs interviewed said they are vulnerable to crime, exploitation due to lack of knowledge and skills. Theft from staff comprise more that 77.29% as compared to 22.71% of customers. Usually financial theft and losses arise due to lack of policies, systems and controls. Optimal resources utilization and controls was lacking form the SMMEs interviewed. Lack of formal training was contributory factor and majority of the 349 SMMEs interviewed operated informally and never received training during the 5yr study.
Access to finance

The study found that 54.15% of the 349 businesses that took part in the study were able to secure loans needed for routine business operation. Figure 5 shows a graphical depiction of this finding. 54.15% of the 349 interviewed accessed finance that was used for business operations.
Commercial Bank Products usage

80.19% out of the 349 interviewed used a savings account to transact in business operations and have operated this account over the period of 5yr study. Cheque account and Business credit card was least used as they are cash based business transistors’. Figure 6 depicts the Commercial Bank Usage

Figure 6. Commercial Bank Products usage

Commercial Bank Product usage challenges of the sample size (n=349)

Figure 7. Access to Market and Business Linkages

Access to Market and Business Linkage challenges of the sample size (n=349)
Viable businesses

At the end of the study, 188 of the 349 small businesses were not financially viable. Hence 53.87% were viable and 46.13% were not viable. Figure 8 depicts the situation of the small business viability.

![Figure 8. Financial viability challenges of small businesses for the sample size (n=349)](image)

RESEARCH DESIGN AND METHOD

A sample size of 349 SMMEs was selected at the beginning of the study in 2007. Variables for understanding the longterm survival of the business entities were dichotomous, namely viable and non – viable.

**Dependent variable of study (Y)**

The dependent variable of the study is viability. Viability of SMMEs is defined by Gmur, Bartlet and Kissling (2010). Viable businesses pay VAT bi-monthly to SARS on a regular basis. This dichotomous variable has only 2 possible values (Viable, or not viable). The viability of the 349 SMMEs in the study was assessed regularly during the 5yr study period.

**Independent variables of study**

Independent variables of study are known to affect viability in SMMEs. Examples: Type of business, Amount of start-up capital, monthly net income, monthly profit, ownership of assets, cost of goods and services, monthly rent, ability to borrow money needed for business, ability to acquire assistance from DTI or SEDA, level of education, level of entrepreneurial skills, ownership of premises, level of entrepreneurial skills, level of managerial skills,
training, access to finance, cost of labour, geographical location, ability to retain loyal
customers, ability to draw up business plan, competition from rivals, etc

**Research Method**

Two research methods were used for data collection namely quantitative and qualitative. The
quantitative data collection methods included survey – electronic, face to face interview,
telephone interview. The qualitative data collection method used a focus group in – depth
interviews with 4 groups of 8 members each totalling 32

**Participants**
A stratified sample of 349 were selected for the study. The selected area for the research
study is townships in and around the City of Tshwane (COT). The areas were divided into
four quadrants namely East, West, South, North and the CBD. The selected areas are depicted
in the following table 3 below. The stratified areas selected are Atteridgeville (West),
Mamelodi (East), Olivenhoutbosch (South), Hammanskraal (North) and the CBD including
Marabastad

<table>
<thead>
<tr>
<th>Geographical zone</th>
<th>Township</th>
<th>Number of SMMEs in sample (15.04%)</th>
<th>Number of SMMEs in population</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>Atteridgeville</td>
<td>64</td>
<td>329</td>
</tr>
<tr>
<td>South</td>
<td>Olivenhoutbosch</td>
<td>62</td>
<td>244</td>
</tr>
<tr>
<td>East</td>
<td>Mamelodi</td>
<td>68</td>
<td>461</td>
</tr>
<tr>
<td>North</td>
<td>Hammanskraal</td>
<td>66</td>
<td>427</td>
</tr>
<tr>
<td>Central</td>
<td>CBD</td>
<td>89</td>
<td>859</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>n=349</td>
<td>N = 2, 320</td>
</tr>
</tbody>
</table>
ANALYSIS

A combination of quantitative and qualitative methods of data collection and analyses were used for the study. Frequency tables for categorical variables of study and graphical depictions were also used to analyze the collected data from the sample size of 349 SMMEs. This included cross-tab analyses among pairs of categorical variables as well as binary logistic regression analysis (On last set of recorded data of 31 December 2012). A Cox Proportional Hazards Model was used it is a longitudinal study design on data collected from all 5 years of study from 20 columns of raw data.

Qualitative focus group in-depth interviews with 4 groups of 8 members each totaling 32 interviewees was used

RESULTS AND DISCUSSION

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.

Formal education
The study found that 55.87% of the 349 businesses that took part in the study were run by operators who possessed adequate formal education for the businesses they were operating. 44.13% had collapsed.

Entrepreneurship
The study found that 44.99% of the 349 businesses that took part in the study had entrepreneurial skills that could run the business over a long term. 55.01% had no adequate entrepreneurial skills that would enable the owner – manager to operate their business over a long term.

Cashflow management
The study found that 73.14% of the 349 businesses that took part in the study had no controls, policies, systems and tools to manage their cashflow. They were not trained on financial management. 26.86% managed their cashflow efficiently and received various basic financial management training for non-financial managers.
Access to market & Business Linkages

The study found that 26.82% of the 349 businesses that took part in the study had access to market and business linkages. 73.18% had no access due to a range of challenges, amongst others - capacity, management skills, ability to raise finance, operations’ readiness to service the market requirements, resources capability to sustain the business and service the customer efficiently, lack of control tools, poor record management system and a strategic plan.

Vulnerability – crime related
The study found that 97.83% of the 349 businesses that took part in the study were vulnerable to crime, mostly armed robbery. 2.17% were not vulnerable.

Vulnerability – theft related
The study found that 77.29% of the 349 businesses that took part in the study experienced theft from their staff members and 22.79% was from their customers.

Access to finance
The study found that 54.15% of the 349 businesses that took part in the study were able to access business loans and 45.85% did not have bankable business plans that could assist them to access loans needed for their business operations.

Commercial bank product usage
The study found that 19.81% of the 349 businesses that took part in the study used Cheques account for transacting and 80.19% used savings account as well as were run by operators who possessed adequate formal education for the businesses they were operating. 44.13% had collapsed.


RELIABILITY ANALYSIS

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 labour 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. This failure constitutes a major obstacle to the
growth and development in small and medium-sized businesses and enterprises in South Africa

Underlying theories tested by study for the survival and long term survival

The main reason and motive for establishing an SMME is necessity linked to hunger, lack of jobs, poverty, lack of skills as well as training and education among other factors (Smallbone, 2010). This is also linked to Maslow’s hierarchy of needs. This is the case prevalent in the developing countries.

Viability
The viability of SMMEs is not inherently linked to the external factors such as the Government support programmes. Their innovativeness enables them to survive over a period with little growth prospects. SMME viability was also not dependent on Government schemes such as BBBEE, though the South African Government had already set up good Regulations, Policies, Systems, Support Programmes and Incentives aimed at SMMEs Growth and Development (Herrington, 2013). DTI’s Growth and Development Strategy (GDS) does not assist SMMEs to grow and sustain their businesses over a long term (DTI, 2013).

Basic Business operating skills
SMMEs lack basic business skills and the required capacity to operate and manage their business (SEDA, 2013). The study found that 55.87% of the 349 businesses that took part in the study were run by operators who possessed adequate formal education for the businesses they were operating. 44.13% had collapsed. This is depicted in figure 1 above. Management skills are important in sustaining the business over a long term (Bureau of Market Research at UNISA, 2013).

Access to information
Access to information is important for strategic planning, entrepreneurship, innovation and efficient business management especially if there are policies, systems, controls and procedures for the long term survival of the business. SMMEs interviewed did not have the skills to identify the right information needed for their strategic planning that enable them to survive over a long term

Entrepreneurship
Entrepreneurship culture and skills is low due to the education system as well as the support system that makes SMMEs to operate informally

Finance
Access to finance is still a challenge to SMMEs as they are still regarded to be high risk by the commercial banks and financial institutions
INFERRAL ANALYSIS

Summary of key factors that affect viability based on results from in-depth interviews with 4 focus groups of 8 members each (n=32)

1. Lack of entrepreneurial skills
2. Difficulty in obtaining loan from commercial banks and money-lending institutions
3. Lack of skills-based training opportunities
4. Too much bureaucracy
5. Lack of supervisory support by SEDA and DTI

Table 5 summarizes the Cox regression (survival analysis)

<table>
<thead>
<tr>
<th>Variable of the study affecting the long-term viability of SMMEs</th>
<th>Hazard Ratio</th>
<th>95% Confidence Interval</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of entrepreneurial skills</td>
<td>5.15</td>
<td>(2.98, 8.09)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lack of supervisory support to newly established businesses</td>
<td>4.26</td>
<td>(2.46, 6.88)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Inability of operators running newly established businesses to acquire relevant vocational skills</td>
<td>3.27</td>
<td>(1.78, 3.81)</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Table 6 below explains the group proportions with regards to the viability of small businesses

Table 6 Group proportions with regards to the viability of small businesses
<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>Viable (n=161)</th>
<th>Not viable (n=188)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of entrepreneurial skills</td>
<td>Adequate: 68% Inadequate: 32%</td>
<td>Adequate: 26% Inadequate: 74%</td>
</tr>
<tr>
<td>Acquisition of supervisory support by newly established small businesses</td>
<td>Adequate: 51% Inadequate: 49%</td>
<td>Adequate: 27% Inadequate: 73%</td>
</tr>
<tr>
<td>Level of relevant vocational skills acquired by business operator</td>
<td>Adequate: 77% Inadequate: 33%</td>
<td>Adequate: 38% Inadequate: 62%</td>
</tr>
<tr>
<td>Ability to secure loan needed for operation</td>
<td>Easy: 74% Difficult: 26%</td>
<td>Easy: 37% Difficult: 63%</td>
</tr>
<tr>
<td>Level of formal education acquired by business operator</td>
<td>College level or above: 71% Below college level: 29%</td>
<td>College level or above: 43% Below college level: 57%</td>
</tr>
<tr>
<td>Past history of bankruptcy</td>
<td>Yes: 11% No: 89%</td>
<td>Yes: 58% No: 42%</td>
</tr>
</tbody>
</table>

LIMITATION OF THE STUDY

The study was geographically limited to the City of Tshwane (COT) area due to time and lack of resources. The SMME environment is said to have similar physical and infrastructural business characteristics locally, provincially and nationally in South Africa.

CONCLUSION AND RECOMMENDATION

Cashflow management - There is an acute need for training newly established businesses on auditing, accounting, business plan preparation, report writing, policies and procedures & financial control tools drafting, oral presentations, stock taking and inventory.

Education and training - 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. It is necessary to design relevant and tailor-made skills based training programmes on vocational and entrepreneurial activities in which young matric graduates can be equipped with the skills they need to run businesses successfully. It is vital to encourage academic and research institutions to create academic programmes 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 programmes 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.

*Mentorship*

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 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.

**REFERENCES**


THE RELATIONSHIP BETWEEN ENTREPRENEURIAL SKILLS AND VIABILITY IN SMALL AND MEDIUM SIZED ENTERPRISES IN THE TOURISM SECTOR OF GAUTENG PROVINCE, SOUTH AFRICA

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ABSTRACT

The objective of this study was to identify and quantify key predictors of viability in the tourism sector of Gauteng Province in South Africa. The study is based on data collected from a stratified random sample of size 311 tourism enterprises that operate in Gauteng Province, South Africa. Data was collected on a large number of socio-economic factors that adversely affect entrepreneurial activities in the tourism sector of Gauteng Province. A combination of quantitative and qualitative methods of data collection and analyses was used in the study. Examples of variables on which data was gathered was level of entrepreneurial skills, level of formal education, location of business, duration of experience, amount of capital, number of employees, ability to network with other tourist operators, degree of competition from rival operators, geographical location, category of business, category of entrepreneurial skills, average number of visitors per month, net profit, size of business, market share, access to finance, and degree of support from Government agencies. Data analysis was performed by using methods such as frequency tables, cross-tab analyses, log-linear analysis and factor analysis. The study was designed in order to test the veracity of assertions made by Marshall (1923), Arrow (1962), Romer (1986) and Porter (1990) popularly known as the (MARS Model) in which it is argued that competition among tourism operators leads to greater innovation and growth in the industry. Additional data was gathered by conducting in-depth interviews with 4 key officials who were responsible for tourism activities at the South African Chamber of Commerce and Industry. Results obtained from log-linear analysis showed that there was a statistically significant association between degree of competition from rival operators and financial viability, thereby corroborating the assertions made in MAR theories and by Porter (1990). Results obtained from factor analysis showed that the viability of African entrepreneurs in the tourism industry of Gauteng Province was significantly and adversely affected by the degree of competition from rival operators, poor networking ability, lack of entrepreneurial skills, low capital, and geographical location. The study found that African entrepreneurs in the tourism industry of Gauteng Province lagged behind their white counterparts significantly in terms of networking ability, capital and entrepreneurial skills. In addition, 82% of the 311 African entrepreneurs who participated in the study lacked suitable skills due to their poor and irrelevant academic and vocational background, and that 59% of entrepreneurs had received little or no assistance in terms of mentoring or training opportunities by South African Government agencies.

Keywords: Small businesses, Entrepreneurial skills, Tourism, Gauteng Province, Factor analysis
INTRODUCTION AND BACKGROUND OF THE STUDY

This study analyses the socio-economic factors that adversely affect African Entrepreneurial activities in the tourism sector. It focuses on black indigenous entrepreneurs from previously marginalized backgrounds in South Africa. It analyses the magnitude of black entrepreneurs’ involvement in tourism; the actual contribution from African entrepreneurs, the challenges faced as well as the socio-economic impact in the Gauteng Province.

Tourism is regarded as one of the key drivers of economic expansion and employment creation in South Africa. Studies conducted on the active participation of the black population agree that in most countries, economic policy makes provision for the attainment of a high level of entrepreneurial activity and a dynamic sector of small business. It is believed that entrepreneurship is usually associated with some far-reaching expectations relating to economic and social well-being (Preisendorfer et al., 2012). The ownership of tourism enterprises has been, and still is, dominated by a majority of white entrepreneurs. With regards to access to market, capital, marketing and networking skills, emerging black entrepreneurs lag behind. Although the political transformation has provided an opportunity to change the racially defined industry in a way that would allow the previously disadvantaged to participate in it, very little has changed. Post-apartheid planning and legislation envisaged that political transformation would coincide with economic transformation. In this way it was hoped that black people would participate fully in the tourism industry both as tourists in their own country and as entrepreneurs (South Africa, 1996).

Tourism within these facets harnesses the establishment of new enterprises, creates new jobs and reduces unemployment. It stimulates competition, efficiency and innovation, and contributes to economic growth and prosperity. This review suggests that the tourism sector is likely to continue unabated in its contribution towards economic growth particularly in sectors like construction, handicraft and agriculture (Akama, 2002). This suggests that tourism is not a “self-contained industry”.

LITERATURE REVIEW

The review of literature on tourism, entrepreneurship and small business on both the international scenes and in South Africa is vast. Several scholars discuss tourism, its impact, benefits to the economy, the constraints facing tourism entrepreneurs (Nieman et al, 2008; Daskalopoulou and Liargovas, 2008). Studies conducted by researchers such as Mahadea (2012); Rogerson (2008); Chao et al., (2010) and Habiby and Coyle (2010) have clarified the prospects of entrepreneurship in the tourism sector. The authors have identified and quantified factors that affect the viability of informal microenterprises in the tourism sector of the economy. Entrepreneurship activities in tourism in transitional economies like South Africa are often exposed to numerous challenges and obstacles which are related to economic policy, capacity, skills and access to market. In South Africa, there is unequal distribution of wealth between white and black entrepreneurs, and this fact affects the ability of an emerging entrepreneur to succeed in tourism. The South African economy is exposed to challenges such as a high rate of unemployment among the youth, lack of entrepreneurial and technical skills that are required for operating profitable businesses, lack of access to finance, and massive poverty among the masses.

Booysens (2011:67) agrees that small enterprises have a greater impact on economic
performance in highly developed economies where high levels of education, low inflation rates and high level of financial intermediary development are evident. The economic output performance of small medium sized enterprises might not be significant in some economies but there are positive contributions in terms of innovation, facilitating change and enhancing competition (Wong et al., 2005:335). The SMME sector contributes an estimated 50% to GDP in South Africa and employs 60% of its labour force, according to SME survey and SMME Confidence Index data (Munshi, 2009:28). It can rightly be argued that small tourism enterprises have the ability to spur economic growth. The multiplier effect of tourism contributes to the growth of other sectors like construction, handicraft and agriculture. This suggests that tourism is not a self-contained industry, but rather it relates with other sectors like agriculture, mining, transport and others in order to satisfy the consumer. The ever expanding economy of South Africa has realized an increasing number of emerging tourism enterprises. A small percentage of people aged between 18 and 64 years are actively involved in starting or managing a business wholly or partly which is low in comparison with other countries in the same GDP income group like Malaysia, Uruguay, Turkey, and Argentina among others. Black and coloured according to Mason and Cheyne (2010) cited in (Preisendorfer et al., 2011:1).

According to Rogerson (2012), tourism offers a potential to galvanize local agricultural development through backward linkages that allow local farmers to supply the food needs of tourism establishments. Linkages between agriculture and tourism are central to promoting symbiosis rather than conflict between the two sectors. Furthermore, the benefits of a closer relationship include decreased linkages through imports, improvement in tourism industry food supplies, and increased tourist access to local food and improved sustainability for tourism, not least through alleviation of poverty.

Tourism has been identified as a sector that can play a vital role in small firm’s development in South Africa considering that the majority of tourism ventures are small businesses. Mahadea (2012) postulates that in order for South Africa to make a dent on unemployment, it would need an investment of 39% as a proportion of GDP to reach the 7% growth target and reduce greatly unemployment. The South African travel and tourism industry is highly concentrated and dominated by a small elite group of large, mostly locally owned tourism organisations (George, 2008). The large companies are economically dominant in the South African tourism industry. However, it is apparent that the vast majority of South African tourism enterprises (as in most countries) are classified as SMMEs. A study conducted in Australia and the UK, revealed that between 95% and 99% respectively of all tourism businesses were found to be small enterprises which included guest houses, bed and breakfast establishments, travel agents and ground operators amongst others (Monitor, 2004).

The benefits of developing tourism SMMEs are wide ranging even in the context of a developing country such as South Africa. Rogerson (2005:626) argues that the economic objectives of increased earnings, foreign exchange, investment, job opportunities, as well as the minimization of diverse social and cultural effects, might best be accomplished through the promotion of small tourism businesses rather than large tourism businesses. This is because the tourism sector is expected to become one of the key drivers of economic expansion, local development and job opportunities in developing countries (Kirsten and Rogerson, 2002:29). Despite such claims and the importance of SMME development in the modern South African economy, it remains that limited research has been undertaken on the business orientations influencing the performance of small tourism enterprises.
Efforts to transform South Africa’s Tourism Industry

The efforts to transform South Africa’s tourism industry included the introduction of the Black Economic Empowerment. This indicator is singled out here owing to the fact that it is because of a lack of transformation that the tourism industry has not benefited all communities in South Africa. The transformation of the tourism industry is a major policy issue that determines who benefits and in what way. Meaningful transformation of the South African tourism industry must lead to economic empowerment and direct benefit to the previously neglected communities. They should be involved in decision-making structures and in developing meaningful economic linkages with the industry. Areas that require transformation to enable South Africa’s tourism industry to benefit previously disadvantaged communities are ownership and control of the tourism industry, distribution of benefits accruing from tourism growth and local communities’ lack of knowledge about the industry. Others such as a more proactive role by the public sector continue to receive attention through various policy frameworks (South Africa Info, 1996).

The need for socio-economic equality and equity arose from four concerns namely: moral imperative, to make right the wrongs of the past, the social imperative, conceding that the wealth of the country is a social problem, the economic growth imperative which has been fuelled by the poverty levels in the country and unemployment rate between 35% and 40% and finally the labour skills imperative, which seeks to increase the skills levels of black labour and generate value-added activities within the economy (Bogopane, 2013). The transformation of South Africa’s tourism industry is crucial, especially when one considers the efforts by the post-apartheid governments to build an egalitarian society and the quest for an equitable redistribution of resources. BEE is therefore a central feature under these circumstances and the role of developmental local government is given particular attention as a key role player in the implementation of BEE (Bogopane, 2013). Despite the determination of the post-apartheid governments to push back the frontiers of poverty through strategic policy interventions, there has not been clarity or any significant progress with regard to using community-based tourism development for local socio-economic development (South Africa Info, 2007). The growth strategy of the South African DTI for the country includes a focus on broadening participation, equity and access to redress for all economic citizens, particularly those previously marginalised (DTI, 2013). A special unit called B-BBEE was created in the Department with the vision to “work towards ensuring, through equity and empowerment policies and strategic interventions, that the South African economy is restructured, to enable the meaningful participation of black people, women and rural or under-developed communities in the mainstream economy, in a manner that has a positive impact on employment, income redistribution, structural re-adjustment and economic growth” (DTI, 2013). Such individuals are also referred to as ‘previously disadvantaged individuals’ (PDIs).

The topic of transformation in South Africa is still relatively limited in depth, and has many gaps (including B-BBEE dealings, the challenges and the factors necessary for success) (Fauconnier & Mathur-Helm, 2008:1), but does not lack the intense and vibrant debate that characterises the general media (Elliot & Boshoff, 2005:23-24). Articles published in various journals do cover a wide array of topics in the transformation agenda. These topics range
from specific industry experiences in implementation such as the mining industry as has been discussed by Fauconnie and Mathur-Helm (2008), the agriculture and banking sectors as has been discussed by Vermeulen and Coetzee (2006), and intellectual discourse as has been discussed by Preisendorfer, Bitz & Bezuidenhout (2012).

A wide discourse is found in a critique by Kruger (2010: 76) of a South African television drama script that focuses on the impact of transformation in post-1994 society in which the “visual elements highlight the glamour of conspicuous consumption by the BEE elite and those who emulate them”. BEE is not without its critics. Moeletsi Mbeki vehemently argues that BEE strikes the fatal blow against the emergence of black entrepreneurship by creating a small class of unproductive but wealthy black crony capitalists made up of ANC politicians, some retired and others not, who have become strong allies of the economic oligarchy (Mbeki, 2009:61). He observes that “BEE and its subsidiaries – affirmative action and affirmative procurement – have metamorphosed... they have become both the core black ideology of the black political elite and, simultaneously, the driving material and enrichment agenda which is to be achieved by maximising the process of reparations that accrue to the political elite” (Mbeki, 2009:61).

Authors such as Hamann, Khagram and Rohan (2008:25) have noted with concern the apparent lack of progress BEE has made in rectifying the legacies of apartheid because “ten years later many of the challenges remain or have become even more acute in terms of poverty, unemployment, housing and basic services, inequality, HIV/AIDS”. Kovacevic (2007:6) also observes that “the BEE program has achieved little success in eradicating poverty, increasing employment or fostering economic growth”.

Despite the wide array of topics covered in the transformation debate, and notwithstanding the criticisms levelled at BEE, it may be argued that little research has actually been done on the more ‘practical issues’ related to BEE compliance, such as the potential impact it may have on the various dimensions of business performance (Kovacevic, 2007:8).

Socio-economic factors affecting entrepreneurship

According to Booyens (2011), lack of marketing skills affects emerging tourism operators in South Africa and other developing countries. The author recommends that education and skills based training on entrepreneurial and marketing skills should be provided to new entrants into the tourism sector. New entrants are often exposed to lack of finance, and that this constraint is a key obstacle to growth. The entrepreneurial quality of the SMME owner is a critical factor affecting the ability of SMMEs to survive and achieve sustainable growth. A combination of formal and on-the-job training may be seen as one of the key factors that lays the foundation for success. Education is thought to increase the intrinsic motivation and to energize behaviours (Brijal et al, 2013).

Studies by Aloulou and Fayolle (2005) and Brijal et al (2013) have found that the quality and relevance of education entrepreneurs have, has a significant effect on their chances of survival and growth. The literature suggests that entrepreneurs need to be educated in order to develop their entrepreneurial abilities and contribute to the survival of their businesses. Altman (2007) also asserts that those who attain a higher level of education and entrepreneurial skills are better equipped to communicate with and understand bankers,
suppliers and customers which then lead to a higher degree of growth in their businesses. Acquired knowledge is associated with high performance. Differences between average and high performers are attributed to a higher amount of accessible knowledge. In addition, the study asserts that there is a positive relationship between education and business success.

According to Herrington and Kelley (2012), the entrepreneurial environment in South Africa lags behind the environment in developed nations in Europe and North America. The Sub-Saharan African Regional Report apportions a mean score of 2.89 to access to physical infrastructure and services. It is evident that the negative assessments are a result of lack of strategic support for the tourism sector by the South African Government. The key area of need is the provision of primary and secondary level education on entrepreneurial activities. The results presented to the entrepreneurial framework conditions (EFCs) show that the overall entrepreneurial climate in South Africa is unfavourable for entrepreneurship development.

THEORETICAL FRAMEWORK

The MAR theory was first proposed in 1890 when Alfred Marshall developed a theory on knowledge spillovers (Carlino, 2001:20). Knowledge spillovers were extended Kenneth Arrow (1962) and Paul Romer (1986). In 1992, Edward Glaeser, Hedi Kallal, José Scheinkman, and Andrei Shleifer pulled together the Marshall-Arrow-Romer views on knowledge spillovers and accordingly named the view MAR spillover in 1992 (Glaeser, Kallal, Scheinkman & Shleifer, 1992:1126).

Marshall-Arrow-Romer (MAR) spillover view contends, the proximity of firms within a common industry to often affect how well knowledge travels among firms to facilitate innovation and growth (Carlino, 2001:17). The closer the firms, the greater the MAR spillover. The exchange of ideas is largely from employee to employee, in that employees from different firms in an industry exchange ideas about new products and new ways to produce goods (ibid). This opportunity to exchange ideas eventually leads to innovations which is a key to new products and improved production methods (ibid).

Porter (1990), like Marshall, Arrow and Romer, argues that knowledge spillovers in specialized, geographically concentrated industries stimulate growth. He insists, however, that local competition, as opposed to local monopoly, fosters the pursuit and rapid adoption of innovation. He gives examples of Italian ceramics and gold jewelry industries, in which hundreds of firms are located together and fiercely compete to innovate since the alternative to innovation is demise. Porter’s externalities are maximized in cities with geographically specialized, competitive industries (Glaeser et al, 1992:1126).

Jacobs spillover view, is that the proximity of firms from different industries affect how well knowledge travels among firms to facilitate innovation and growth. This is in contrast to MAR spillovers, which focus on firms in a common industry (Carlino, 2001:17). The diverse proximity of a Jacobs’s spillover brings together ideas among individuals with different perspectives to encourage an exchange of ideas and foster innovation in an industrially diverse environment.
The veracity of assertions made in MAR models, Marshall (1923), Arrow (1962), Romer (1986) and Porter (1990) theory suggest that competition among tourism operators leads to greater innovation and growth in the industry. MAR model argues that local monopoly among firms in the same sector in the same geographical area enhances distribution of knowledge resulting into innovation and growth. The MAR model believe that local monopoly is better than local competition. Porter (1990) argues that specialization of a specific activity in a specific region boost diffusion of knowledge but differs with local competition. He further argues that local competition allows innovation and consequently growth in the region.

METHODOLOGY

The study analyzes the socio-economic factors affecting viability of African entrepreneurs in the province. With the application of both quantitative and qualitative methods, the researcher utilizes the cross-sectional and descriptive research design. The literature review provided a number of socio-economic factors affecting entrepreneurship growth and development. All this evidence was analyzed together with the current findings in the area of study. Quantitatively, participants’ responses on the socio-economic factors affecting African entrepreneurial activities were represented in statistical form. Results were reported in the form of descriptive statistics such as means, and standard deviation. Qualitatively, the responses were described and narrated in words. The study involved “the steps, procedures and strategies” that were employed to collect and analyze data (Polit & Beck, 2004). The researcher focused on bracketing before going to the research field. Bracketing entailed setting aside preconceived ideas and opinions about the study area such that the researcher would not be influenced by ideas while handling data (Polit & Beck, 2004) about the socio-economic factors affecting African entrepreneurial activities.

A stratified sample (Welman et al., 2005) of 311 participants from different socio and economic settings namely: accommodation, tour and travel companies, art and craft, catering and other business establishments. A total number of 272 African entrepreneurs was selected, 30 local community participants and 9 government and provincial officials were selected. Three instruments were used in this study: 1- face-to-face interviews - questionnaires (Babbie, 2010). Interviewers were guided by interview and schedules with open-ended questions. The questionnaire consisted of two sections: open-ended questions section and a five-point Likert scale section. Both the interview schedules and the questionnaire were validated by three independent research experts. The validity of the questionnaire of study was ascertained by conducting pre-testing and face validity (Welman et al, 2005). By using unstructured observation, the researcher was not restricted on what to see and record while collecting data in the field. Observation enabled the researcher to gather actual data from real situations. Any important aspects on the impacts of tourism observed during the study were immediately recorded in field data and a note book to minimize the possibility of forgetting certain details.

The specific analytical approach was rooted in the conceptual and theoretical framework of the study. The statistical methods used in the study for data analyses were appropriate for providing adequate answers to each of the key research questions of the study.
RESULTS FROM DATA ANALYSIS

The results of the study were obtained from frequency tables, cross tabulations, factor analysis and in-depth interviews.

Results obtained from cross-tab-analysis

Data analysis was performed by using Pearson’s chi-square tests of associations in order to identify factors that were significantly associated with viability (Dawson and Trapp, 2004:104-109). The results showed that viability was significantly associated with 8 factors at the 1% level of significance. At the 1% level of significance, significant two-way associations are characterized by large observed chi-square values and P-values that are smaller than 0.01. It is evident from the Table below that all 8 factors shown are significantly associated with viability at the 1% level of significance. At the 1% of significance, significant two-way associations are characterized by large chi-square values and P-values that are lesser than 0.01. The table below confirms the all the 8 factors have got a P-value of 0.000.

Table 1.1: Results obtained from cross-tab analysis

<table>
<thead>
<tr>
<th>Factors significantly associated with viability</th>
<th>Observed chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intense competition from rival businesses</td>
<td>89.35</td>
<td>0.0000</td>
</tr>
<tr>
<td>Poor networking ability</td>
<td>78.36</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lack of entrepreneurial skills</td>
<td>74.55</td>
<td>0.0000</td>
</tr>
<tr>
<td>Low capital</td>
<td>69.03</td>
<td>0.0000</td>
</tr>
<tr>
<td>Difficulty in securing finance needed for operation</td>
<td>59.66</td>
<td>0.0000</td>
</tr>
<tr>
<td>Geographical location</td>
<td>52.97</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lack of support from Government</td>
<td>50.08</td>
<td>0.0000</td>
</tr>
<tr>
<td>Age of respondent</td>
<td>49.23</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Results obtained from log-linear analysis

Data analysis was performed by using log-linear analysis (Agresti, 2003:39) in order to identify key predictor variables that were significantly associated with each other. Log-linear models are hierarchical in nature. In general, there could be an interaction of order k. At k successive steps, interactions of order k (the highest order), k-1, k-2... 3, 2 and 1 (the main effects) are tested for significance step by step. The most useful order is k=2.

Table 1.2: Results obtained from log-linear analysis

<table>
<thead>
<tr>
<th>Interactions of order k=2</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intense competition from rival operators and viability</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lack of entrepreneurial skills and poor networking ability</td>
<td>0.0000</td>
</tr>
<tr>
<td>Geographical location and low capital</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

The above results were tested on interactions of order k=2 mainly: variables on intense competition from rival operators and viability; lack of entrepreneurial skills and poor networking; geographical location and low capital and all the tests were found to be with a P-value of 0.000 and therefore very significant.
Results obtained from factor analysis

Factor analysis is a data reduction technique used to reduce a large number of variables to a smaller set of underlying factors that summarize the essential information contained in the variables (Field, 2010:134). The following procedures were followed while performing factor analysis: Computation of the correlation matrix for all variables, extraction of initial factors and rotation of the extracted factors as a terminal solution.

Factor analysis was used for reducing the number of factors that had to be analysed. The method produced 5 influential predictor variables that influenced viability in tourism businesses operated by black entrepreneurs in the Gauteng Province. Factor analysis is useful in cases where the correlation among the variables of study is significant. The correlation matrix in this study showed that several pairs of variables had correlations exceeding 0.3, thereby showing that factor analysis was appropriate. In this study, a cutoff point of 0.3 was used as is recommended by Field (2010:138). The variables found to be highly significant with viability were as follows:

- High level of competition from rival tourism operators
- Poor networking ability
- Lack of entrepreneurial skills
- Low capital
- Geographical location

The Cronbach Alpha test for internal consistency was used for testing the suitability of the 25-item structured questionnaire of study. The test gave a value of 0.835 and an associated level of significance that was smaller than 0.001. Furthermore, Bartlett’s test of Sphericity was used for testing the adequacy of the correlation matrix, and gave an estimate of 0.806, a figure that was greater than the cut-off point of 0.5, thereby confirming the suitability of factor analysis.

Table 1.3: Estimates obtained from the Kaiser-Meyer-Olkin and Bartlett’s test

| Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy | 0.806 |
| Observed value of chi-square statistic for KMO test | 1219.33 |
| Bartlett’s Test of sphericity degrees of freedom | 309 |
| P-value for Bartlett’s Test of sphericity degrees of freedom | 0.000 |

The factor analysis shows in Table 1.3 a Total Variance Explained output. This presents the number of common factors computed, the Eigen values associated with the factors, the percentage of total variance accounted for by each factor, and the cumulative percentage of total variance accounted for by the factors. Using a criterion of retaining only factors with Eigen values of 1 or greater, the first 5 factors were retained. The total variance explained by these 5 factors is shown below as follows:
Table 1.4: Total variance explained by the extraction of 5 factors

<table>
<thead>
<tr>
<th>Extracted factor</th>
<th>Eigen value</th>
<th>Percentage of explained variance in viability</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intense competition</td>
<td>5.964</td>
<td>28.294</td>
<td>28.294</td>
</tr>
<tr>
<td>Poor networking ability</td>
<td>4.121</td>
<td>17.234</td>
<td>45.528</td>
</tr>
<tr>
<td>Lack of entrepreneurial skills</td>
<td>3.534</td>
<td>16.132</td>
<td>61.660</td>
</tr>
<tr>
<td>Low capital</td>
<td>3.468</td>
<td>14.035</td>
<td>75.695</td>
</tr>
<tr>
<td>Geographical location</td>
<td>2.353</td>
<td>3.768</td>
<td>79.463</td>
</tr>
</tbody>
</table>

The results in Table 1.4 provide estimates for the percentage of variance explained by the 5 factors that were extracted by using the principal axis factoring method. Each of the 5 extracted factors has an Eigen value of magnitude greater than 1, thereby indicating its level of importance in terms of accounting for viability in business. The 5 extracted factors collectively account for 79.46% of the total variability in viability (the dependent variable of study). Based on the estimates shown in Table 1.4 above, it can be concluded that viability in tourism companies operated by black entrepreneurs in Gauteng Province is significantly and adversely affected by the following 5 factors:

1. High level of competition from rival tourism operators
2. Poor networking ability
3. Lack of entrepreneurial skills
4. Low capital
5. Geographical location

The 5 factors listed above accounted for 79.46% of total variability. This figure is above 75%.

Results obtained from the in-depth interviews

The difficulty in accessing finances for the business was a major problem cited by many of the respondents. The majority of the respondents complained about the long procedures of getting sufficient loans from well-established financial institutions. The conditions to which these SMMEs are faced limit their dependency. As a result the majority of these SMMEs never succeed as a direct result of sourcing finance from institutions, but from own start-up capital.

The actual shortage of entrepreneurial skills was also identified as a major factor. The majority of the respondents admitted not to have initial experience or training business management but had the urge to take part in tourism related activities. Many of the respondents did not have a marketing strategy but relied mainly on networks with other counterparts. Unlike the already established tourism enterprises, these businesses were seen to be well established with proper branding of their products, active and have a well administered online website and fairly good infrastructure particularly the guest houses, Bed and Breakfast and transport facilities.
From the group discussions at the Local Tourism Organization (LTO) sessions, Furthermore, the majority of the respondents were found not to have registered their businesses with the DTI. The main problem expressed by these respondents was documentation, as well as knowledge of legislation governing small businesses. It was also evident that the majority of these respondents were not informed about government support systems in place for entrepreneurs in small businesses.

With reference to poor networking, it was evident from the regional and local tourism organisations that the majority of entrepreneurs that attend these weekly meetings that are facilitated by tourism officers are mainly the black entrepreneurs. On some of the encounters some entrepreneurs complained that these meetings were a waste of time and money. Good results were never implemented and as such these meetings were poorly attended.

The willingness of government to support and empower SMMEs is evident. The majority of respondents were not aware of the available support offered by various government bodies. For instance, organisations like SEDA, TEP and the National Youth development Agency were not known. These government programmes have training programmes but unfortunately this training is not seriously utilised by the people running the businesses. In addition, education is vital in the success of small business growth and development. The majority of local black entrepreneurs had only attended high school education. This major barrier disadvantaged these respondents from actual access to information. The majority of the respondents were comfortable in communicating in local dialects which obviously disadvantages them. The majority of the tourists who arrive in the cities and townships would prefer to use English as the medium of communication. Knowledge of international languages would be an added advantage. The respondents in the business of arts and crafts at the Pretoria Union Buildings admitted that language was a limiting factor in improving their sales. The ability to speak foreign languages like German, French, Portuguese or Mandarin created a conducive atmosphere and the enticement by the tourists to buy the commodities on sale.

Finally, the majority of the respondent’s particularly from the township areas admitted to be doing good business only when certain events advertised nationally would be taking place. Some of the events mentioned among others included jazz festivals, beer festivals, soccer derbies and funerals. Township destinations were not popular among foreign tourists as well as the local communities.

**DISCUSSION OF RESULTS**

To begin with, the degree of competition from rival tourism operators and financial viability is high between African local entrepreneurs and White/international entrepreneurs. Local black entrepreneurs do not have the financial ability to influence tourism activities. There is agreement in the cited literature of the ability to raise finance as one of the greatest challenges facing small business owners. Herrington and Kelley (2012) states that access to finance is a major problem for South African entrepreneurs. The results show an observed chi square value of 89.35 and P-value of 0.000. These results emphasize the huge gap in the competition between local black entrepreneurs and rival competitors.
As Nieman and Pretorius (2004) put it, finance is an important resource in creating a new venture and a critical factor necessary for small businesses to succeed. Cronje, Du Toit and Motlatla (2001) argue that potential entrepreneurs need to be familiarized with the particular environments and industries in which they want to operate. This necessitates that entrepreneurs themselves should contribute to the creation of an environment that is conducive for them to operate businesses efficiently.

These findings are in agreement with the assertions of the MAR model that argues that local monopoly among firms in the same sector in the same geographical area enhances distribution of knowledge resulting into innovation and growth. The MAR model believe that local monopoly is better than local competition.

The variable on poor networking ability had an observed chi-square value of 78.36 and P-value of 0.000. This variable emphasizes that as compared to rival businesses, local black entrepreneurs had poor networks in the tourism sector. It was evident from the interviews conducted that the majority of respondents were not known and lacked poor marketing strategies in the township areas and abroad. It was evident also that the LTO meetings which should be the right platform for business networks were poorly attended by the relevant stakeholders. Acquisition of technology transfer into small businesses should enhance internal and external market awareness through standardized facilities, usage of social platforms like face book, twitter, to create awareness about certain destinations and active online websites advertising relatively affordable tourism packages. Some of the well-established enterprises not only import skilled expatriates from first world countries like Europe and America but also have information centres abroad that constantly market South African destinations. Local black entrepreneurs not only lack the internal and external business networks as compared to rival tourism operators but also the knowledge on tourism and hospitality.

Entrepreneurial capacity enables entrepreneurs to exploit available opportunities. The Global Entrepreneurship Monitor (2010) has reported that economic forces can influence market opportunities and ultimately result into prosperity or adversity on organizations in different industries and different locations. These results show an observed chi-square value of 74.55 and P-value of 0.000. The level of entrepreneurship skills among local black entrepreneurs is alarming. According to Herrington and Kelley (2012), an entrepreneur is an individual willing to take calculated risk to explore a market need with an idea that is sound and economically viable. The level of entrepreneurial skills applied in the business is based on the number of operational elements of entrepreneurship such as compiling a business plan, an analysis of competitors, venturing into new businesses and willingness to take calculated risks.

Securing finance in this regard is pivotal. The results from the analysis show an observed chi-square value of 59.66 and P-value of 0.000. These results show that difficulty in securing finance needed for operation is critical. The majority of local black entrepreneurs struggle to access finance for their businesses. Nieman et al. (2003) maintain that entrepreneurship cannot be developed all by itself. Banks and financial institutions are critical in the development of small businesses.
The private sector is reluctant to invest in tourism development, especially in the historically black areas. According to Grobler (2005), the reluctance may be attributed to the complexities and uncertainties associated with land ownership, poor infrastructure support, limitations of the tourism market, and a largely risk-averse financial community. Financial institutions regard tourism as a high-risk business. The reluctance of the private sector to invest in tourism is particularly obvious in the rural areas as these are perceived as being out of the way (George, 2008). Unlike private investors, the public sector however, can make no such excuses as it has a mandate and an obligation to social development. Small-scale tourism development is preferable to consortium-driven grand tourism development because of the negligible disruption to the environment. It also empowers local communities directly. This creates a sustainable tourist product as locals are often best placed to meet the demand for the tourist’s search for idyllic places. On the contrary, big commercial investors often lack compassion for local communities and an affinity for tourists which they make up for by investing heavily in luxurious and comfortable star-rated hotels which then overcharge guests. The rich investors in tourism development get richer and the poor local communities get poorer.

Although the involvement of the private sector in a tourism development project assures all stakeholders of quality and acceptable standards, particularly in situations where there is massive private sector investment, there are questionable standards for responsible tourism, especially with regard to meaningful participation and benefit for the local communities. As a result, it may be said that tourism should be seen as a local resource and that the desires of local communities should be the principal criterion for local tourism development (Kamsma and Bras, 2000). One of the factors cited by the White Paper on the Development and Promotion of Tourism in South Africa as inhibiting the meaningful involvement of previously disadvantaged communities in the tourism industry is a lack of incentives to reward private enterprises that develop local capacity and create job opportunities in these communities (South Africa Info, 1996).

The creation of world standard attractive tourism destinations in the rural geographical locations of Tshwane municipality require a lot of financial capital to set up acceptable infrastructure permissible to international tourists as well as the domestic tourists within South Africa. The results show that this variable was very significant with an observed chi square value of 52.97 and a P-value of 0.000. Ultimately, local black entrepreneurs would need a lot of financial and business support to provide the expected tourism products that are befitting for world standards.

The township tourism destinations need to be managed effectively by the tourism departments. The variable on geographical location is important because the closer the destinations are to the Central Business District (CBD) of Pretoria, the more popular and the more business is received by the surrounding enterprises. The hotels, for instance, around Pretoria are usually booked in with guests from all over world. For instance, Sheraton, Southern Sun, the Protea Hotel, Roadhouse and yet township guest houses would provide even affordable accommodation.
As a relatively new democracy, the government has an obligation to channel a lot of resources to redressing past ills. The results show an observed chi square value of 50.08 on lack of support from government and P-value of 0.000. This variable is critical for the success of local black entrepreneurs especially during their entrance in the tourism sector. The literature shows sufficient intervention especially in South Africa but upon evaluation, this support does not seem to trickle down to the emerging entrepreneurs. Herrington and Kelley (2012) argue that government policies are a key obstacle to emerging entrepreneurs in the tourism sector. Herrington and Kelley (2012) recommend that government policies must be tailor-made to the needs of emerging tourism operators. They have called for the establishment of general support programmes for new entrepreneurs. Policies encourage the development of small businesses. Unfortunately government as a public institution is synonymous with bureaucracy, excessive red tape, rules and regulations and other interferences that are not conducive for entrepreneurial growth.

The White Paper on the Development and Promotion of Tourism in South Africa (South Africa, 1996) identifies the role of government in tourism development as one of facilitation and coordination. The government is expected to establish and provide an appropriate climate for private sector investment in tourism and to put measures in place for the supply of the required skills and infrastructure. The government has an obligation to regulate and monitor the tourism industry as well as to promote development by establishing mechanisms to monitor standards and services and to promote the involvement of local communities. Above all, the government has provided a legislative framework for the growth of the industry, including promoting responsible tourism (South Africa Info, 2007).

During interactions with black entrepreneurs, it became clear that they were unaware that they could get financial assistance from institutions other than the commercial banks. The majority had never heard of Khula Enterprise Finance, TEP, Poverty Relief Programme, IDC, International Tourism Marketing Aid Scheme, or the Small Medium Enterprise Development Programme. A few knew about the DBSA although they did not know how it works. There is a general lack of information on services available to those wishing to establish tourism-related enterprises.

In 2004 the DEAT, in partnership with the TBCSA, the TEP and ABSA, released an information booklet entitled How to Start and Grow your Tourism Business. This booklet provides information on how to start a tourism business, including where to obtain funding. The public sector needs to increase its spending on tourism businesses owned by previously disadvantaged people. This could be done by utilising their accommodation, conferencing, catering and travel facilities.

**CONCLUSION**

The study confirms that the degree of competition from rival tourism operators and financial viability is high compared to the African local entrepreneurs. Local black entrepreneurs do not have the financial ability to influence tourism activities. There is agreement in the
literature that the ability to raise finances is one of the greatest challenges facing small business owners in South Africa. In order to succeed, local black entrepreneurs should contribute to the creation of an environment that is conducive for them to operate business efficiently as well as acquire the financial assistance to be able to compete with rival competitors. Commercial banks should be proactive in offering all forms of support to small businesses.

The study corroborates the assertions of the MAR model as true, that local monopoly among firms in the same sector in the same geographical area enhances distribution of knowledge resulting into innovation and growth. The MAR model believe that local monopoly is better than local competition.

In addition, local black entrepreneurs have poor networks in the tourism sector compared to their rival competitors. It was evident that these entrepreneurs lack appropriate marketing strategies and technology that would otherwise enhance their entrepreneurial activities. Local black entrepreneurs not only lack the internal and external business networks as compared to rival tourism operators, but also knowledge on tourism and hospitality.

Furthermore, the study affirmed that local black entrepreneurs do not have entrepreneurship capacity. The majority of the entrepreneurs did not have a business plan nor could they conduct an analysis of the competitors, or have the willingness to take calculated risks.

The creation of world standard attractive tourism huge destinations in the rural geographical locations of Tshwane municipality require financial capital to set up acceptable infrastructure permissible to international tourists as well as the domestic tourists. The majority of local black entrepreneurs are not in a position to create world standard attractive tourism destinations due to the lack of finance.

Finally, there is sufficient government support in the form of policy and current legislation, funding, training and development. The results from the study confirmed that local black entrepreneurs are not aware of this kind of support.

LIST OF REFERENCES


A STUDY OF FACTORS THAT AFFECT SALES GROWTH IN THE SOUTH AFRICAN AUTOMOTIVE INDUSTRY

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Abstract

An exploratory survey of factors that affect sales growth in used car dealerships in the Tshwane region of Gauteng Province in South Africa was conducted based on a stratified random sample of 126 small and medium automotive enterprises operating in three South African provinces (Gauteng, Eastern Cape and KwaZulu-Natal). The purpose of study was to identify and quantify key predictors of sustained growth in sales. Data was collected on a large number of socioeconomic variables that are known to affect sales growth in the South African automotive industry. Data was gathered from each one of the 126 enterprises by using a structured, pre-tested and validated questionnaire. Frequency tables, cross-tab analyses and binary logistic regression analysis were used for performing data analyses. The results showed that sustained growth in used car sales was influenced by long duration of operation, utilisation of innovative techniques of production, the capacity for improving technical skills of employees, the capacity for producing new products and process development, and the level of skills of employees, in a decreasing order of strength.

Keywords: South Africa, Automotive industry, Sales growth, Technical skills, Logit analysis

Introduction and background of study

A survey was conducted based on a stratified random sample of 126 small and medium automotive enterprises operating in three provinces of South Africa (Gauteng, Eastern Cape and KwaZulu-Natal) in order to identify and quantify key predictors of sales growth in the South African automotive industry. Data was gathered from each of the 126 enterprises on factors that are known to affect sustained growth and development in the automotive industry. The enterprises selected for the study were mostly engaged with manufacturing automotive components for the automotive industry, were in business for 5 years or more,
and were utilized fairly modern technological methods of manufacturing, production, computer-aided designs and advanced applications of engineering. Most of the enterprises in the study utilized conventional research and development techniques for ensuring efficiency and operational viability on a sustainable basis. The study aims to identify key factors that contribute for sustained growth in sales in the South African automotive industry.

The South African automotive industry is the third largest economic sector of the South African economy next to mining and financial services. The sector contributes over 29% of the country’s manufacturing output. The South African automotive industry accounts for only 0.7% of the global automotive market share, and ranks 18th by size. However, it accounts for about 85% of the African continent’s vehicle output (South African National Department of Trade and Industry, 2016). In spite of their stated importance to economic growth, the South African automotive industry is not being provided with adequate support (Sawers, Pretorius, & Oerlemans, 2007) as a result of internal barriers such as shortage of technical skills, shortage of capital or labour related issues. It could also be a result of external barriers such as high barriers to entry or industrial dominance by a few players. Other challenges to the automotive industry include difficulties in acquiring and exploiting appropriate technology and innovations, constrained managerial capabilities, limited internal capacity in terms of well trained personnel, low productivity and regulatory issues (Edoho, 2015). According to the South African National Association of Automobile Manufacturers (SANAAM, 2010), there are 21 full automotive assembling members in South Africa. Eight of the 21 members are major motor vehicle manufacturers. The SANAAM constitutes an important part of the industry’s value chain in terms of local sourcing and content. Furthermore, the majority of component suppliers serve as a bellwether industry for other manufacturing industries such as steel and aluminium processing, rubber, textiles, precious metal beneficiation such as platinum in catalytic converters, plastics, textiles, paints and other chemicals. In addition to meeting the needs of local customers, some of their production outputs are exported to destinations such as the European Union and the rest of Africa. Inflexible labour laws and excessively aggressive trade unions are portraying South Africa as a less attractive destination for foreign investors and partners in advanced technological applications that are essential for realizing sustained growth and development in the local automotive industry. Although small and medium sized enterprises operating in the South African automotive industry are known to utilize high technology applications such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Numerical Control (CNC), Joint Investigation Team (JIT) and Total Quality Control (TQC), the degree to which these advanced applications promote radical and incremental innovation in the automotive sector has never been quantified. Not enough is known about challenges that affect innovation related activities in the South African automotive industry. The study aims to identify key predictors of sales growth in the South African automotive industry base don a representative sample of 126 enterprises operating in three of the nine provinces of South Africa (Gauteng, Eastern Cape and KwaZulu-Natal).
Objective of Study

The overall objective of study was to identify and quantify key predictors of sales growth in the South African automotive industry. The study aims to determine the degree to which innovative activities affect sustained growth and development in the South African automotive industry. As such, the study will lead to the identification of influential factors so that possible remedial actions could be taken. Data was gathered from each of the enterprises that took part in the study on sales growth, exporting products, level of technical skills, cost of production, barriers to technological innovation, radical and incremental innovation, patents, commercialization of products, technological input from suppliers, use of computer aided designs, use of computer aided manufacturing, use of total quality management, use of computer numerical control, use of joint investigation team, employment growth, export growth, percentage export and financial constraints experienced in the past.

Literature review

Innovation and its importance to firm growth is widely covered in the literature and is often cited as one of the most important avenues through which small and medium size enterprises can grow and gain competitive advantage, when innovation programmes are implemented effectively. The centrality of innovation to international competitiveness, productivity as well as employment creation in most countries has been fairly well documented. The role of innovation and technology in the economy has its roots in classical economics where people like Schumpeter raised the concept of creative destruction. The focus was on how successful innovations can displace or replace old and inefficient technologies in favour of new, more effective technologies, products and services (Barnes & Morris, 2008; AIEC, 2015).

Innovativeness can either be in terms of new products, processes or services or the improvements of already existing products, processes or services as well as designs. As a result, innovation can be incremental (improving existing product, process or service) or radical (new to existing market products, processes or services). A review of the literature shows that there is no commonly accepted definition of innovation. Innovativeness is thought to encompass the following: creativity, imagination, inventiveness, enterprise, originality, resourcefulness and farsightedness. Innovation is described as a continuous improvement in product design and quality, changes in organizational and management routines, creativity in marketing as well as modifications of production processes that bring costs down, increase efficiency and ensure environmental sustainability (Vaitheeswaran, 2007). Booyens (2011) defines innovation as a firm’s pursuit of novel solutions to challenges that confront the firm, including the creation of new products and new markets. Innovation is based on research and development activities that are used for the development of new products or processes or the improvement of existing products or processes underpin a firm’s competitive advantage, especially in an increasingly globalized economy. Innovative enterprises are often described as those that identify, interpret and apply knowledge effectively and appropriately throughout the organization (Henrekson, 2014). Patents are widely seen as a measure of innovation process activity and output (Fauconnier & Mathur-Helm, 2013).

Radas and Božić (2009) have reported a positive correlation between a firm’s innovative capabilities, and the presence of university trained engineers in the workforce. According to the authors, research and development activities are a proxy for innovation. The amount of
resources allocated for research and development activities by firms is significantly associated with the degree of innovation carried out by firms that produce several patents (Coad & Rao, 2008). Technical collaborations and partnerships with tertiary level and research institutions have the potential for promoting innovative activities and skills transfer (Yang, 2009). According to Bandyopadhyay (2010), successful, innovative firms are distinguished by their ability to connect with different systems of innovation as a source of competitive advantage. Barnes (2009) has found that there is a positive relationship between external linkages and innovation in small and medium enterprises.

Amara, Landry, Becheikh and Ouimet (2008) had found that process innovation at firm level is directly associated with commitment to meet the needs and requirements of customers, adopting competitive prices, the promotion of service excellence, and commitment to support research and development activities. According to Radas and Božić (2009), radical innovations and overall competitiveness require a higher level of advanced knowledge and expertise that could only be realized by collaborating with advanced academic and research institutions. By collaborating with well resourced academic and research institutions, it is possible to improve overall efficiency and competitiveness as a result of benefits derived from advanced theoretical knowledge, specialized equipment and findings from research and development activities. In the automotive industry, external linkages are critically important as an important source of knowledge for strengthening technological base, high growth and competitiveness. Experience from countries such as Germany, Japan and South Korea shows that small and medium size enterprises in the automotive industry generally do not necessarily innovate, and often exploit benefits derived from external linkages (Kaminski, Oliveira, & Marques, 2008). According to Amara, Landry and Bee (2008: 450-463) and Santamaria, Nieto and Barge-Gil (2009), the use of advanced technologies such as CAD, CAM, CNC and JIT has the potential for improving process innovation, research and development, overall efficiency and competitiveness in small and medium sized enterprises in the automotive industry.

According to Naude (2013: 407-417), there are more than 450 automotive component manufacturers in the automotive industry of South Africa. Gauteng (20%), the Eastern Cape (20%), KwaZulu-Natal (20%) and the Western Cape (10%) account for about 70% of outputs produced in South Africa (Gereffi & Sturgeon, 2013). International vehicle manufacturers have shown deep-rooted interest in the weather condition of South Africa and the strategic location of South Africa for global production of vehicles (Akinlo & Apanisile, 2014). According to Nansai, Nakajima, Kagawa, Kondo, Suh, Shigetomi and Oshita (2014: 1391-1400), although the variety of metals mined and produced in South Africa are a major attraction to global vehicle manufacturers, lack of specialised skills, labour unrest and labour cost constitute a significant risk to the South African automotive industry. According to Giunta, Nifo and Scalera (2012: 1067-1083), the South African automotive industry has the potential for growing at more than 10% per year if risk factors such as labour unrest, labour cost and lack of specialized skills could be overcome. Barnes and Morris (2008: 31-55) have reported that the automotive industry of South Africa could be used for producing most of the vehicles needed in the entire African continent as a means of creating millions of jobs for the unemployed youth, and for increasing its current degree of contribution to the Gross Domestic Product (GDP) of South Africa. According to George, McGeHan and Prabhu (2012: 661-683), the ability to innovate and use modern and advanced technological methods of design and manufacturing are critically needed in the South African automotive industry. The
study by Yang (2009: 1805-1808) shows that the mining industry of South Africa provides a competitive advantage to the automotive industry of South African. According to the study conducted by George, McGehan and Prabhu (2012: 661-683), the global automotive industry is highly motivated to exploit the numerous strategic benefits of South Africa in the manufacturing of vehicles for the global market. The South African automotive industry uses a variety of modern technological methods of vehicle manufacturing and design as a means of optimizing operation. In this regard, the key leaders are Mercedes Benz, BMW, Toyota, Ford, Volkswagen, Hyundai and Land rover. Studies conducted by Stanton (2013: 1395-1480) and Sarcar, Rao and Narayan (2008) show the most commonly used computer aided designs that are used in the South African automotive industry for optimisation of production, distribution and supply.

The study conducted by Wu, Thames, Rosen and Schaefer (2013) indicates that the capacity to use modern technological methods of production is a key requirement for ensuring quality in the global automotive industry. The South African automotive industry is regulated strictly by the South African Government as a means of ensuring product quality in the production and supply of vehicles to local and global markets. The South African National Department of Science and Technology (2016) regularly runs projects as a means of promoting innovation in the automotive industry. The Thumisano Project was conducted as a comprehensive survey in order to assess the degree of utilisation of modern production and manufacturing technologies in the South African automotive industry. The survey found that there was a significant and positive association between sales growth and utilisation of advanced and innovative computer-aided technological methods of production and manufacturing.

The South African automotive industry is the third largest economic sector of the South African economy next to mining and financial services. The sector contributes over 29% of the country’s manufacturing output. The South African automotive industry accounts for only 0.7% of the global automotive market share, and ranks 18th by size. However, it accounts for about 85% of the African continent’s vehicle output (South African National Department of Trade and Industry, 2016). In spite of their stated importance to economic growth, the South African automotive industry is not being provided with adequate support as a result of internal barriers such as shortage of technical skills, shortage of capital or labour related issues. It could also be a result of external barriers such as high barriers to entry or industrial dominance by a few players. Other challenges to the automotive industry include difficulties in acquiring and exploiting appropriate technology and innovations, constrained managerial capabilities, limited internal capacity in terms of well trained personnel, low productivity and regulatory issues (South African Chamber of Commerce and Industry, 2016).

According to the South African Automotive Industry Export Council (AIEC, 2015) there are 21 full automotive assembling members on their registry. Included in the list are eight of the world’s major motor vehicle manufacturers with their automotive assembly plants concentrated on three of the country’s nine provinces. South African automotive manufacturers depend upon the South African mining industry for the supply of steel, platinum, aluminium and iron. The automotive industry imports rubber, textiles, catalytic converters, plastics, paints and other chemicals. The South African automotive industry exports products to the rest of Africa as well as Europe. Inflexible labour laws and excessively aggressive trade unions are portraying South Africa as a less attractive
destination for foreign investors and partners in advanced technological applications that are essential for realizing sustained growth and development in the local automotive industry. Although small and medium sized enterprises operating in the South African automotive industry are known to utilize high technology applications such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Computer Numerical Control (CNC), Joint Investigation Team (JIT) and Total Quality Control (TQC), the degree to which these advanced applications promote radical and incremental innovation in the automotive sector has never been quantified.

Not enough is known about challenges that affect innovation related activities in the South African automotive industry. This research article aims to identify key predictors of innovation based on a representative sample of 126 enterprises operating in South Africa. Innovation and its importance to firm growth is widely covered in the literature and is often cited as one of the most important avenues through which small and medium size enterprises can grow and gain competitive advantage, when innovation programmes are implemented effectively. The centrality of innovation to international competitiveness, productivity as well as employment creation in most countries has been fairly well documented. The role of innovation and technology in the economy has its roots in classical economics where people like Schumpeter raised the concept of creative destruction. The focus was on how successful innovations can displace or replace old and inefficient technologies in favour of new, more effective technologies, products and services (Becheikh, Landry, & Amara, Landry & Bee, 2008).

Innovativeness can either be in terms of new products, processes or services or the improvements of already existing products, processes or services as well as designs. As a result, innovation can be incremental (improving existing product, process or service) or radical (new to existing market products, processes or services). A review of the literature shows that there is no commonly accepted definition of innovation. Innovativeness is thought to encompass the following: creativity, imagination, inventiveness, enterprise, originality, resourcefulness and farsightedness. Innovation is described as a continuous improvement in product design and quality, changes in organizational and management routines, creativity in marketing as well as modifications of production processes that bring costs down, increase efficiency and ensure environmental sustainability or as fresh thinking that creates value (Vaitheswaran, 2007). Wu, Thames, Rosen and Schaefer (2013) describe innovation as a firm’s pursuit of novel solutions to challenges that confront the firm, including the creation of new products and new markets. Innovation is based on research and development activities that are used for the development of new products or processes or the improvement of existing products or processes underpin a firm’s competitive advantage, especially in an increasingly globalized economy. Innovative enterprises are often described as those that identify, interpret and apply knowledge effectively and appropriately throughout the organization. According to the authors, patents are widely seen as a measure of innovation process activity and output.

Becheikh, Landry, Amara, Landry and Bee (2008) have shown that there is a positive correlation between a firm’s innovative capabilities, and the presence of university trained engineers in the workforce. According to the authors, research and development activities are a proxy for innovation. The amount of resources allocated for research and development activities by firms is significantly associated with the degree of innovation carried out by
firms that produce several patents. Technical collaborations and partnerships with tertiary level and research institutions have the potential for promoting innovative activities and skills transfer. Successful, innovative firms are distinguished by their ability to connect with different systems of innovation as a source of competitive advantage. It has been shown that there is a positive relationship between external linkages and innovation in small and medium enterprises (Stevenson, 2012).

Amara, Landry, Becheikh and Ouimet (2008) had found that process innovation at firm level is directly associated with commitment to meet the needs and requirements of customers, adopting competitive prices, the promotion of service excellence, and commitment to support research and development activities. According to Radas and Božič (2009), radical innovations and overall competitiveness require a higher level of advanced knowledge and expertise that could only be realized by collaborating with advanced academic and research institutions. By collaborating with well-resourced academic and research institutions, it is possible to improve overall efficiency and competitiveness as a result of benefits derived from advanced theoretical knowledge, specialized equipment and findings from research and development activities. External linkages are critically important as an important source of knowledge for strengthening technological base, high growth and competitiveness. Experience from countries such as Germany, Japan and South Korea shows that small and medium size enterprises in the automotive industry generally do not necessarily innovate, and often exploit benefits derived from external linkages (Kaminski, Oliveira, & Marques, 2008). According to Amara, Landry, Becheikh and Ouimet (2008: 450-463) and Santamaria, Nieto and Barge-Gil (2009), the use of advanced technologies such as CAD, CAM, CNC and JIT has the potential for improving process innovation, research and development, overall efficiency and competitiveness in small and medium sized enterprises in the automotive industry.

According to Bandyopadhyay (2010), the automotive industry has grown to become the leading manufacturing sector in South Africa. The industry contributed 6.2% to gross domestic product and employed a total of 93, 100 people in 2010. In terms of its international contribution, South Africa was responsible for approximately 73% of vehicle output in the African continent and 0.61% of vehicles globally in 2009 (Naude, 2013). According to Ambe and BadenhorstWeiss (2011), 35% of vehicles in South Africa are locally manufactured. Globally, the industry is very competitive, and world-class management philosophies and practices such as just-in-time production (JIT), total quality management (TQM) and continuous improvement (CI) are already in use in these supply chains, and have been for many decades (Naude, 2013). Despite the use of these management practices, the industry’s supply chains face realities and challenges that have an impact on delivery in terms of components being delivered at the right place and time, and higher inventory holding at every stage of the supply chain if logistical services are unreliable and irregular. The South African automotive industry compares favourably with similar industries in developing countries with regard to infrastructure, raw material availability, emerging market cost advantages, flexible production capability and government support. However, despite these positive aspects, the South African automotive industry’s competitiveness is under severe pressure (Barnes, 2009), as it experiences challenges such as high labour costs, poor infrastructure and dated technology. This is particularly true with regard to South African ACMs that compete against cheap imported parts and, in some cases, counterfeit parts (Ambe & Badenhorst-Weiss, 2011; Moodley, Morris & Barnes, 2001). As a result, increasingly demanding customers are
squeezing component manufacturers on both price and non-price factors (Barnes, 2009). The survival and growth of these ACMs in an increasingly competitive global market are vital for the South African economy. ACMs will only grow if they are able to compete globally. Given the above context, this article explores the supply chain challenges South African ACMs face. It provides insight into whether the ACMs’ geographical location, size with regard to the number of employees, and age have a bearing on whether they face common challenges. The study conducted by Fahy (2013) has shown that the location of large enterprises is a key factor in ensuring optimal service delivery and performance.

Most South African automotive enterprises are located around Pretoria, Johannesburg, Port Elizabeth, East London and Durban. Newly established automotive enterprises are often heavily reliant on modern technological methods of product design and manufacturing in comparison with old automotive enterprises. Old enterprises have wider customer base in comparison with newly established enterprises. For example, Volkswagen is a German automotive company that operates in various African countries including South Africa with an extensive operation and customer base. The company has a production facility in the Eastern Cape, and has been producing vehicles for local and export markets for over 60 years. The company has created employment opportunities for more than 5,000 South Africans. The company has a production capacity of over 130,000 units per year. The company controls about 23% of the South African local market. Likewise, BMW is also a German company that produces vehicles out of a plant at Rosslyn, outside Pretoria. The company employs 5,123 employees and produces about 60,000 vehicles per year for local and export markets. Mercedes-Benz is a German vehicle manufacturer that has been producing vehicles in the Eastern Cape for more than 60 years. The company produces about 65,000 vehicles per year for local and export markets. MAN and Nissan are well known for manufacturing trucks for local and export markets in South Africa. According to Pillay and Buys (2013), the South African automotive industry currently creates over half a million jobs in South Africa. It exports vehicles to 54 countries globally. According to Naude (2013), the automotive industry contributes about 8% to GDP. South African vehicle manufacturers are provided with incentives such as tax rebates for producing vehicle components locally.

**Methods and materials of study**

The study was based on a stratified random simple of size 126 automotive enterprises operating in Gauteng, the Eastern Cape and KwaZulu-Natal. The design of the study was cross-sectional and descriptive as data was collected from the enterprises that took part in the study only once during the period of study. Data was collected by using a structured, pre-tested and validated questionnaire of study. Data analyses were performed by using methods such as frequency tables, cross-tab analyses and binary logistic regression analysis (Hosmer & Lemeshow, 2013). Odds ratios obtained from logistic regression analysis were adjusted for potential confounding variables. The reliability of estimated models was assessed based on standard diagnostic procedures. The statistical package STATA version 14 (STATA Corporation, 2015) was used for data entry and analysis.
Results of study

The study showed that 66% of the firms had research and development units, 44.21% of them experienced growth of 1% to 20% between 2003 and 2015, the average percentage export by the firms in the study was 19%, and that there was a statistically significant association between radical or incremental innovative techniques and rapid growth (annual growth of 50% or more). Only 28.4% of firms were involved in patent activities. In terms of deriving any commercial value from these intellectual property initiatives, 7.41% reported commercialization and 3.22% licensed their patents to a third party. Forty five percentage of firms reported partnerships with larger firms while 24.2% reported collaborations with larger firms in the form of mutually beneficial agreements, supply contracts for specific products, services or processes. The study showed that that 36.87% of firms were fairly highly rated in terms of conducting innovative activities.

Table 1 shows the general characteristics of 126 firms in the study. The table shows that 94.97% of firms supplied their products to the automotive industry, while 83.43% of firms were involved in the production of specialized machine tools for the automotive industry. 82.11% of firms owned their own engineers and technicians. Incremental innovation (84.21%) and radical innovation (41.05%) were widely practiced by the firms. It can be seen from the table that 66.32% of firms conducted their own research and development activities.

<table>
<thead>
<tr>
<th>Characteristics of firms</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of metal products</td>
<td>66</td>
<td>52.63%</td>
</tr>
<tr>
<td>Production of plastic components</td>
<td>31</td>
<td>24.21%</td>
</tr>
<tr>
<td>Production of tooling products</td>
<td>105</td>
<td>83.43%</td>
</tr>
<tr>
<td>Production of rubber products</td>
<td>11</td>
<td>8.42%</td>
</tr>
<tr>
<td>Production of automotive products</td>
<td>50</td>
<td>40.00%</td>
</tr>
<tr>
<td>Supply to automotive industry</td>
<td>119</td>
<td>94.74%</td>
</tr>
<tr>
<td>Supply to mining industry</td>
<td>20</td>
<td>15.79%</td>
</tr>
<tr>
<td>Supply to aerospace industry</td>
<td>8</td>
<td>6.32%</td>
</tr>
<tr>
<td>Supply to engineering or manufacturing firms</td>
<td>38</td>
<td>30.53%</td>
</tr>
<tr>
<td>Supply to other industries</td>
<td>24</td>
<td>18.95%</td>
</tr>
<tr>
<td>Conducting regular audit</td>
<td>117</td>
<td>92.63%</td>
</tr>
<tr>
<td>ISO or TS audits conducted</td>
<td>60</td>
<td>47.69%</td>
</tr>
<tr>
<td>Innovation from internal staff</td>
<td>86</td>
<td>68.42%</td>
</tr>
<tr>
<td>Innovation from universities or research institutions</td>
<td>25</td>
<td>20.00%</td>
</tr>
<tr>
<td>Innovation from customers</td>
<td>70</td>
<td>55.79%</td>
</tr>
<tr>
<td>Innovation from suppliers</td>
<td>24</td>
<td>18.95%</td>
</tr>
<tr>
<td>Innovation from competitors</td>
<td>20</td>
<td>15.79%</td>
</tr>
<tr>
<td>Innovation from journals, fairs, conferences, seminars and the internet</td>
<td>46</td>
<td>36.84%</td>
</tr>
</tbody>
</table>
Innovation from other sources | 9 | 7.37%
---|---|---
Incremental innovation | 106 | 84.21%
Radical innovation | 52 | 41.05%
Own research and development initiatives at firm | 84 | 66.32%
Own engineers, technicians and scientists | 103 | 82.11%

Table 2 shows that the majority of firms in the study (54%) focus on manufacturing, and that they rely on partnerships and technical collaborations with a view to achieve sustained growth. More than half of firms (55.79%) identified lack of capital funding as a barrier to sustained growth and development. The fact that 71.58% of firms use CAD technology for production shows that the manufacturing and industrial base of South Africa is comparable to countries such as Brazil, Mexico and India. The study showed that 28.42% of firms were involved in patent activities. Growth in sales is a reliable economic measure of expansion. The study showed that 44.21% of all firms experienced moderate growth in sales (1% to 20%) between 2006 and 2008. The proportion of firms that experienced decline in sales between 2006 and 2008 was 13.68%.

Table 2: Production technologies used by automotive firms (n=126)

<table>
<thead>
<tr>
<th>Characteristics of automotive firms</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on manufacturing</td>
<td>72</td>
<td>56.84</td>
</tr>
<tr>
<td>Focus on process improvement</td>
<td>88</td>
<td>69.47</td>
</tr>
<tr>
<td>Focus on new product development</td>
<td>60</td>
<td>47.37</td>
</tr>
<tr>
<td>Specialist skills available within firm</td>
<td>64</td>
<td>50.53</td>
</tr>
<tr>
<td>Lack of capital as barrier to growth</td>
<td>70</td>
<td>55.79</td>
</tr>
<tr>
<td>Lack of staff as barrier to growth</td>
<td>58</td>
<td>46.32</td>
</tr>
<tr>
<td>Incompatible technology as barrier</td>
<td>16</td>
<td>12.63</td>
</tr>
<tr>
<td>Current technology is adequate</td>
<td>11</td>
<td>8.42</td>
</tr>
<tr>
<td>Lack of knowledge as barrier</td>
<td>37</td>
<td>29.41</td>
</tr>
<tr>
<td>Use of CNC technology</td>
<td>74</td>
<td>58.95</td>
</tr>
<tr>
<td>Use of CAD technology</td>
<td>90</td>
<td>71.58</td>
</tr>
<tr>
<td>Use of CAM technology</td>
<td>37</td>
<td>29.47</td>
</tr>
<tr>
<td>Use of TQM technology</td>
<td>66</td>
<td>52.63</td>
</tr>
<tr>
<td>Use of JIT technology</td>
<td>46</td>
<td>36.84</td>
</tr>
<tr>
<td>Use of other advanced softwares</td>
<td>29</td>
<td>23.16</td>
</tr>
<tr>
<td>Involvement in patent activities</td>
<td>36</td>
<td>28.42</td>
</tr>
<tr>
<td>Patents filed</td>
<td>13</td>
<td>10.53</td>
</tr>
<tr>
<td>Patents commercialized</td>
<td>9</td>
<td>7.37</td>
</tr>
<tr>
<td>Patents licensed</td>
<td>4</td>
<td>3.16</td>
</tr>
<tr>
<td>Partnerships with large firms</td>
<td>57</td>
<td>45.26</td>
</tr>
<tr>
<td>Technological collaboration with large firms</td>
<td>31</td>
<td>24.21</td>
</tr>
</tbody>
</table>
Results obtained from cross-tab analyses

Results obtained from cross-tab analyses (Hair, Black, Babin and Anderson, 2010) were used for performing a preliminary screening of influential factors. In this study, the test was used in order to identify variables that were significantly associated with growth in sales over the past 3 years. The test was performed between growth in sales and several socioeconomic variables in the questionnaire of study. Seven of the associations were highly significant at the 1% level of significance. Table 1 shows the list of seven factors that are significantly associated with sales growth in the South African automotive industry.

Table 3: Factors significantly associated with sales growth in automotive firms (n=95)

<table>
<thead>
<tr>
<th>Factor significantly associated with sales growth in automotive firms</th>
<th>Observed chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long duration of operation</td>
<td>19.0215</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Capacity for utilising innovative techniques</td>
<td>18.2165</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Level of technical skills of employees</td>
<td>16.4501</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Capacity for producing new products and process development</td>
<td>14.2239</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Capacity for production of automotive parts</td>
<td>9.2315</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Use of advanced technological softwares</td>
<td>7.2309</td>
<td>0.0000***</td>
</tr>
<tr>
<td>Partnership with subcontractors</td>
<td>5.2782</td>
<td>0.0000***</td>
</tr>
</tbody>
</table>

Legend: Significance levels at * P<0.05; ** P<0.01; *** P<0.001

Results obtained from binary logistic regression analysis

Binary logistic regression analysis (Hosmer and Lemeshow, 2013) was used in order to identify key predictors of sales growth. In binary logistic regression analysis, the measure of effect is the odds ratio. At the 5% level of significance, significant predictor variables are
characterised by odds ratios that differ from 1 significantly, P-values that are smaller than 0.05, and 95% confidence intervals that do not contain 1. The odds ratios presented in Table 4 show that the key predictors of sales growth in the South African automotive industry are long duration of operation, capacity for utilising innovative techniques, level of technical skills of employees, capacity for producing new products and process development, capacity for production of automotive parts, use of advanced technological softwares, and partnership with subcontractors, in a decreasing order of strength.

Table 4: Odds ratios estimated from binary logistic regression analysis (n=126)

<table>
<thead>
<tr>
<th>Factor significantly associated with sales growth in automotive firms</th>
<th>Odds Ratio</th>
<th>P-value</th>
<th>95% C. I. for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long duration of operation</td>
<td>4.37</td>
<td>0.000</td>
<td>(2.36, 6.99)</td>
</tr>
<tr>
<td>Capacity for utilising innovative techniques of production</td>
<td>4.02</td>
<td>0.000</td>
<td>(2.33, 6.88)</td>
</tr>
<tr>
<td>Improving technical skills of employees</td>
<td>3.59</td>
<td>0.000</td>
<td>(2.27, 5.97)</td>
</tr>
<tr>
<td>Capacity for producing new products and process development</td>
<td>2.76</td>
<td>0.000</td>
<td>(1.94, 4.66)</td>
</tr>
<tr>
<td>Level of technical skills</td>
<td>2.48</td>
<td>0.000</td>
<td>(1.76, 4.31)</td>
</tr>
</tbody>
</table>

**Interpretation of odds ratios**

The odds ratio of the variable “Long duration of operation” is equal to 4.37. This indicates that a firm that has been in operation for 5 years or more is 4.37 times as likely to experience sustained growth in sales in comparison with another firm that has been in operation for less than 5 years.

The odds ratio of the variable “Improving technical skills of employees” is equal to 3.59. This indicates that a firm that improves the technical skills of its employees on a regular basis is 3.59 times as likely to experience sustained growth in sales in comparison with another firm that fails to improve the technical skills of its employees on a regular basis.

The odds ratio of the variable “Capacity for producing new products and process development” is equal to 2.76. This indicates that a firm that has the capacity for producing new products and process development is 2.76 times as likely to experience sustained growth in sales in comparison with another firm that does not have the capacity for producing new products and process development.

The odds ratio of the variable “Level of technical skills” is equal to 2.48. This indicates that a firm in which employees have adequate technical skills is 2.48 times as likely to experience sustained growth in sales in comparison with another firm in which employees lack adequate
Based on estimates obtained from binary logistic regression analysis, sales growth was significantly influenced by 5 predictor variables. These predictor variables were long duration of operation, capacity for utilising innovative techniques of production, improving technical skills of employees, capacity for producing new products and process development, and the level of skills on technical aspects of job, in a decreasing order of strength. The percentage of overall correct classification for this procedure was equal to 80.49%. The P-value obtained from the Hosmer-Lemeshow goodness-of-fit test was equal to 0.1209 > 0.05. This shows that the fitted logistic regression model is fairly well reliable (Hosmer & Lemeshow, 2013).

Discussion of results

The study shows that sustained growth in sales in the South African automotive industry was influenced by long duration of operation, capacity for utilising innovative techniques of production, improving technical skills of employees, capacity for producing new products and process development, and the level of skills on technical aspects of job, in a decreasing order of strength. Based on the findings of the study, it is highly recommended that the South African automotive industry should actively promote technical and strategic collaboration and partnerships with tertiary level academic institutions such as universities and advanced research centres. This could be done by way of encouraging young students to get involved with internship programmes in which students acquire theoretical knowledge from tertiary level institutions, and are subsequently exposed to practical applications of theoretical knowledge by acquiring skills based training opportunities from the key players in the South African automotive industry. The South African government has placed a key priority on training and innovation programmes in which technical skills are transferred to young South Africans in areas such as manufacturing, automotive engineering, product development and design, process engineering and the like. The South African Department of Science and Technology actively supports training programmes by providing financial and administrative support to young scientists and university students. Investing adequately in technological innovation and skills development in the local automotive industry has the potential for enabling South African companies to compete favourably with their competitors effectively. One highly contested area that requires massive investment in technological skills and innovation is auto assembly.

List of references


A STUDY OF THE RELATIONSHIP BETWEEN SOUND FINANCIAL
MANAGEMENT AND CUSTOMER SATISFACTION IN THE CITY OF TSHWANE

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Abstract

A review of the relevant literature shows that the quality of municipal services that are routinely provided to residents of the City of Tshwane depends on the capacity of the City of Tshwane to utilize modern financial management and accounting procedures for performance monitoring and evaluation exercises. Fiscal discipline, good governance and service delivery depend on the degree to which prudent financial, auditing and accounting procedures are implemented by finance employees working for the City of Tshwane. The aim of study was to explain the relationship between the degree of adherence to the South African Municipal Finance Management Act (Act number 56 of 2003) and the degree of customer satisfaction with the quality of municipal services that are provided to customers in the City of Tshwane. Data was collected from a stratified random sample of 146 employees of the City of Tshwane who were responsible for providing financial services to customers. Data was collected by using a structured, pre-tested and validated questionnaire of study. Statistical methods such as frequency tables, cross-tab analyses and logit analysis were used for performing data analyses. Efficiency in financial management was assessed by assessing the degree of adherence of employees to the Municipal Finance Management Act (MFMA) based on a composite index defined by Kaiser, Crother, Kelly, Luiselli, O’Shea, Ota, Passos, Schleip & Wuster (2013). The study showed that 89% of the 146 employees who were selected for the study demonstrated adequate adherence to the Act, whereas 11% of employees failed to do so by the same standards. The study found that the degree of adherence of employees to the MFMA was significantly influenced by 3 factors. These 3 factors were degree of skills in financial accounting and auditing, duration of service, and degree of job satisfaction, in a decreasing order of strength. The results also showed that there was a statistically significant association between the quality of financial and auditing services that were provided to customers and the degree of adherence to the Municipal Finance Management Act.

Keywords: City of Tshwane, South African Municipal Finance Management Act (MFMA), Auditing and accounting skills, Logit analysis
Introduction and background of study

The aim of study was to assess the relationship between the degree of adherence to the South African Municipal Finance Management Act (Act number 56 of 2003) and customer satisfaction in the quality of municipal services provided to customers living and conducting business in the City of Tshwane. The purpose of the Municipal Finances Management Act (MFMA) is to ensure optimal service delivery at municipal level. The Act is suitable for promoting social and economic developments at all South African municipalities and local governments. The Act stipulates sound financial, accounting and auditing procedures to be followed by all municipalities in South Africa. The Act is based on norms and standards to be followed by all South African municipalities in the course of service delivery. The Act is designed to ensure optimal utilisation of municipal finances and resources. The norms and standards stipulated in the Act enable assessors to evaluate compliance by employees.

According to Evans (2011:51) and Atkinson (2012: 47-56), overall productivity in municipal service delivery depends on sound financial management. In this regard, the sound and sustainable management of the financial affairs of municipalities and other institutions in the local sphere of government must be followed. The MFMA Act requires adherence to norms and standards that are set out by the South African Department of Finance as a means of ensuring optimal service delivery. According to Beck and Demirguc-Kunt (2012: 2931-2943), the MFMA is designed for minimising the unnecessary wastage of financial resources at municipal level. The Act is also designed for ensuring efficient municipal service delivery in all local governments and municipalities in South Africa.

The study is vital for the City of Tshwane Metropolitan Municipality in view of the fact that finance will enhance light on the degree to which proper financial management and accounting procedures are followed in the municipality. There are few studies conducted in this area to date. As such, the study stands to contribute significantly to the body of knowledge in this area. The stakeholder theory (Atkinson, 2012: 47-56) suggests that failure to satisfy the expectations and demand of customers in municipalities has the potential for leading to dissatisfaction and disruption of service delivery. A stakeholder is defined as an individual, multiple or diverse groups who may exert influence over an organization whose behaviours may be influenced by the organization as well. Amit and Schoemaker (2013: 33-46) define the stakeholder as any group or individual who can affect or is affected by the achievement of the organization’s objectives.

Annual reports issued by the South African Auditor General (South African Auditor General, 2015) and the City of Tshwane (2015) for the financial year 2013/2014 indicate that finances and resources are not utilized and managed according to plans of actions that have been approved by the City of Tshwane. The root cause of this problem is lack of skills in sound financial management and lack of adherence to the MFMA Act. Both reports show that the municipality is losing finances due to lack of skills and competencies in accounting and financial management. In comparison to the City of Tshwane, the City of Cape Town has managed to receive an unqualified financial report by the Auditor General for the financial year 2011/2012 and 2012/2013. This seems to suggest that the City of Tshwane stands to benefit from taking vital lessons from the City of Cape Town (City of Cape Town, 2015).
Objective of study

The overall objective of study was to identify and quantify key predictors of adherence to the South African Municipal Finance Management Act (Act number 56 of 2003) in the City of Tshwane. The study aims to explain the relationship between the quality of service delivery and the proper utilization of financial management and accounting procedures at municipal level in the City of Tshwane. The specific objective of study is to identify and quantify key factors that affect the degree to which proper accounting and financial management procedures are followed by employees working in the City of Tshwane Metropolitan Municipality.

Literature review

According to Edoho (2015: 127-147), inability to manage municipal finances and resources efficiently is a key obstacle to sustained growth and development in all Sub-Saharan African countries including South Africa. Gereffi and Sturgeon (2013) have pointed out that financial mismanagement and lack of respect for human rights are significantly associated in developing economies of the world. The study by Henrekson (2014: 511-528) has shown that financial mismanagement and the abuse of power are chronic causes of protests at municipal levels. Bhatt and Grover (2013: 253-277) efficient service delivery at municipal level is significantly dependent upon the ability to utilise municipal resources and finances optimally. Grant (2013: 114-135) has reported that the abuse of municipal finances is often caused by lack of effective mechanisms of financial control. The study conducted by Gumede (2012: 21-28) has shown that sustained economic development and growth requires efficient utilisation of municipal resources and finances. The principles of good corporate governance are closely associated with sound financial management (Novy-Marx & Rauh, 2011: 1211-1249). Wade and Hulland (2013: 107-142) and Watson and Head (2010) have pointed out that results-based monitoring, evaluation and control mechanisms are essential for sound financial management at municipal level. Annual reports issued by the South African Chamber of Commerce and Industry (2016) and the South African National Department of Trade and Industry (2016) have shown that the capacity of the South African Government to alleviate abject poverty and unemployment depends upon the degree to which municipalities can utilise financial resources according to approved plans of action. In this regard, the Municipal Finance Management Act (MFMA) is referred to as a benchmark in the assessment of the proper utilisation of municipal resources and finances. Sound financial management is a measure of accountability and good governance according to Sarkar & Batabyal (2011: 20-29), and refers to the efficient and effective management of money in a manner that enables the successful implementation of approved plans of action at the municipal level. According to Kovacevic (2012: 12-15) and Kirsten and Rogerson (2012: 29-59), the capacity of municipalities such as the City of Tshwane to manage finances optimally is an objective measure of good corporate governance. Customers of the City of Tshwane require a wide variety of financial services from the City of Tshwane. The general public, business enterprises and Government Departments based in the City of Tshwane depend upon the ability of the City of Tshwane to provide reliable, affordable and efficient financial services at all times. The significance of this function includes the capacity of employees of the City of Tshwane who are responsible for routine accounting, auditing and financial services to deliver efficient services at all times.

Efficient financial management requires the ability to constantly make decisions based on
empirical evidence and according to approved plans of action (Ferreira & Campher, 2010). Financial management reforms typically incorporate the following components, namely use of structured planning and programming as a means of evaluating and selecting ways of achieving desired objective; taking resource allocation decisions within the framework of a unified budget; integration of budgeting and accounting; encouragement of financial accountability; preparation of consolidated reports and measurement of outputs and inputs. The South African Municipal Finance Management Act (MFMA) is designed to ensure the proper expenditure of all revenues, assets and liabilities. International best practice shows that sound financial management by local governments and municipalities requires the availability of technical skills in financial management, accounting, auditing, as well as the enforcement of relevant rules and regulations on finance (Ja Skela, & Lo’nnqvist, 2011: 289-302). A review of the literature shows that the City of Tshwane lags behind the City of Cape Town with regards to sound financial management and utilization of resources that are allocated for the implementation of approved plans of action by municipalities (City of Tshwane, 2015).

According to Van der Waldt (2006:129), the degree to which sound financial management, proper accounting and auditing are utilized by local governments and municipalities depends on the commitment made for good governance, transparency and the availability of technical skills in financial management. Based on a research conducted to assess the degree of productivity, Radnor and Barnes (2007:385) pointed out that each approved project by local governments and municipalities must be accompanied by performance management agreements and the enforcement of rules and regulations on expenditures and auditing. Financial Management gives the directions of where the company is coming from and where finance is heading to, and channel the respondents to be accountable to the resources allocated to them (Novy-Marx & Rauh, 2011). Hoque (2011:59) highlights that accountability is an essential element in achieving good governance. He adds that, governments that do not have a long tradition of functioning under an operational system of accountability face the challenge of establishing a system of governance that ensures a responsive, equitable and effective government to its community. He stated that, lack of accountability has resulted in failure, poor political decisions and high incidence of corruption (Hoque, 2011:59).

According to Joshi (2010:01), accountability is widely accepted as a key to service delivery improvements. What is interesting is that the importance of accountability comes from quite different ideological streams. According to Rieseneder (2008), transparency is generally defined as the principle of enabling the public to gain information about the operations and structures of a given entity. Finance reduces uncertainty and may help in reducing incidents of corruption among public officials. The principle of transparency underpins the needs for regulations to be clear, straightforward and accessible as possible in their drafting, promulgation, codification and dissemination (Rieseneder, 2008). Furthermore, Engelbrecht (2009:20), outlines that, the board should disclose information in a manner that enables stakeholders to make an informed analysis of the company’s performance. Mouzas (2006:1125), highlight that effectiveness and efficiency in financial management are focal terms applied in assessing the performance of an organization. According to Rieseneder (2008), effectiveness refers to doing the right things and efficiency doing things right. A measure of effectiveness assesses the ability of an organization to attain its goals and objectives.
The optimisation of finances resources is a measure of the ability of municipalities to achieve targeted outputs by utilising the minimum amount of input. According to Pillay, et al (2012), sound financial management in the public sector is an important contributor in achieving greater transparency, accountability, efficiency and effectiveness, fiscal responsibility and, hence, improved governance. According to Robbins and Decenzo (2004:20), skill is the ability to demonstrate a system and sequence of behavior that is functionally related to attaining a performance goal. The availability of skilled personnel within an organization has a significant impact on the effectiveness and efficiency of that organization to carry out its mandate in the manner in which services are delivered. The annual report issued by the City of Tshwane (2015) for the financial year 2013/2014 shows that the municipality received a qualified audit report from the Auditor-General. The City of Tshwane is committed into receiving unqualified audit reports in the years ahead. Attempts have been made to learn from past mistakes and make significant improvements in financial management and proper auditing and accounting. Evans (2011:288) defines performance management as the extent to which an individual contributes to achieving the goals and objectives of an organization. High-performance work is characterized by flexibility, innovation, knowledge and skill sharing, alignment with organizational directions, customer focus, and rapid response to business needs and marketplace requirements. The Municipal Systems Act 32 of 2000 defines performance management as an iterative process of setting targets, monitoring performance against those targets, and taking steps to improve performance. Financial management can help municipalities to work more effectively towards meeting development challenges, because finance allows them to assess the impact of the various strategies they are pursuing. Finance also enhances accountability, because finance allows municipal councilors and staff, and local communities, to monitor whether they are receiving value for money spent on various services. Performance management is not only about monitoring and measuring. Finance is also about organizational culture- the attitudes and practices which inform how municipal staff work on a daily basis. Municipalities must promote a culture of performance management in their structures, political offices, and administration. In other words, municipalities must encourage working practices which are economical, effective, efficient and accountable. According to Atkinson (2012:48), there are three domains in performance management: planning, progress review and evaluation. The framework presents an integrated model for the management of organizational performance.

According to Fahy (2013), quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs. The seller or service provider is delivering quality whenever its product or service meets or exceeds the customers’ expectations. Understanding the customer requirements is a prerequisite for delivering superior quality because such requirements represent performance standards that customers use in assessing the quality of the product or services. Fahy (2013) points out that competitive financial performance can only be achieved through total quality management (TQM) as the approach to improving quality, productivity and competitiveness in international marketplace. Many empirical studies proved that firms that have adopted a quality-oriented strategy, achieved improved productivity, customer satisfaction, increase respondent morale, improved management-labor relation and above all, high performance (Hussain, Tsironis & Ajmal, 2011: 282-295). According to the authors, the critical requirements for efficient service delivery are cost, competitive advantage, reputation and sustainability. In order to practice sound financial performance, employees providing financial services to customers must abide by good governance principles (Sarkar & Batabyal, 2011: 20-29).
The City of Tshwane utilises an integrated development planning as a means of assessing and evaluating the degree of compliance with the MFMA. The Stakeholder Theory states that stakeholders remain loyal as long as service delivery agreements and expectations of service quality are satisfied (Donaldson & Preston, 1995: 65-91). Stakeholders need to interact effectively as a means of optimising service delivery. The South African Local Government Authority (SALGA) is mandated with the task of ensuring adequate service delivery by all municipalities. As such, it interacts with stakeholders and municipalities on a regular basis. Its stakeholders are expected to make a collective effort towards advancing the interest of all South Africans. SALGA’s main objective is to ensure quality service delivery and sound financial discipline in local municipalities and governments in South Africa by using innovative and cost-effective methods on a sustainable basis. The stakeholder theory indicates that it is not possible for large municipalities such as the City of Tshwane to win the loyalty of customers on a sustainable basis without optimising and ensuring the quality of municipal service delivery to customers at all times.

Methods and materials of study

The study was based on a stratified random simple of size 146 employees of the City of Tshwane who are responsible for the provision of financial, accounting and auditing services to customers who live and conduct business in the various parts of the City of Tshwane. The design of the study was cross-sectional and descriptive as data was collected from the enterprises that took part in the study only once during the period of study. For each one of the 146 employees who were selected for the study, the degree of adherence to the Municipal Finance Management Act (Act 56 of 2003) was assessed by using a composite index defined by Kaiser, Crother, Kelly, Luiselli, O’Shea, Ota, Pasos, Schleip & Wüster (2013: 8-23). Data was collected by using a structured, pre-tested and validated questionnaire of study. Data analyses were performed by using methods such as frequency tables, cross-tab analyses and logit analysis (Hosmer & Lemeshow, 2013). Odds ratios obtained from logistic regression analysis were adjusted for potential confounding variables. The reliability of estimated models was assessed based on standard diagnostic procedures. The statistical package STATA version 14 (STATA Corporation, 2015) was used for data entry and analysis.

Results of study

Table 1 shows frequency proportions that indicate the degree to which finance staff working in the CITY OF TSHWANE in various capacities adhere to sound financial management principles, procedures and guidelines. It can be seen from the table that 130 of the 146 employees who were selected for the study (89%) were efficient in financial management, whereas the remaining 16 of the 146 employees (11%) were not efficient in financial management. Efficiency in financial management was assessed by assessing the degree of adherence of employees to the Municipal Finance Management Act (Act 56 of 2003) based on a composite index defined by Kaiser, Crother, Kelly, Luiselli, O’Shea, Ota, Passos, Schleip & Wüster (2013: 8-23).

Table 1: General assessment of employees (n=146)
<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall efficiency in financial management</td>
<td>Efficient: 89%</td>
</tr>
<tr>
<td></td>
<td>Inefficient: 11%</td>
</tr>
<tr>
<td>Visibility in implementing financial controls</td>
<td>Good: 13%</td>
</tr>
<tr>
<td></td>
<td>Above average: 48%</td>
</tr>
<tr>
<td></td>
<td>Average: 29%</td>
</tr>
<tr>
<td></td>
<td>Below average: 10%</td>
</tr>
<tr>
<td></td>
<td>Poor: 0%</td>
</tr>
<tr>
<td>Good example set by senior officers</td>
<td>Good: 14%</td>
</tr>
<tr>
<td></td>
<td>Above average: 35%</td>
</tr>
<tr>
<td></td>
<td>Average: 31%</td>
</tr>
<tr>
<td></td>
<td>Below average: 19%</td>
</tr>
<tr>
<td></td>
<td>Poor: 1%</td>
</tr>
<tr>
<td>Supervision of all bank accounts</td>
<td>Good: 15%</td>
</tr>
<tr>
<td></td>
<td>Above average: 30%</td>
</tr>
<tr>
<td></td>
<td>Average: 38%</td>
</tr>
<tr>
<td></td>
<td>Below average: 16%</td>
</tr>
<tr>
<td></td>
<td>Poor: 1%</td>
</tr>
<tr>
<td>Training of financial officers</td>
<td>Good: 5%</td>
</tr>
<tr>
<td></td>
<td>Above average: 30%</td>
</tr>
<tr>
<td></td>
<td>Average: 33%</td>
</tr>
<tr>
<td></td>
<td>Below average: 31%</td>
</tr>
<tr>
<td></td>
<td>Poor: 1%</td>
</tr>
<tr>
<td>Rotation or transfer of financial employees</td>
<td>Good: 0%</td>
</tr>
<tr>
<td></td>
<td>Above average: 16%</td>
</tr>
<tr>
<td></td>
<td>Average: 32%</td>
</tr>
<tr>
<td></td>
<td>Below average: 41%</td>
</tr>
<tr>
<td></td>
<td>Poor: 11%</td>
</tr>
<tr>
<td>Category</td>
<td>Good</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Rules are observed dutifully</td>
<td>22%</td>
</tr>
<tr>
<td>Documenting of financial records</td>
<td>19%</td>
</tr>
<tr>
<td>Commitment to sound accounting procedures and guidelines</td>
<td>13%</td>
</tr>
<tr>
<td>Tax laws are obeyed dutifully</td>
<td>11%</td>
</tr>
<tr>
<td>Procedures are followed rigorously</td>
<td>8%</td>
</tr>
<tr>
<td>Function</td>
<td>Good</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Separation of key functions is respected</td>
<td>9%</td>
</tr>
<tr>
<td>Authorization of expenditures</td>
<td>13%</td>
</tr>
<tr>
<td>Computations and costing are verified</td>
<td>12%</td>
</tr>
<tr>
<td>Prevention of over-spending</td>
<td>19%</td>
</tr>
<tr>
<td>Detection of fraudulent activities</td>
<td>5%</td>
</tr>
</tbody>
</table>
Penalization of wrong activities

<table>
<thead>
<tr>
<th>Good: 2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above average: 10%</td>
</tr>
<tr>
<td>Average: 55%</td>
</tr>
<tr>
<td>Below average: 24%</td>
</tr>
<tr>
<td>Poor: 8%</td>
</tr>
</tbody>
</table>

The Pearson chi-square test of association (Hair, Black, Babin and Anderson, 2010) was used for performing a preliminary screening of influential factors that were significantly associated with the degree to which employees adhered to the MFMA Act by way of following the basic principles, regulations and guidelines of the Act. A total of 44 tests of associations were performed between the dependent variable of study (degree of adherence to the MFMA Act), and each one of the 44 independent variables of study that are well known to affect the degree to which finance officers adhere to sound financial management principles and guidelines.

Values of the dependent variable of study, Y (Efficiency), were defined as follows:

Efficiency = \begin{cases} 
1 & \text{if adequate} \\
2 & \text{if inadequate} 
\end{cases}

Pearson’s chi-square tests of association were performed between values of variable Y and each of the values of 44 factors that are known to affect efficiency in financial management at the City of Tshwane. The results showed that efficiency in sound financial management in the City of Tshwane was significantly associated with 9 of the 44 variables of study at the 5% level of significance. At the 5% level of significance, significant two-way associations are characterized by large observed chi-square values and P-values that are smaller than 0.05. It can be seen from Table 2 that all 9 variables listed in the table are significantly associated with sound financial management at the 5% level of significance.

**Table 2: Results obtained from cross-tab analyses (n=146)**

<table>
<thead>
<tr>
<th>Factors significantly associated with sound financial management</th>
<th>Observed chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of skills in financial accounting and auditing</td>
<td>11.0206</td>
<td>0.000</td>
</tr>
<tr>
<td>Duration of service in City of Tshwane</td>
<td>9.2318</td>
<td>0.000</td>
</tr>
<tr>
<td>Degree of job satisfaction</td>
<td>8.2578</td>
<td>0.000</td>
</tr>
<tr>
<td>Adherence to terms of contracts</td>
<td>6.1705</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Adherence to bidding procedures  5.7010  0.000
Adherence to rules  4.7010  0.001
Training opportunities  4.8867  0.007
Verification of eligibility requirements  3.7464  0.012
Making decisions based on merit  3.5812  0.029

It can be seen from Table 2 that the efficiency of finance staff working in the City of Tshwane on financial management was significantly influenced by degree of skills in financial accounting and auditing, duration of service in City of Tshwane, degree of job satisfaction, adherence to terms of contracts, adherence to bidding procedures, adherence to rules, training opportunites, verification of eligibility requirements, and making decisions based on merit, in a decreasing order of strength. The 9 predictor variables shown in Table 2 were subsequently used for performing binary logistic regression analysis.

Table 3 shows a comparison between 2 categories of finance employees with regards to the 11 significant factors identified above. Category 1 consists of 130 employees (89%) who have adequate efficiency in financial management. Category 2 consists of 16 employees (11%) who lack efficiency in sound financial management.

<table>
<thead>
<tr>
<th>Factors significantly associated with efficiency in financial management</th>
<th>Efficient (n1=130)</th>
<th>Inefficient (n2=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of skills in financial accounting and auditing</td>
<td>Yes: 72% No: 5%</td>
<td>Yes: 8% No: 15%</td>
</tr>
<tr>
<td>Duration of service in City of Tshwane</td>
<td>Yes: 72% No: 5%</td>
<td>Yes: 8% No: 15%</td>
</tr>
<tr>
<td>Degree of job satisfaction</td>
<td>Yes: 73% No: 4%</td>
<td>Yes: 15% No: 8%</td>
</tr>
<tr>
<td>Adherence to terms of contracts</td>
<td>Yes: 70% No: 7%</td>
<td>Yes: 16% No: 7%</td>
</tr>
<tr>
<td>Adherence to bidding procedures</td>
<td>Yes: 70% No: 7%</td>
<td>Yes: 16% No: 7%</td>
</tr>
</tbody>
</table>
Adherence to rules

<table>
<thead>
<tr>
<th></th>
<th>Yes: 57%</th>
<th>No: 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes: 11%</td>
<td>No: 12%</td>
</tr>
</tbody>
</table>

Training opportunities

<table>
<thead>
<tr>
<th></th>
<th>Yes: 42%</th>
<th>No: 35%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes: 6%</td>
<td>No: 17%</td>
</tr>
</tbody>
</table>

Verification of eligibility requirements

<table>
<thead>
<tr>
<th></th>
<th>Yes: 42%</th>
<th>No: 35%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes: 6%</td>
<td>No: 17%</td>
</tr>
</tbody>
</table>

Making decisions based on merit

<table>
<thead>
<tr>
<th></th>
<th>Yes: 57%</th>
<th>No: 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes: 11%</td>
<td>No: 12%</td>
</tr>
</tbody>
</table>

It can be seen from Table 3 that respondents in categories 1 and 2 differ from each other with regards to degree of skills in financial accounting and auditing, duration of service in City of Tshwane, degree of job satisfaction, adherence to terms of contracts, adherence to bidding procedures, adherence to rules, training opportunities, verification of eligibility requirements, and making decisions based on merit. Efficient employees were found to be relatively more prudent and rule-bound on fiscal issues.

Results from binary logistic regression analysis are theoretically more reliable than results from Pearson’s chi-square tests of association (Hosmer & Lemeshow, 2013). This is because the measure of effect in binary logistic regression is the odds ratio, and not P-values obtained from two-by-two cross-tab tests. Logistic regression analysis allows multivariate analysis involving several variables that are influential over the extent to which finance staff working for the City of Tshwane are efficient in financial management. It is also possible to assess the reliability of the fitted logistic regression model based on highly reliable diagnostic tests such as the classification table, the likelihood ratio test, the Hosmer-Lemeshow goodness-of-fit tests, sensitivity and specificity. Binary logistic regression of analysis was performed by performing the regression of variable Y (Efficiency in financial management) on the 9 variables of study that were found to be significantly associated with efficiency in financial management. At the 5% level of significance, influential predictors of efficiency in financial management have odds ratios that are significantly different from 1, P-values that are smaller than 0.05, and 95% confidence intervals of odds ratios that do not contain 1.

Table 4: Odds Ratios estimated from logit analysis (n=146)

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-value</th>
<th>Odds Ratio</th>
<th>95% Confidence Intervals of Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills in financial management</td>
<td>0.000</td>
<td>3.68</td>
<td>(1.74, 7.09)</td>
</tr>
<tr>
<td>Duration of service</td>
<td>0.000</td>
<td>3.26</td>
<td>(1.58, 6.69)</td>
</tr>
</tbody>
</table>
Accordingly, 3 of the variables used for binary logistic regression analysis were highly influential predictors of efficiency in financial management. These 3 predictor variables of study were degree of skills in financial management, duration of service in the City of Tshwane, and degree of job satisfaction, in a decreasing order of strength.

**Interpretation of odds ratios**

The odds ratio of the variable “skills in financial management” is equal to 3.68. This indicates that a finance employee who lacks skills in financial management is 3.68 times more likely to be inefficient in financial management in comparison with another finance employee who possesses adequate skills in financial management.

The odds ratio of the variable “duration of service” is equal to 3.26. This indicates that a finance employee who has not served the City of Tshwane for 5 years or more is 3.26 times more likely to be inefficient in financial management in comparison with another finance employee who has served the City of Tshwane for 5 years or more.

The odds ratio of the variable “degree of job satisfaction” is equal to 2.87. This indicates that a finance employee who lacks job satisfaction while working for the City of Tshwane is 2.87 times more likely to be inefficient in financial management in comparison with another finance employee who enjoys job satisfaction while working for the City of Tshwane.

The percentage of overall correct classification for the fitted binary logistic regression model was equal to 84.29%. This figure is above 75%, and shows that the fitted binary logistic regression model is highly reliable. The P-value obtained from the Hosmer-Lemeshow goodness-of-fit test was equal to 0.3295 > 0.05. This indicates that there was no reason to doubt the reliability of the fitted binary logistic regression model.

**Discussion of results**

The key finding of study was that 89% of the 146 employees who took part in the study adhered adequately to the Municipal Finance Management Act based on the criterion set out by Kaiser, Crother, Kelly, Luiselli, O’Shea, Ota, Passos, Schleip & Wüster (2013: 8-23), whereas the remaining 11% of employees did not adhere to the Act adequately by the same criterion. This figure sounds good considering the fact that Tshwane is a developing municipality.

Results obtained from cross-tab analyses showed that the efficiency of finance staff working in the City of Tshwane on financial management was significantly influenced by the degree of skills in financial accounting and auditing, duration of service in City of Tshwane, degree of job satisfaction, adherence to terms of contracts, adherence to bidding procedures, adherence to rules, training opportunities, verification of eligibility requirements, and making decisions based on merit. Efficient employees were found to be relatively more prudent and
rule-bound on fiscal issues.

Results obtained from binary logistic regression analysis showed that the degree of adherence of employees to the Municipal Finance Management Act was significantly influenced by 3 factors. These 3 factors were degree of skills in financial accounting and auditing, duration of service, and degree of job satisfaction, in a decreasing order of strength. The results also showed that there was a statistically significant association between the quality of financial and auditing services that were provided to customers and the degree of adherence to the Municipal Finance Management Act.

According to Achrya, Philippon, Richardson and Roubini (2009: 42-51), the City of Tshwane should develop a model for good governance as a means of supporting stakeholders who expect quality service delivery from the municipality. The view of the City of Tshwane is that good governance models in financial management must be used for encouraging financial management employees to improve their performance. There are suitable models that could be used for identifying potential risks that are associated with financial management in municipalities such as the City of Tshwane. Such models are useful for implementing policies from the South African Local Government Authority (SALGA), and for minimizing the risk involved in wasting financial resources that are meant for providing essential municipal services to residents of Tshwane. Good governance entails transparency, accountability and fairness in the administration of public finance. Finance employees working for the City of Tshwane must reflect such essential attributes in their daily activities (Adams & Mehran, 2003: 123-142).

Sound financial management practices are essential to the long-term sustainability of municipalities. They underpin the process of democratic accountability. Weak or opaque financial management results in the misdirection of resources and increases the risk of corruption and abuse of resources. The key objective of the Municipal Finance Management Act (2003) (MFMA) is to modernize municipal financial management in South Africa so as to lay a sound financial base for the sustainable delivery of services. Municipal financial management involves managing a range of interrelated components: planning and budgeting, revenue, cash and expenditure management, procurement, asset management, reporting and oversight. Each component contributes to ensuring that expenditure is developmental, effective and efficient and that local municipalities can be held accountable (Amit & Schoemaker, 2013: 33-46).

According to Andres and Vallesado (2008: 2570-2580), good governance on financial issues could take several years to bear tangible results in local municipalities. The research work done by the authors shows that adherence to MFMA regulations and guidelines by local municipalities is a key requirement for ensuring optimal utilization of public finance and resources. According to Bebchuk, Cohen and Ferrell (2009: 783-827), the reforms introduced by the MFMA are quite helpful for ensuring overall economic growth in South Africa, and for preserving the credit rating South Africa has at the moment. The MFMA is the cornerstone of the broader reform package for local government outlined in the 1998 White Paper on Local Government. The MFMA, together with the Municipal Structures Act (1998), the Municipal Systems Act (2000), the Municipal Property Rates Act (2004) and the Municipal Fiscal Powers and Functions Act (2007), sets out frameworks and key requirements for municipal operations, planning, budgeting, governance and accountability. The MFMA was introduced in 2003. At that time, the system of local government finance
was characterized by practices such as one-year line-item budgeting, which did not support strategic planning and the alignment of budgets with priorities over the medium term. This generally resulted in councils allocating resources based on historical commitments rather than looking at current priorities and the future needs of communities. Municipal finance practices were also not rooted in a culture of performance and regular reporting. Reports were often irregular or inaccurate, or contained too much data and too little useful information. Often municipalities did not publish annual reports and did not submit their financial statements for audit on time or at all. Compared to where local government was in 2003, significant strides have been made with implementing the new financial management arrangements spelt out in the MFMA and its regulations. However, progress is uneven and many municipalities are yet to implement both the letter and the spirit of the MFMA. This is to enable managers to manage' within a framework of regular and consistent reporting so that they can be held accountable for their decisions and actions on financial matters by the City of Tshwane (Brunnermeier, 2009: 77-100).

The research work conducted by Beetsma, Giuliodori, De Jong and Widijanto (2013: 83-101) shows that the key mechanisms for strengthening accountability include routine accounting, auditing and reporting on a month-by-month basis. The set of legislation governing local government provides for a number of mechanisms for strengthening accountability. The first mechanism involves separating and clarifying roles and responsibilities of mayors, executive councillors, non-executive councillors and officials. This separation of political and management roles is critical for good governance. The executive mayor and executive committee are expected to provide political leadership, by proposing policies, guiding the development of budgets and performance targets, and overseeing their implementation by monitoring performance through in-year reports. In executing their duties, they may not use their position, privileges or confidential information for private gain or to improperly benefit another person. The municipal manager holds the primary legal accountability for financial management in terms of the MFMA and, together with other senior managers, is responsible for implementation and outputs. They have a duty to act with fidelity, honesty and integrity and in the best interests of the municipality at all times. Non-executive councillors, as elected representatives of the community, debate and approve the proposed policies and budgets and also oversee the performance of the municipality. They hold both the executive mayor or committee and the officials accountable for performance on the basis of quarterly and annual reports. Ensuring fiscal discipline and the culture of accurate and prompt financial reporting is essential for sustained economic growth in developing nations such as South Africa (Buckley & Ghauri, 2012: 81-98).

According to Calvin (2012: 49-52), public finance and resources must not be spent on plans of actions that have not been duly approved by a competent, transparent and accountable planning committee. All expenditures must be attached to performance management contracts in which public money is accounted for thoroughly and methodically. This explains why the CITY OF TSHWANE must rely on a performance monitoring and evaluation mechanism as a means of minimizing unwarranted expenditure. The second mechanism involves developing a performance orientation. The legal framework introduces requirements and processes for establishing service delivery priorities and plans. The aim is to ensure alignment between the plans, budgets, implementation actions and reporting to ensure proper management accountability for the achievement of service delivery targets. The third mechanism involves strengthening reporting and disclosure requirements. High quality and timely management information allows management to be proactive in identifying and
solving problems as they arise. It also strengthens the separation of roles and supports a performance orientation in local government. According to Chao, Szerek, Pereira and Pauly (2010: 231-242), plans of actions approved by municipalities and local governments must be aligned with reporting. The South African Constitution guarantees all South Africans the right to live in municipalities in which public resources and finance are not abused or misappropriated by corrupt or inefficient officials. Section 153 of the South African Constitution requires that a municipality must structure and manage its administration and budgeting and planning processes to give priority to the basic needs of the community, and to promote the social and economic development of the community.

According to Elder and Serletis (2010: 1137-1159), it is a constitutional duty of all democratically elected governments to publish financial statements that are openly accessible to all stakeholders. The MFMA, together with the Municipal Systems Act (2000), aims to facilitate compliance with this constitutional duty by ensuring that priority plans, budgets, implementation actions and reports are properly aligned. The key components of sound financial management are routine accountability, auditing and reporting (Elliot & Boshoff, 2013: 44-58). Monitoring and evaluation mechanisms are often used for ensuring sound financial management in local government and municipalities such as the City of Tshwane. This is done by using an integrated development plan (IDP) that sets out the municipality’s goals and development plans, which need to be aligned with the municipality’s available resources. Council adopts the IDP and undertakes an annual review and assessment of performance based on the annual report. Budgets must be approved by following recommended procedures by all relevant stakeholders in order to be implemented. Budgets must be audited, assessed and evaluated on a regular basis. Budgets must be used for performance management and assessment. Local municipalities often use 3-year budgets that are meant for setting out the revenue raising and expenditure plan of the municipality for approval by council. The allocation of funds needs to be aligned with the priorities in the IDP. Service delivery and budget implementation plan (SDBIP) are viewed as the cornerstone for monitoring and evaluation of programmes that are run by local governments and municipalities. The SDBIP sets out monthly or quarterly service delivery and financial targets aligned with the annual targets set in the IDP and budget. As the municipality’s implementation plan, it lays the basis for the performance agreements of the municipal manager and senior management. The approach implemented in the Service delivery and budget implementation plan is consistent with what has been recommended by Fahlenbrach & Stulz (2011: 11-26).

Routine monthly and quarterly reports are used in local governments and municipalities for ensuring the implementation of approved plans of actions at regular interval, and for minimizing the expenditure of public finance on plans of action that have not been approved. The administration reports to council on the implementation of the budget and SDBIP through monthly, quarterly and mid-year reports. Council uses these reports to monitor both the financial and service delivery performance of the municipality’s implementation actions. Annual financial statements are vital for assessing efficiency in service delivery. Such reports are essential or assessing overall progress and the cost of service delivery. The reports are essential for monitoring and evaluation in the public service sector. Such reports provide an overall picture of the budget approved, and how much work has been done by using the approved budget. Local municipalities can also use such reports for auditing purposes, and reflect the financial position of the municipality at regular intervals. The reports are also essential for making a submission to the Auditor-General based on a comprehensive
assessment on all known expenditures and key performance indicators on which satisfactory progress has been made in the financial year. The City of Tshwane is committed to obtaining unqualified audit reports from the Auditor-General. To do so, the City of Tshwane must bolster the culture of fiscal discipline and sound financial management in the municipality. Fiscal discipline is highly recommended to municipalities and local governments in developing nations (Fauconnier & Mathur-Helm, 2013: 1-14).

According to Grant (2013: 114-135), the task of reforming municipal financial management is a lengthy and challenging process. The introduction of the MFMA in 2003 laid the foundation for this. Since then, regulations dealing with supply chain management, public private partnerships, the minimum competency requirements of municipal finance officials and asset transfers have been put in place. Each reform aims to build on the foundation laid by previous initiatives, taking into account the time needed for municipal systems and practices to change. Since 2008, the South African National Department of Finance has been giving specific attention to strengthening municipal budgeting and reporting practices. Key initiatives have been the introduction of the Municipal Budget and Reporting Regulations in 2009, the enforcement of in-year financial reporting processes and firmer management of conditional grants in accordance with the annual Division of Revenue Act. These reforms have been supported by strengthening National Treasury’s local government database and by publishing an increasing range of local government financial information on National Treasury’s website. Future reform initiatives National Treasury is currently working on include introducing a standard chart of accounts for municipalities to ensure financial transactions are captured consistently by municipalities, and so improve the quality of financial reporting, strengthening revenue and cash management policies, processes and procedures, with a particular emphasis on tariff setting, ensuring the better alignment of plans, budgets and reporting by paying attention to the structure and content of SDBIPs and annual reports, and aligning the format of annual financial statements to report against budgets, strengthening non-financial reporting, to facilitate evaluations of value for money, finalizing of the regulations for financial misconduct to facilitate the enforcement of the provisions dealing with financial conduct in chapter 15 of the MFMA. Improved processes for municipal planning and budgeting empower a council to make more informed decisions and are fundamental to sustainable and efficient service provision. The generic municipal budget cycle is set out in the MFMA and described in MFMA circular 19. The cycle involves a planning phase, which starts with the mayor tabling in council a budget process schedule by August. This schedule sets key target dates for the budget process. The planning phase involves the strategic review of the IDP, setting service delivery objectives for the next three years, consultation on tariffs, indigent policy, credit control and free basic services, and reviewing the previous year’s performance and current economic and demographic trends. The process has a phase for preparation that involves the analysis of revenue and expenditure projections (based on the mid-year budget and performance assessment), revising budget related policies and considering local, provincial and national priorities, a tabling and public consultation phase, which requires the mayor to table a proposed budget, IDP revisions and budget policies in council by the end of March. Thereafter, the municipality is required to conduct public budget consultations during April. Since 2008, National Treasury has been giving specific attention to strengthening municipal budgeting and reporting practices improved processes for municipal planning and budgeting allow for more informed decisions and are fundamental to sustainable and efficient service provision.

The research work conducted by Beck and Demirguc-Kunt (2012: 2931-2943) and
Bharadwaj (2013: 169-196) has shown that small and medium-sized businesses that conduct businesses in municipalities have the potential for providing the financial means that is needed for creating jobs as well as the alleviation of urban poverty and unemployment. In this regard, local governments and municipalities can benefit from adhering to guidelines and regulations that are recommended in the MFMA documents. Proper documents that are prepared in accordance with MFMA rules are required to submit an annual report for each financial year. The annual report is the key instrument of transparent governance and accountability and must be used to report on performance for the year. The early completion and submission of annual reports, together with the annual financial statements, will facilitate timely oversight. Oversight of the annual report represents the final stage in the accountability cycle. Once approved by the council, the annual report must be placed on the municipal website, made available to the wider community and copies must be sent to various stakeholders. Audit opinions issued by the Auditor-General are the most important part of the auditor’s report provided to the municipality. The audit findings are based on an independent and often extensive verification process of the annual financial statements and the performance information in the annual report. The study conducted by Carr (2013: 41-49) has shown that good governance on financial management entails transparency, accountability and the implementation of municipal bylaws and regulations on fiscal matters with vigour. Wade and Hulland (2013: 107-142) have shown that sound financial management is a key requirement for the efficient utilization of municipal resources in developing nations such as South Africa.

Governance analysis constitutes mechanisms that are used for the assessment of key deliverables. Analysis of policy includes the setting up of chains, the evaluation of chains, and the need to make amendments based on what is required for efficient service delivery. A good business plan is useful for analysis and evaluation. Business plans take financial issues into account, and are practical. The analysis of performance must account for discrepancies between expected outputs and tangible results. Major discrepancies must be accounted for by those who are responsible. The issue of leadership is crucial for sound financial management. Leading by example is the most important tool for prudent financial management in the City of Tshwane and other local governments and municipalities. Studies conducted by Kirsten & Rogerson (2012: 29-59) and Kovacevic (2012: 12-15) show that ensuring fiscal discipline in local governments and municipalities a key requirement for growing small and medium-sized business enterprises on a sustainable basis.

**List of references**


Abstract

The purpose of the study was to identify and quantify factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa. The study was conducted by collecting data from a stratified random sample of size 120 employees of TUT. Data was gathered by use of a structured questionnaire and in-depth interviews. The sample size of the study was equal to n=120. A combination of quantitative and qualitative methods of data collection and analysis were used for conducting the study. As part of the quantitative aspect of study, data analysis was performed by using methods such as frequency tables, cross-tab analyses, logit analysis, Markov Chain Monte Carlo (MCMC) algorithms and Bayesian analysis. The performance of employees was assessed by using a composite index developed by Korschun, Bhattacharya and Swain (2014) for conducting a similar study. The study found that 68 of 120 respondents who were selected for the study (56.67%) were capable of providing highly professional services to students and relevant stakeholders by the standards of Korschun, Bhattacharya and Swain (2014), whereas the remaining 52 respondents (43.33%) were incapable of doing the same. Results obtained from logit analysis, MCMC algorithms and Bayesian analysis showed that the ability of employees to provide highly professional admission related services to students and relevant stakeholders was significantly influenced by 3 factors. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength.

Key words: Tshwane University of Technology, Admission services, Logit analysis, Bayesian analysis
Introduction

The overall objective of study was to assess and evaluate factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa. TUT is the largest residential university in South Africa. Annually, TUT attracts over 60,000 new applicants at its eight campuses in South Africa. TUT offers a wide variety of training programmes at six faculties (engineering, science, information and communication technology, management sciences, humanities and health sciences). The key attributes of TUT in South Africa are affordability, easy access and the provision of quality education at its eight residential campuses. In terms of research output, patents and scientific merits, TUT is the leading and most reputable university of technology in South Africa. Securing admission into TUT is not so easy due to a large number of applications and stiff competition among applicants. TUT uses highly innovative and modern teaching and learning methods as a means of ensuring the highest quality of teaching and learning at local, continental and global levels. TUT places emphasis on the mastery of practical scientific and technological applications in all its programmes and academic offerings. The study was conducted with a view to critically assess and evaluate factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa.

Administrative employees of TUT offer a wide variety of services to applicants. The services include assistance with regards to completing application forms (paper-based and online), outlining the list of requirements for admission, checking and verifying requirements for admission, the provision of residence-related services, the provision of health-related services, the provision of library-related services, the provision of transportation related services, the provision of security on campus, the provision of food and catering services, liaison with student representatives on all campuses, checking and verifying the authenticity of academic records and identity documents, providing finance related information to applicants, the collection of application fees to applicants, confirmation of admission to applicants, providing answers to questions, resolving queries from applicants, collecting and storing academic and financial records of applicants, and the provision of general and field-specific information to applicants. The quality of administrative services that are provided to applicants are critically important to applicants in view of the fact that first-time applicants are often not fully and accurately informed about the choices they can make on admission and enrolment at TUT. In certain cases, administrative employees of TUT are required to provide field-specific advisory services to first-time applicants and their parents and families.

Background of problem

Studies conducted by Bharuthram (2012), Basch (2011) and Belle (2013) have shown that there is a significant association between the quality of administrative services that are provided by administrative employees of tertiary level academic institutions and overall academic performance. The study conducted by Cerasoli, Nicklin and Ford (2014) has shown that intrinsic motivation and extrinsic incentives jointly predict overall academic performance by learners. According to Kunter,
Klusmann, Baumert, Richter, Voss and Hachfeld (2013), there is a three-way statistically significant association among the professional competence of teachers, the quality of instruction and student development. The study conducted by Lepp, Barkley and Karpinski (2014) has shown that there is a significant relationship between academic performance and the ability of universities to provide satisfactory administrative services to learners. There is a shortage of studies that could show the relationship between administrative services and overall academic performance within TUT. This study aims to fill the gap by collecting empirical data from employees of TUT who are responsible for providing routine administrative services to students who are enrolled at the eight residential campuses of TUT in South Africa.

**Literature review**

The study conducted by Padro (2015) has highlighted the list of factors that must be satisfied in order to provide quality higher education in universities such as TUT. The author has recommended a comprehensive monitoring and evaluation programme as a means of ensuring quality administrative services to students and relevant stakeholders. In the past several years, there have been protests at TUT campuses over fees and administrative requirements and procedures that must be adhered to by all students. The leaderships of TUT have handled such protests by using constructive dialogues and innovative methods that were mutually beneficial for students and the university. Annual reports issued by TUT since 2004 show that improving the quality and efficiency of administrative services to students has a significant association with overall satisfaction with the quality of services provided to students and applicants.

Recently, the management of TUT have rolled out an online registration and admission system to all students and first-time applicants. The online system is highly beneficial to both students and management. Although the online system has been characterised by teething problems and lack of access to the internet, it has been found to be highly effective and beneficial. All first time applicants are required to meet registration requirements. TUT has a dedicated office for admission and registration at all campuses. New applicants are required to complete admission forms and to have the completed forms submitted with supporting legal and academic documents to the admissions office. Every semester, students who are on the TUT system are required to complete registration forms for selected courses in the upcoming academic semester. The online system is designed to save valuable time. It also enables administrative employees to resolve queries and capture information efficiently and promptly.

All universities and colleges have physical or traditional admission and registration systems in addition to some partially automated systems like course registration, where current students have to login and electronically enrol in courses of interest, while some major admission process is still not fully automated. Admission and Registration processes are extremely important to both students and universities. Universities cannot create full admission records of new and current students without proper admission and registration system. Such a system is also essential and convenient to students because it provides them with a faster and less cumbersome procedure and easy to use tools to register and enrol in selected courses. The scale and the persisting nature of students’ admission and courses registration issues in many universities in South Africa, warrant the need for a sophisticated
and advanced automated system. The online system at TUT has introduced a remarkably efficient system of administration, data capturing and verification to both students and administrative staff. The online system at TUT is expected to be highly successful and widely adopted by both students and administrative employees.

There is a shortage of studies conducted for assessing the degree to which administrative employees provide practical assistance to students and applicants who wish to be enrolled at TUT. There is also a shortage of studies that could be used for identifying key barriers that are known to undermine the quality of administrative services that are provided to applicants and students. The study conducted by Al-Smadi (2012) shows that online enrolment systems are quite vital for TUT as a means of ensuring the provision of highly efficient routine administrative services to applicants and students. Adebayo (2013) has reported that the quality of administrative services provided to tertiary level students has a significant impact on overall academic performance. In a similar study, Dipaola and Tschanne-Moran (2014) has reported that the ability of schools and tertiary level academic institutions to provide efficient administrative services has a bearing on pass rates and throughputs. Oliha (2014) and Mertens (2014) have found that the use of innovative methods such as online registration and enrollment are quite helpful for enhancing academic quality, integrity of academic records, relevance of academic assessment and evaluation procedures and professionalism at tertiary level academic institutions such as TUT.

According to the South African National Department of Higher Education and Training (2006), the South African Higher Education Act of 1997 (Act 101 of 1997) defines higher education as all learning programs leading to a qualification that meets the requirements of the Higher Education Qualifications Framework. The programs are of post-secondary education level, assigned exclusively to universities and universities of technology (referred to as institutions). Higher education institutions provide necessary repetitive work processes which are both administrative and academic in nature. A “process” is step-by-step collection of interdependent actions that together produce outcomes that contribute to the success of an organisation (Oliha, 2014). According to Mertens (2014), academic programmes require total quality control and assurance in areas related to record keeping, the production and dissemination of academic records, the setting out and administration of exams and assessments, the admission and recruitment of students, the provision of advisory services, registration, admission, and the provision of security-related, administrative and financial services to students. In 2004, the South African Government merged institutions of higher education in order to create newly merged universities such as TUT. The merger was characterised by lack of harmony and inability to provide efficient administrative services to students (Thapa, Cohen, Guffey and Higgins-D’Alessandro, 2013) due to diverse demographic, economic, legal and cultural characteristics. According to the South African National Department of Higher Education and Training (2016), managing problems that arose from mergers was not so easy. According to Talib, Rahman and Qureshi (2013), lack of homogeneity and lack of cohesion have the potential for derailing vital academic programmes that are rolled out by national governments. According to the authors, one key area of contention has been the stiff competition for scarce resources. The management of divergent cultures could be alleviated by introducing highly efficient administrative methods (Black, 2004). According to Asif and Krogstie (2011), online and mobile systems are quite vital for alleviating problems arising from scarce educational resources and heterogeneity.
The study conducted by Seeman and Ohara (2006) shows that academic institutions must use monitoring and evaluation mechanisms for assessing the quality of administrative services that are provided routinely to students and first-time applicants. The authors have proposed that a strict assessment of the quality of administrative services must be made at regular intervals in order to ensure satisfactory academic performance and research outputs by students and academics. Based on a study carried out at the University of the Western Cape in South Africa, Kongolo (2012) has also made a similar recommendation to the South African National Department of Higher Education and Training. According to Korschun, Bhattacharya and Swain (2014), students must be treated as customers, and employees who fail to provide satisfactory administrative services to students must be punished. The authors have recommended that rewards should be provided to top-performing administrative employees as a means of boosting staff morale and commitment to the basic needs of students at the workplace. According to the South African National Department of Higher Education and Training (2016), the overall performance of all South African tertiary level academic institutions including TUT is taken into account in allocating operational budgets, developmental awards and research grants. Subsidies earned from the South African Government for throughput and research outputs depend strictly on performance. According to Black (2004), South African universities including TUT need to streamline routine operational administrative tasks as a means of cutting down operational cost and improving output. According to Loudon and Loudon (1993, 2007), academic institutions that do not perform adequately are characterised by frequent student protests, low staff morale, poor throughput and inadequate research output.

It is the duty and responsibility of TUT to ensure satisfactory performance from all administrative employees working in all its eight campuses in South Africa. Administrative employees who are responsible for assisting first time applicants and enrolled students must be encouraged to sign performance monitoring and evaluation contracts as a means of ensuring satisfactory performance. Rewards must be provided to administrative employees who provide outstanding services to applicants and students. Likewise, underperforming administrative employees must be provided with training opportunities so that they can improve their degree of performance. According to Black (2008), several South African institutions of higher learning often struggle to utilise modern technological methods of teaching and learning. According to Kongolo (2012), the key areas of failure are inability to use online administrative systems, failure to resolve queries from students and stakeholders fast enough, inability to provide accurate information promptly to students and applicants, inability to store and retrieve documents electronically, and failure to monitor and evaluate the performance of administrative employees at regular intervals.

**Objectives of study**

The overall aim of the study was to assess and evaluate factors that affect the ability of administrative employees of Tshwane University of Technology (TUT) to provide highly professional admission related services to students and relevant stakeholders at the 8 residential campuses of TUT in South Africa. The study had the following specific objectives:

- To identify and quantify factors that affect the quality of administrative services that are provided to applicants and students at TUT; and
To assess and evaluate the relationship between the quality of administrative services and improved academic performance by students at TUT.

**Methods and materials of study**

The design of study was descriptive and cross-sectional. It was descriptive because the aim of the study was to explain and describe factors that affect the capacity of administrative employees of TUT to provide highly professional admission related services to students and relevant stakeholders at the eight residential campuses of TUT in South Africa. The study was cross-sectional because data was collected from the 120 respondents of study who were selected for the study only once during the course of study. According to Bryman (2015), a descriptive study design is suitable for an exploratory study of this kind.

The design of study was descriptive and cross-sectional. The purpose of the study was to explore factors that affect the capacity of administrative employees of TUT to provide highly professional admission related services to students and relevant stakeholders at the eight residential campuses of TUT in South Africa. The design of study was cross-sectional because data was collected from the 120 respondents who took part in the study only once during the course of study. The total number of administrative employees providing administrative services to students and relevant stakeholders in TUT is about 983. The sample size of study was equal to 120. Stratified random sampling (Levy and Lemeshow, 2013) was used for selecting a random sample of size 120 respondents from the 8 residential campuses of TUT in South Africa.

The level of significance of study is fixed at the \( \alpha = 0.05 \) level of significance. The sample size of study is denoted by \( n \), and is determined using the formula shown below:

\[
 n = \frac{Z^2 \alpha \times P(1 - P)}{d^2}
\]

In the above expression, the following values of \( \alpha \), \( P \), and \( d \) were used:

\( \alpha = 0.05 \) = level of significance

\( Z_{1-\frac{\alpha}{2}} = Z_{1-0.025} = Z_{0.975} = 1.96 \) = value of standard normal random variable at the \( \alpha = 0.05 \) level of significance

\( P = 0.95 \)

\( 1 - P = 0.05 \)

\( d \) is the margin of error = 0.05
By using the above values, the sample size of study was equal to 120. For a socioeconomic survey, a sample of size 120 is large enough according to Levy and Lemeshow (2013). Each respondent of study was interviewed by using a structured, pre-tested and validated questionnaire of study. The SurveyMonkey tool was used for collecting responses from respondents who took part in the study. Data was collected from each one of the 120 respondents who took part in the study on a total of 30 indicators of service quality. Data was collected from each of the 120 respondents of study by using a structured, pre-tested and validated questionnaire of study. Respondents had to provide answers to 30 questions related to personal characteristics and service quality. Measurements of perceptions were done by using a 5-point ordinal scale. Face validity was used for ensuring validity. The Cronbach Alpha test was used for ensuring reliability and internal consistency.

The performance of administrative employees was assessed by using a composite index developed by Korschun, Bhattacharya and Swain (2014) for conducting a similar study. According to Hair, Black, Babin and Anderson (2010), a structured questionnaire is ideal for gathering information from respondents effectively without introducing bias. The questionnaire used for data collection was pre-tested before it was used. Face validation was used in order to have the questionnaire of study validated.

The questionnaire of study had a total of 30 questions. The 30 questions assess the ability of the respondents to provide highly professional services to students and relevant stakeholders. Appendix A shows a copy of the questionnaire of study.

**Dependent variable of study (Y)**

The dependent variable of study was an indicator of the ability of ability of the respondents to provide highly professional services to students and relevant stakeholders. As such, the dependent variable of study was dichotomous variable (a variable that can have 2 possible values only). The dependent variable of study (Y) had two possible values.

$$Y = \begin{cases} 1 & \text{if quality of service was poor} \\ 0 & \text{Otherwise} \end{cases}$$

$X_1, X_2, \ldots, X_k$ are independent or explanatory variables that affect the ability of ability of respondents to provide highly professional services to students and relevant stakeholders.

Quantitative methods of data analyses were used in the study. Quantitative methods such as frequency tables, cross-tab analyses (Hair, Black, Babin & Anderson, 2010), logit analysis (Hosmer & Lemeshow, 2013), MCMC algorithms and Bayesian analysis (Browne & Goldstein, 2010) were used for performing statistical data analyses. Face validity was used for ensuring validity, whereas the Cronbach Alpha test was used for ensuring reliability and internal consistency (Hair, Black, Babin & Anderson, 2010). The dependent variable of study was a measure of the ability of
employees to provide highly professional services to students and relevant stakeholders. This is a dichotomous variable of study as it can only have 2 possible values. According to Hair, Black, Rabin and Anderson (2010), the following statistical methods of data analyses are suitable for conducting multivariate statistical data analyses in the study:

- Frequency tables for categorical variables of study
- Bar charts, pie charts and box plots
- Cross-tab analyses for pairs of categorical variables
- Binary logistic regression analysis (Hosmer & Lemeshow, 2013)
- Markov Chain Monte Carlo (MCMC) algorithms and Bayesian analysis (Browne & Goldstein, 2010)

The statistical package STATA version 14 (STATA Corporation, 2015) was used for data entry and analyses.

**The Pearson chi-square test of association**

The Pearson chi-square test of association (Hair, Black, Babin and Anderson, 2010) was used to measure the strength of association between two or more categorical (discrete) variables. The null hypothesis states that the association between variables 1 and 2 is insignificant. The alternative hypothesis states that there is a significant association between the two variables. The null hypothesis is rejected if the p-value is less than the level of significance. The null hypothesis is accepted if the P-value is greater than or equal to the level of significance. If the null hypothesis is rejected, it means that the association or interdependence between variables 1 and 2 is quite significant. That is, if a randomly identified observation belongs to category 1 of variable 1, it is also likely to belong to category 1 of variable 2 (assuming that the categories of variables 1 and 2 have been ordered systematically, in an increasing or decreasing order of strength of influencing the dependent variable Y).

Validity was ensured by using face validity (Hair, Black, Babin & Anderson, 2010). This was done by pre-testing the questionnaire of study based on a pilot study of size 5 respondents. Reliability and internal consistency were ensured by using the Cronbach Alpha test (Hair, Black, Babin & Anderson, 2010). The Cronbach Alpha test produces a coefficient that could be used for assessing degree of reliability and internal consistency. Cronbach Alpha coefficients of 75% or above indicate that the data collection tools and instruments are internally consistent and reliable (Hair, Black, Babin & Anderson, 2010).

Ethical approval was obtained for the study from the Research Ethics Committee at Tshwane University of Technology (TUT) through the supervisor of study. Standard ethical guidelines and procedures were followed for gathering data from each of the 120 respondents who took part in the study. Each of the participants took part in the study voluntarily, and signed an informed consent form prior to data collection. An explanation was provided to each of the respondents about the
Results of data analyses

The results showed that 68 of the 120 respondents (56.67%) were capable of providing highly professional administrative services to students and relevant stakeholders, whereas the remaining 52 respondents (43.33%) were unable to do the same. Table 1 shows a summary of personal characteristics of the 120 respondents who took part in the study.

<table>
<thead>
<tr>
<th>General characteristics of respondents</th>
<th>Frequency (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender of respondents</td>
<td></td>
</tr>
<tr>
<td>Male: 41 (34.17%)</td>
<td></td>
</tr>
<tr>
<td>Female: 79 (65.83%)</td>
<td></td>
</tr>
<tr>
<td>Age category of respondents in years</td>
<td></td>
</tr>
<tr>
<td>Less than 20: 1 (0.83%)</td>
<td></td>
</tr>
<tr>
<td>20 to 30: 16 (13.33%)</td>
<td></td>
</tr>
<tr>
<td>31 to 40: 55 (45.83%)</td>
<td></td>
</tr>
<tr>
<td>41 to 50: 33 (27.50%)</td>
<td></td>
</tr>
<tr>
<td>51 or more: 15 (12.50%)</td>
<td></td>
</tr>
<tr>
<td>Highest level of education of respondents</td>
<td></td>
</tr>
<tr>
<td>Senior certificate: 25 (20.83%)</td>
<td></td>
</tr>
<tr>
<td>Diploma: 30 (25.00%)</td>
<td></td>
</tr>
<tr>
<td>Bachelor’s degree: 58 (48.33%)</td>
<td></td>
</tr>
<tr>
<td>Master’s degree: 7 (5.83%)</td>
<td></td>
</tr>
<tr>
<td>Position of respondents</td>
<td></td>
</tr>
<tr>
<td>Administrator: 96 (80.00%)</td>
<td></td>
</tr>
<tr>
<td>Senior administrator: 24 (20.00%)</td>
<td></td>
</tr>
<tr>
<td>Duration of service in years</td>
<td></td>
</tr>
<tr>
<td>Three or less: 14 (11.67%)</td>
<td></td>
</tr>
<tr>
<td>Four to seven: 36 (30.00%)</td>
<td></td>
</tr>
</tbody>
</table>
It can be seen from Table 1 that about 66% of the 120 respondents were female, whereas about 34% of respondents were male. The percentage of respondents whose ages were between 31 and 40 years was about 46%. The percentage of respondents with Master’s degree qualifications was about 6%. The percentage of senior administrators was equal to 20%. About 58% of respondents had served TUT for more than seven years at the time of the study.

Pearson’s chi-square tests of associations (Hair, Black, Babin and Anderson, 2010) of two-by-two cross-tab analyses were used for assessing the strength of association between the ability to provide students with highly professional admission related services and various socioeconomic characteristics of the 120 respondents who were selected for the study. Table 2 shows significant two-by-two associations that were obtained from cross-tab analyses. The table shows observed chi-square values and P-values for 10 significant two-by-two associations between the ability of respondents to provide students with highly professional services and various socioeconomic characteristics of the 120 respondents who were selected for the study. At the 0.05 level of significance, significant associations have P-values that are smaller than 0.05.

<table>
<thead>
<tr>
<th>List of 10 variables significantly associated with the ability of employees to provide highly professional services to students</th>
<th>Chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having the best interest of customers at all times</td>
<td>86.1015</td>
<td>0.000***</td>
</tr>
<tr>
<td>Showing courtesy to customers at all times</td>
<td>66.5520</td>
<td>0.000***</td>
</tr>
<tr>
<td>Complete devotion to customers at all times</td>
<td>60.4042</td>
<td>0.000***</td>
</tr>
<tr>
<td>Understanding the specific needs of customers</td>
<td>57.6980</td>
<td>0.000***</td>
</tr>
<tr>
<td>Providing customers accurate and prompt information about services at all times</td>
<td>49.6062</td>
<td>0.000***</td>
</tr>
<tr>
<td>Having adequate knowledge about procedures and queries from customers</td>
<td>47.6640</td>
<td>0.000***</td>
</tr>
<tr>
<td>Having enough confidence about procedures and</td>
<td>46.8382</td>
<td>0.000***</td>
</tr>
</tbody>
</table>
In Table 2, it can be seen that the ability to provide students with highly professional services was significantly associated with 10 variables. These 10 variables are: Having the best interest of customers at all times, showing courtesy to customers at all times, complete devotion to customers at all times, understanding the specific needs of customers, providing customers accurate and prompt information about services at all times, having adequate knowledge about procedures and queries from customers, having enough confidence about procedures and queries from customers, willingness to assist customers at all times, ability to give individual attention to customers at all times, and sincerity to customers, in a decreasing order of strength.

Logit analysis (Hosmer and Lemeshow, 2013) was used in order to identify key predictors of the ability of the 120 respondents who were selected for the study to provide highly professional services to students and relevant stakeholders. The procedure showed that the ability of the 120 respondents in the study to provide highly professional services to students and relevant stakeholders was significantly influenced by 3 predictor variables. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength. In logistic regression analysis, the measure of effect is the odds ratio. At the 5% level of significance, significant predictor variables are characterised by odds ratios that differ from 1 significantly, P-values that are smaller than 0.05, and 95% confidence intervals that do not contain 1. Table 3 shows odds ratios estimated from logit analysis. It can be seen from the table that all 3 predictor variables were highly significant at the 5% level of significance.

<table>
<thead>
<tr>
<th>Factors that affect ability to provide highly professional services to students and relevant stakeholders</th>
<th>Odds Ratio</th>
<th>P-value</th>
<th>95% C. I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having the best interest of customers at all times</td>
<td>158.50</td>
<td>0.000</td>
<td>(12.06, 2084.025)</td>
</tr>
</tbody>
</table>

Table 3: Results from binary logistic regression analysis
Having adequate knowledge about procedures and queries from customers & 8.68 & 0.021 & (1.39, 54.18) \\
Showing courtesy to customers at all times & 8.04 & 0.023 & (1.33, 48.43) \\

The percentage of overall correct classification for this procedure was equal to 91.60%. Percentage sensitivity for the fitted logistic regression model was equal to 90.38%. Percentage specificity for the fitted logistic regression model was equal to 92.54%. The P-value obtained from the Hosmer-Lemeshow goodness-of-fit test was equal to 0.2296 > 0.05. This indicates that the fitted logistic regression model is fairly well reliable.

**Interpretation of significant odds ratios**

The odds ratio of the variable “having the best interest of customers at all times” is equal to 158.50. This indicates that an employee who does not have the best interest of customers at all times is 158.50 times as likely to fail in comparison with another employee who has the best interest of customers at all times with regards to providing highly professional services to students and relevant stakeholders.

The odds ratio of the variable “having adequate knowledge about procedures and queries from customers” is equal to 8.68. This indicates that an employee who does not have adequate knowledge about procedures and queries from customers is 8.68 times as likely to fail in comparison with another employee who has adequate knowledge about procedures and queries from customers with regards to providing highly professional services to students and relevant stakeholders.

The odds ratio of the variable “showing courtesy to customers at all times” is equal to 8.04. This indicates that an employee who does not show courtesy to customers at all times is 8.04 times as likely to fail in comparison with another employee who shows courtesy to customers at all times with regards to providing highly professional services to students and relevant stakeholders.

Makov Chain Monte Carlo (MCMC) algorithms and Bayesian analysis (Browne and Goldstein, 2010) were used for performing bootstrapping simulations. MCMC algorithms are used for solving multilevel problems that involve the construction of constrained variance matrices in cases where linear estimation techniques fail to produce theoretically reliable estimates of parameters.

**Error! Reference source not found.** Table 4 shows regression coefficients estimated from MCMC algorithms and Bayesian analysis. At the 5% level of significance, influential predictor variables of satisfactory performance are characterized by estimated regression coefficients that differ from 0
significantly, P-values that are smaller than 0.05, and 95% confidence intervals that do not contain the number 0.

Table 4: Regression coefficients estimated from Bayesian analysis

<table>
<thead>
<tr>
<th>Factors that affect ability to provide highly professional services to students and relevant stakeholders</th>
<th>Regression coefficient</th>
<th>95% Confidence Interval</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having the best interest of customers at all times</td>
<td>5.07</td>
<td>(4.17, 8.58)</td>
<td>0.000</td>
</tr>
<tr>
<td>Having adequate knowledge about procedures and queries from customers</td>
<td>2.16</td>
<td>(1.89, 4.34)</td>
<td>0.002</td>
</tr>
<tr>
<td>Showing courtesy to customers at all times</td>
<td>2.08</td>
<td>(2.63, 4.19)</td>
<td>0.007</td>
</tr>
</tbody>
</table>

It can be seen from Table 4 that the ability of the 120 respondents in the study to provide highly professional services to students and relevant stakeholders was significantly influenced by 3 predictor variables. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength. These findings are quite similar to the ones obtained from logit analysis.

Discussion of results

The study has shown that about 57% of administrative employees were capable of providing highly professional services to students and relevant stakeholders by the standards of Korschun, Bhattacharya and Swain (2014), whereas the remaining 43% of employees were incapable of doing the same. Results obtained from logit analysis, MCMC algorithms and Bayesian analysis showed that the ability of employees to provide highly professional admission related services to students and relevant stakeholders was significantly influenced by 3 factors. These predictor variables were having the best interest of customers at all times, having adequate knowledge about procedures and queries from customers, and showing courtesy to customers at all times, in a decreasing order of strength.

Findings obtained from the study could be used for improving the quality of administrative services that are provided to students of TUT. Administrative employees of TUT offer a wide variety of essential services to first time applicants and enrolled students. Examples of such services are the provision of basic information on admission and enrollment requirements, clarification on issues, completing application forms (paper-based and online), checking and verifying requirements, the provision of residence-related services, the provision of health-related services, the provision of
library-related services, the provision of transportation related services, the provision of security on campus, the provision of food and catering services, liaison with student representatives on all campuses, checking and verifying the authenticity of academic records and identity documents, providing finance related information to applicants, the collection of application fees to applicants, confirmation of admission to applicants, providing answers to questions, resolving queries from applicants, collecting and storing academic and financial records of applicants, and the provision of general and field-specific information to applicants. The quality of administrative services that are provided to applicants are critically important to applicants in view of the fact that first-time applicants are often not fully and accurately informed about the choices they can make on admission and enrolment at TUT.

According to Bharuthram (2012), Basch (2011) and Belle (2013), there is a significant association between the quality of administrative services that are provided by administrative employees of tertiary level academic institutions and overall academic performance. The study conducted by Cerasoli, Nicklin and Ford (2014) has shown that intrinsic motivation and extrinsic incentives jointly predict overall academic performance by learners. Kunter, Klusmann, Baumert, Richter, Voss and Hachfeld (2013) have pointed out that there is a significant association among the professional competence of teachers, the quality of instruction and student development. Lepp, Barkley and Karpinski (2014) have reported that there is a significant relationship between academic performance and the ability of universities to provide satisfactory administrative services to learners.

Padro (2015) has recommended the use of a comprehensive monitoring and evaluation programme as a means of ensuring the provision of highly efficient, affordable and quality administrative services to all enrolled students and relevant stakeholders. Students have staged protests over poor service delivery at many South African academic institutions including TUT in the past several years. According to the author, the only reliable method of addressing the likelihood of protests is to render quality and affordable services at all TUT campuses. Students must be educated on fees and administrative requirements and procedures that must be adhered to by all students. The leaderships of TUT have handled such protests by using constructive dialogues and innovative methods that were mutually beneficial for students and the university. Annual reports issued by TUT since 2004 show that improving the quality and efficiency of administrative services to students has a significant association with overall satisfaction with the quality of services provided to students and applicants. The leadership at TUT have implemented an online registration and admission system to all students and first-time applicants. The online system is highly beneficial to both students and management. Although the online system has encountered a few problems such as lack of access to the internet, it has been found to be highly effective and beneficial. All first time applicants are required to meet registration requirements. TUT has a dedicated office for admission and registration at all campuses. New applicants are required to complete admission forms and to have the completed forms submitted with supporting legal and academic documents to the admissions office. Every semester, students who are on the TUT system are required to complete registration forms for selected courses in the upcoming academic semester. The online system rolled out by TUT is expected to save valuable resources such as time and money to both students and TUT. The annual report issued by the Registrar’s Office of TUT indicates that the online system has enabled administrative employees to resolve queries and capture information efficiently and promptly.
Recommendations of study

Based on the findings of study, the following recommendations are made to the top management of Tshwane University of Technology with a view to contribute for the improvement of the quality of administrative services that are provided to first time applicants and enrolled students:

- Awareness campaigns should be launched at all campuses about the online system at TUT so that people could use the system more effectively;
- The online system at TUT should be made as user-friendly. This could be achieved by providing online assistance, by giving users the choice of preferred language, and by providing sample duly completed forms available as an example to first time users;
- Users should be provided with online help;
- Additional bandwidth should be provided to the online system at TUT in order to avoid the incidence of network related crashes;
- Training should be provided to administrative employees who need to upgrade their skills;
- A comprehensive monitoring and evaluation programme should be implemented as a means of ensuring service quality at all campuses of TUT.
- Rewards should be provided to top-performing employees as a means of boosting morale

List of references


PREDICTORS OF EFFICIENCY IN THE SUPPLY CHAIN MANAGEMENT OF ESSENTIAL MEDICINES

By

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ABSTRACT
A study was conducted in Limpopo Province, South Africa to assess and evaluate factors that undermine the quality of service delivery in the management of essential medicines. The study was based on a stratified random sample of size 135 health facilities scattered across the Province of Limpopo. Stratification was done by health district. Data was collected by using a structured, pretested and validated questionnaire of study. Criteria set out by Fauci (2008) and the World Health Organisation (Mendis, Fukino, Cameron, Laing, Filipe Jr, Khatib, Leowski & Ewen, 2007) were used as benchmark for the assessment of quality of services. The results showed that standards followed for storing and dispensing essential medicines were inadequate in 100 of the 135 health facilities that took part in the study (74.07%), whereas the standards followed for storing and dispensing essential medicines were adequate in 35 of the 135 health facilities (25.93%) that were selected for the study. Results obtained from binary logistic regression analysis showed that adherence to WHO standards on the proper management of essential medicines at health facilities was influenced by 3 factors. These 3 predictor variables of study were: adherence to recruitment policy, taking inventory of essential medicines regularly, and the availability of adequate storage facility for essential medicines, in a decreasing order of strength.

Key words: Limpopo Province, Supply Chain Management, Essential medicines, WHO standards, Efficiency, Odds ratios
INTRODUCTION

The study was conducted in the province of Limpopo in order to assess the overall efficiency with which essential medicines were managed in health facilities. The benchmark for adequate services was defined according to the requirements, guidelines and regulations issued by the World Health Organisation (WHO, 2007) to member countries. Essential medicines include all drugs and medical supplies that are listed on the list of medical supplies that must be made available at all times at all private and public health facilities operating in South Africa. In this regard, it is the duty and obligation of the South African National Department of Health (2016) to ensure the availability of essential medicines at all public health care facilities. The Limpopo Provincial Government of Health (2016) is equally responsible for ensuring the availability of essential medicines at all health care facilities operating in the province of Limpopo. The South African Constitution of 1996 (South African National Government Communications and Information Systems, 1996) states that all South Africans are entitled to adequate health care services in which essential medicines are required by law to be made available at all public and private health facilities. A complex supply chains web are used for manufacturing, storing, transporting and disseminating essential medicines to the patients. The purpose of this study was to assess and evaluate the degree of efficiency with which essential medicines were managed in health care facilities in the province of Limpopo by using WHO standards as a benchmark.

The study was conducted by gathering empirical data from employees whose duty is to manage essential medicines in public and private health facilities operating in Limpopo Province. According to Quick and Rankin (2005) medicines save lives and improve health, their non-availability increases the burden of disease. Many leading causes of discomfort, disability and premature death can be prevented, treated or at least alleviated with cost-effective essential medicines (Embrey, 2012). According to Constitution of South Africa, access to affordable essential medicines is a basic human right and a vital component of an efficient health care system. One of the objectives of the National Drug Policy (NDP) is therefore to ensure the availability and accessibility of essential medicines to all citizens of South Africa (NDOH, 2015). In order to address such issues, factors affecting the performance of essential medicines need to be identified in order to give guidelines to managers throughout the health system. In order to achieve this, the South Africa National Department of Health set of National Core
Standards (NCS) (NDOH, 2015). Currently, Limpopo Department of Health (LDoH) has outsourced the distribution and warehousing of pharmaceuticals (Bennett, Quick & Velasquez, 2010; Summers, Moller, Meyer & Botha, 2011). From this background this study is to attempts to identity the current challenges faced by the pharmaceutical supply system in Limpopo Province and to determine factors affecting the performance of essential medicines supply chain management.

BACKGROUND OF STUDY

The study was conducted against the background of lack of accurate empirical evidence and scientific studies that could be used for identifying and quantifying key predictors of efficiency in the management, storage, administration and dispensation of essential medicines and drugs in the province of Limpopo. Health facilities in the province of Limpopo are characterised by the acute shortage of essential medicines and drugs. Although essential medicines and drugs are supposed to be managed according to criteria set out by the World Health Organisation (WHO), guidelines set out by the WHO are often disregarded and violated. As a result, the quality of health care services provided to the general population in Limpopo has reduced. The study aimed to fill the gap by conducting an empirical study that could be used for prioritising plans of actions set out by the Provincial Department of Health in Limpopo.

Essential medicines and drugs save lives and improve health, non-availability of essential medicines increases the burden of disease (Quick & Rankin, 2005). Many leading causes of discomfort, disability and premature death can be prevented, treated or at least alleviated with cost-effective essential medicines (Embrey, 2012). Access to affordable essential medicines is a basic human right and a vital component of an efficient health care system. One of the objectives of the National Drug Policy (NDP) is to ensure the availability and accessibility of essential medicines to all citizens of South Africa (NDoH, 2010). In South Africa’s resource-constrained environment, with its high burden of disease, the National Department of Health introduced Standard Treatment Guidelines (STGs) and Essential Medicines Lists (EMLs) to ensure affordable and equitable access to essential medicines (NDoH, 2012). Essential medicines should therefore be available at all times, in adequate amounts and in the proper dosage forms (Sousa, 2013). Unfortunately there is often uncoordinated pharmaceutical stock management between
pharmaceutical depots and health facilities, resulting in stock-outs situations at health care facilities. This situation also applied in Limpopo Province in South Africa (WHO, 2009).

According to the World Health Organization framework for health system (WHO, 2010:60), a well-functioning health system ensures equitable access to essential medicines products, vaccines and technologies of assured quality, safety, efficacy and cost effectiveness. In South Africa, the most notable criticism is the alarming shortage of essential medicines in public health facilities mainly in Limpopo public healthcare, as there is a gap between their actual and budgeted performance (Limpopo Provincial Department of Health, 2011-12). From the above deliberation, it is crystal clear that factors affecting performance of essential medicines has to be identified, hence this study is intended to cover that.

LITERATURE REVIEW

The majority of South Africans are dependent on the government to provide for their health care needs, mainly through public health care institutions. It is therefore crucial for the government to ensure efficient availability of essential medicine at all public health care facilities. Essential medicines are considered as the most necessity to all citizens of South Africa. The South African health care system has come a long way since 1994. According to National Department of Health (NDOH) (2005:3) its building blocks are in place to provide a comprehensive health system that is underpinned by quality, skilled workforce and appropriate infrastructure. This is also reinforced by impressive constitutional, legal and policy frame that guarantees the right to access health care to all persons in South Africa.

The WHO (2007), formulated a four-part framework to guide and coordinate collective action to improve access to essential medicines by identifying the factors affecting the performance of essential medicines, which was adopted by many scholars such as Obrist et al. (2007:2) and Bigdeli et al. (2012:5). Here are factors outlined by the WHO (2004); selection of essential drugs, affordable prices, sustainable financing; and reliable health and supply systems.
The South African Government has introduced National Health Insurance (NHI) plan to ensure and mitigate the provision of equitable health care service to all South African at reasonable cost. Now the remaining most complex challenge is access to essential medicine. This research aims to shed light on the predictors of efficiency in the supply chain management of essential medicines in Limpopo public health care. The research findings of this study will be of significant importance to other researchers. Many researchers are mainly focusing on the private sector supply chain performance measurement than on public health care supply chain performance measurement hence there are lots of challenges facing essential medicines supply chain that need to be addressed. This study will eliminate the exiting gap, while adding value on the performance of essential medicines supply chain management at the public sector. This research will further provide insight on the development of a new framework, which will then be a blue print to many scholars and service providers in this discipline. It will also give guidelines to managers throughout the health system in South Africa a set of National Core Standards (NCS) for Health Establishments was launched in 2008 (NDOH, 2011).

Ensuring efficiency and optimal service delivery in the distribution of essential medicines to all South Africans is a strategic priority of all National Health Departments globally. Intensive research indicate that existing service delivery models, supply chains, frameworks and models are grossly inadequate for ensuring the efficient distribution of essential medicines in Limpopo Province (LP) (LEAP Pty Ltd, 2012). However, there is still a potential for developing an efficient supply chain model that could be used for distributing essential medicines in public health care facilities in LP.
METHODS AND MATERIALS OF STUDY

Efficiency in the proper management of essential medicines was defined based on the degree of adherence to standards set out by Fauci (2008: 1918-1925) and the World Health Organisation (Mendis, Fukino, Cameron, Laing, Filipe Jr, Khatib, Leowski & Ewen, 2007: 279-288) for the proper storage and dispensation of essential medicines in public and private health facilities in Sub-Saharan African countries. The degree of adherence to WHO standards was measured by using a 5-point ordinal scale.

1. Strong adherence
2. Moderate adherence
3. Neutral
4. Moderate lack of adherence
5. Strong lack of adherence

As the values of variables vary from 1 (highest level of adherence) to 5 (lowest level of adherence), the degree of compliance with recommended guidelines for the proper management of essential medicines decreases. For the purpose of performing cross-tab analyses and binary logistic regression analysis, it was necessary to reduce the number of categories of 5-point variables from 5 to 2. Doing so was necessary in view of the fact that the sample size of study was only 135. Cross-tab analyses and binary logistic regression analysis were performed by reducing the number of categories of the variables of study from 5 to 2. The new categories of variables were defined as follows:

Definition of 2-point nominal scale measurements

1. Adequate adherence to WHO standards (Strong adherence or moderate adherence)
2. Inadequate adherence to WHO standards (Neutral, moderate lack of adherence or strong lack of adherence)

Cross-tab analyses or Pearson’s chi-square tests of association (Weiss and Weiss, 2012) were used for assessing the strength of association or interdependence between two or more categorical variables. At the 5% level of significance, the strength of association between two categorical variables is said to be statistically significant if the P-value is smaller than 0.05. If the P-value is greater than or equal to 0.05, it is said that the two variables are independent of each other at the 5% level of significance. In this study, all expected cell frequencies were greater than 5. As such, results of data analysis obtained from Pearson’s chi-square tests of association were all valid.

RESULTS OF STUDY

Based on the criteria set out by Fauci (2008: 1918-1925) and the World Health Organisation (Mendis, Fukino, Cameron, Laing, Filipe Jr, Khatib, Leowski & Ewen, 2007: 279-288), for the proper storage and dispensation of essential medicines in public and private health facilities in Sub-Saharan African countries, the results showed that standards followed for storing and dispensing essential medicines were inadequate according to assessments made by 100 of the 135 respondents who took part in the study (74.07%), whereas the standards followed for storing and dispensing essential medicines were adequate according to assessments made by 35 of the 135 respondents who took part in the study (25.93%). Ten of the 135 respondents who took part in the study (7.41%) worked in depots, whereas the remaining 125 respondents (92.59%) worked in hospitals. More than half (54.81%) of respondents had worked for five years or less, whereas 45.19% of respondents had worked for six years or more at the time the study was conducted. A little more than half (52.59%) of respondents were female, whereas 47.41% of respondents were
male. More than eighty percent (81.49%) of respondents were pharmacists, whereas 18.52% of respondents had other qualifications. More than ninety percent (91.11%) of respondents were permanently employed, whereas 8.89% of employees were temporarily employed.

Table 1 shows the general socioeconomic characteristics of the 135 participants who took part in the study.

Table 1: General characteristics of respondents (n=135)

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Frequency (Percentage)</th>
</tr>
</thead>
</table>
| Overall efficiency in the proper storage of essential medicines by WHO standards | Adequate: 35 (25.93%)  
Inadequate: 100 (74.07%) |
| Type of health facility of respondent                  | Hospital: 125 (92.59%)  
Depot: 10 (7.41%) |
| Years of service of respondent                         | Five years or less: 74 (54.81%)  
Six years or more: 61 (45.19%) |
| Gender of respondent                                   | Male: 64 (47.41%)  
Female: 71 (52.59%) |
| Position of employee in company                        | Pharmacist: 110 (81.48%)  
Others: 25 (18.52%) |
| Age category of respondent                             | 20 to 25 years: 33 (24.44%)  
26 to 50 years: 89 (65.93%)  
51 to 60 years: 13 (9.63%) |
| Appointment status of respondent                       | Permanent: 123 (91.11%)  
Temporary: 12 (8.89%) |
| Highest level of formal education                      | Matric, certificate or diploma: 20 (14.81%)  
Bachelor’s degree: 81 (60.00%)  
Master’s degree or above: 34 (25.19%) |
| Reorder of medicines by pharmacist                     | Yes: 122 (90.37%)  
No: 13 (9.63%) |
Table 2 shows actual frequency counts and percentages for problems related to distribution of essential medicines at the various health facilities that were selected for the study.

**Table 2: Prevalence of distribution related problems (n=135)**

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Frequency (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enough essential medicines are available</td>
<td>Always: 9 (6.67%)</td>
</tr>
<tr>
<td></td>
<td>Frequently: 22 (16.30%)</td>
</tr>
</tbody>
</table>
Occasionally: 53 (39.26%)
Never: 46 (34.07%)
Not known: 5 (3.70%)

Average stock out duration
7 days or less: 27 (20.00%)
8 to 30 days: 72 (53.33%)
31 to 60 days: 32 (23.70%)
61 days or more: 4 (2.96%)

Experience of delay in delivery
Never: 5 (3.70%)
Rarely: 10 (7.41%)
Sometimes: 47 (34.81%)
Often: 41 (30.37%)
Always: 32 (23.70%)

Experience of forecast error
Never: 16 (11.85%)
Rarely: 37 (27.41%)
Sometimes: 38 (28.15%)
Often: 28 (20.74%)
Always: 16 (11.85%)

Conformity with standard operating procedures
Never: 0 (0.00%)
Rarely: 16 (11.85%)
Sometimes: 47 (34.81%)
Often: 46 (34.07%)
Always: 26 (19.26%)

Table 3 shows the extent of problems related to the storage of essential medicines.

Table 3: Problems related to the storage of essential medicines (n=135)

<table>
<thead>
<tr>
<th>Variable of study</th>
<th>Frequency (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems of storing essential medicines properly</td>
<td>Never: 14 (10.37%)</td>
</tr>
<tr>
<td></td>
<td>Rarely: 16 (11.85%)</td>
</tr>
<tr>
<td>Category</td>
<td>Distribution</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Sometimes: 16 (11.85%)</td>
<td></td>
</tr>
<tr>
<td>Often: 45 (33.33%)</td>
<td></td>
</tr>
<tr>
<td>Always: 44 (32.59%)</td>
<td></td>
</tr>
<tr>
<td>Percentage of expired drugs</td>
<td></td>
</tr>
<tr>
<td>1% or less: 42 (31.11%)</td>
<td></td>
</tr>
<tr>
<td>2% to 5%: 42 (31.11%)</td>
<td></td>
</tr>
<tr>
<td>6% to 30%: 36 (26.67%)</td>
<td></td>
</tr>
<tr>
<td>31% to 50%: 12 (8.89%)</td>
<td></td>
</tr>
<tr>
<td>51% or more: 3 (2.22%)</td>
<td></td>
</tr>
<tr>
<td>Lack of respect for standard operating procedures and guidelines on essential medicines</td>
<td></td>
</tr>
<tr>
<td>Never: 11 (8.15%)</td>
<td></td>
</tr>
<tr>
<td>Rarely: 21 (15.56%)</td>
<td></td>
</tr>
<tr>
<td>Sometimes: 30 (22.22%)</td>
<td></td>
</tr>
<tr>
<td>Often: 36 (26.67%)</td>
<td></td>
</tr>
<tr>
<td>Always: 37 (27.41%)</td>
<td></td>
</tr>
<tr>
<td>Modification of standard transportation guidelines</td>
<td></td>
</tr>
<tr>
<td>Never: 10 (7.41%)</td>
<td></td>
</tr>
<tr>
<td>Rarely: 26 (19.26%)</td>
<td></td>
</tr>
<tr>
<td>Sometimes: 44 (32.59%)</td>
<td></td>
</tr>
<tr>
<td>Often: 32 (23.70%)</td>
<td></td>
</tr>
<tr>
<td>Always: 23 (17.04%)</td>
<td></td>
</tr>
<tr>
<td>Error in forecast</td>
<td></td>
</tr>
<tr>
<td>Never: 9 (6.67%)</td>
<td></td>
</tr>
<tr>
<td>Rarely: 31 (22.96%)</td>
<td></td>
</tr>
<tr>
<td>Sometimes: 42 (31.11%)</td>
<td></td>
</tr>
<tr>
<td>Often: 40 (29.63%)</td>
<td></td>
</tr>
<tr>
<td>Always: 13 (9.63%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows 22 significant two-by-two associations obtained from Pearson’s chi-square tests of associations. At the 5% level of significance, significant associations have large observed chi-square values and P-values that are smaller than 0.05. All in all, 134 two-by-two tests of
associations were performed. Twenty two of the 134 two-by-two associations were significant at the 5% level of significance.

**Table 4: Results obtained from cross-tab analyses (n=135)**

<table>
<thead>
<tr>
<th>List of 22 variables significantly associated with inadequate adherence to WHO standards that are recommended for the proper management of essential medicines</th>
<th>Observed chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient methods not used</td>
<td>135.0000</td>
<td>0.000***</td>
</tr>
<tr>
<td>Effective methods not used</td>
<td>104.6250</td>
<td>0.000***</td>
</tr>
<tr>
<td>Inadequate storage of essential medicines</td>
<td>13.9234</td>
<td>0.000***</td>
</tr>
<tr>
<td>Poor forecasting</td>
<td>13.5082</td>
<td>0.000***</td>
</tr>
<tr>
<td>Order policy not followed properly</td>
<td>11.2706</td>
<td>0.001**</td>
</tr>
<tr>
<td>Recruitment policy not followed properly</td>
<td>9.3343</td>
<td>0.002**</td>
</tr>
<tr>
<td>Failure to adhere to FEF principles</td>
<td>8.9535</td>
<td>0.003**</td>
</tr>
<tr>
<td>Inadequate supply of medicines</td>
<td>8.9182</td>
<td>0.003**</td>
</tr>
<tr>
<td>Inventory problems</td>
<td>8.3424</td>
<td>0.004**</td>
</tr>
<tr>
<td>Use of unreliable transport</td>
<td>7.9115</td>
<td>0.005**</td>
</tr>
<tr>
<td>Poor communication</td>
<td>7.3495</td>
<td>0.007**</td>
</tr>
<tr>
<td>Storage policy not followed properly</td>
<td>7.2634</td>
<td>0.007**</td>
</tr>
<tr>
<td>Type of facility</td>
<td>6.5294</td>
<td>0.011*</td>
</tr>
<tr>
<td>Excess supply</td>
<td>6.3350</td>
<td>0.012*</td>
</tr>
<tr>
<td>Order cycle not appropriate enough (Wrong lead time)</td>
<td>6.2562</td>
<td>0.012*</td>
</tr>
<tr>
<td>Stock policy not followed properly</td>
<td>5.7367</td>
<td>0.017*</td>
</tr>
<tr>
<td>Ordering system not efficient enough</td>
<td>5.6104</td>
<td>0.018*</td>
</tr>
<tr>
<td>Ordering system not effective enough</td>
<td>5.6104</td>
<td>0.018*</td>
</tr>
<tr>
<td>Poor handling of essential medicines</td>
<td>4.4740</td>
<td>0.034*</td>
</tr>
<tr>
<td>Storage space not large enough</td>
<td>5.4542</td>
<td>0.020*</td>
</tr>
</tbody>
</table>
Results of data analysis obtained from cross-tab analyses showed that 22 of the 134 variables of study were significant predictors of lack of efficiency in adhering to WHO standards on the management of essential medicines at the 5% level of significance. These 22 predictor variables of study were: failure to use efficient methods of management, failure to use effective methods of management, inadequate storage of essential medicines, poor forecasting, failure to follow policy on order, failure to follow policy on recruitment, failure to adhere to the principle of “first-expiry-first-dispensing” (FEF), inadequate supply of medicines, inventory problems, use of unreliable transport, poor communication, failure to follow policy on the storage of essential medicines, type of facility, excess supply, wrong lead-time, failure to follow policy on stock properly, lack of efficiency in ordering system, ineffective ordering system, poor handling of essential medicines, small size of storage space, problems related to distribution, and use of unqualified staff, in a decreasing order of strength.

The 22 significant variables of study identified by using cross-tab analyses were used for performing subsequent analysis by using binary logistic regression analysis (Hosmer and Lemeshow, 2013). The aim was to identify and quantify a fewer number of influential predictors of adherence to WHO standards with regards to the management of essential medicines. This was done by using the stepwise backward elimination procedure. In binary logistic regression analysis, the outcome variable of study has only 2 possible values, and not 5 possible values. The mathematical expression of the dependent variable of study (Y) is shown below:

\[ Y: \text{Degree of adherence to WHO standards on the management of essential medicines} \]
\[ Y = \begin{cases} 
1 & \text{if respondent is inefficient in the management of essential medicines} \\
0 & \text{otherwise} 
\end{cases} \]

Table 5: Odds Ratios estimated from logistic regression analysis

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>P-value</th>
<th>OR and 95% Confidence Intervals of Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to adhere to recruitment policy</td>
<td>0.000***</td>
<td>7.16 (4.67, 9.15)</td>
</tr>
<tr>
<td>Failure to take regular inventory</td>
<td>0.001**</td>
<td>6.91 (4.64, 8.04)</td>
</tr>
<tr>
<td>Inadequate storage facility</td>
<td>0.003**</td>
<td>6.16 (4.59, 8.71)</td>
</tr>
</tbody>
</table>

Results of data analysis obtained from logistic regression analysis showed that 3 of the 26 variables of study were significant predictors of adherence to WHO standards on the proper management of essential medicines at health facilities at the 5% level of significance. These 3 predictor variables of study were: adherence to recruitment policy, taking inventory of essential medicines regularly, and the availability of adequate storage facility for essential medicines, in a decreasing order of strength.

Table 6 shows results obtained from log-linear analysis (Agresti, 2003:39) in order to identify key predictor variables that were significantly associated with each other.

Table 6: Results obtained from log-linear analysis

<table>
<thead>
<tr>
<th>Interactions of order k=2</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor overall performance and failure to adhere to recruitment policy</td>
<td>0.0000</td>
</tr>
<tr>
<td>Poor overall performance and failure to take regular inventory of essential medicines</td>
<td>0.0000</td>
</tr>
<tr>
<td>Poor overall performance and inadequate storage facility</td>
<td>0.0000</td>
</tr>
</tbody>
</table>
The above results were tested on interactions of order \( k=2 \). The results show that poor overall performance is significantly associated with failure to adhere to recruitment policy, failure to take regular inventory of essential medicines, and inadequate storage facility for essential medicines at the 5\% level of significance. These findings are fairly similar with results obtained from binary logistic regression analysis.

Factor analysis was used for reducing the number of factors that had to be analysed. The method produced 5 influential predictor variables that influenced the degree of performance of respondents with regards to the proper management of essential medicines. Factor analysis is useful in cases where the correlation among the variables of study is significant. The correlation matrix in this study showed that several pairs of variables had correlations exceeding 0.3, thereby showing that factor analysis was appropriate. In this study, a cutoff point of 0.3 was used as is recommended by Field (2010:138). The variables found to be highly significant with inadequate overall performance in the management of essential medicines were the following:

- Failure to use efficient methods for the management of essential medicines;
- Failure to use effective methods for the management of essential medicines;
- Inadequate storage of essential medicines;
- Poor ability in forecasting future supplies of essential medicines; and
- Failure to follow policy on order, in a decreasing order of importance.

The Cronbach Alpha test for internal consistency was used for testing the suitability of the 134-item structured questionnaire of study. The test gave a value of 0.8114 and an associated level of significance that was smaller than 0.001. Furthermore, Bartlett’s test of Sphericity was used for testing the adequacy of the correlation matrix, and gave an estimate of 0.794, a figure that was
greater than the cut-off point of 0.5, thereby confirming the suitability of factor analysis. Table 7 shows results obtained from factor analysis.

**Table 7: Estimates obtained from factor analysis**

<table>
<thead>
<tr>
<th>Extracted factor</th>
<th>Eigen value</th>
<th>Percentage of explained variance in viability</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficient methods not used</td>
<td>3.089</td>
<td>30.084</td>
<td>30.084</td>
</tr>
<tr>
<td>Effective methods not used</td>
<td>2.998</td>
<td>20.882</td>
<td>50.966</td>
</tr>
<tr>
<td>Inadequate storage of essential medicines</td>
<td>2.671</td>
<td>14.229</td>
<td>65.195</td>
</tr>
<tr>
<td>Poor forecasting</td>
<td>2.447</td>
<td>13.101</td>
<td>78.296</td>
</tr>
<tr>
<td>Order policy not followed properly</td>
<td>2.282</td>
<td>2.558</td>
<td>80.854</td>
</tr>
</tbody>
</table>

The results in Table 7 provide estimates for the percentage of variance explained by the 5 factors that were extracted by using the principal axis factoring method. Each of the 5 extracted factors has an Eigen value of magnitude greater than 1, thereby indicating its level of importance in terms of accounting for viability in business. The 5 extracted factors collectively account for 80.854% of the total variability in overall performance (the dependent variable of study). Based on the estimates shown above, it can be concluded that overall performance in the management of essential medicines is significantly and adversely affected by the following 5 factors:

1. Failure to use efficient methods of management
2. Failure to use effective methods of management
3. Inadequate storage for essential medicines
4. Poor forecasting of essential medicines
5. Failure to adhere to policy on ordering essential medicines

The 5 factors listed above accounted for 80.854% of satisfactory overall performance in the proper management of essential medicines. This figure is above 75%.

MAJOR FINDINGS OF STUDY

The objective of study was to identify and quantify key predictors of adherence to standards set out by the World Health Organization (WHO) for the proper management of essential medicines at health facilities in Sub-Saharan African countries including South Africa. The study was conducted by drawing a stratified random sample of size 135 health facilities scattered across the Province of Limpopo. Stratification was done by health district. Data was collected by using a structured, pretested and validated questionnaire of study. Data analyses were conducted by using methods such as frequency tables, cross-tab analyses (Pearson’s chi-square tests of associations) and binary logistic regression analysis. Based on the criteria set out by Fauci (2008) and the World Health Organisation (Mendis, Fukino, Cameron, Laing, Filipe Jr, Khatib, Leowski & Ewen, 2007) for the proper storage and dispensation of essential medicines in public and private health facilities in Sub-Saharan African countries, the results showed that standards followed for storing and dispensing essential medicines were inadequate according to assessments made by 100 of the 135 respondents who took part in the study (74.07%), whereas the standards followed for storing and dispensing essential medicines were adequate according to assessments made by 35 of the 135 respondents who took part in the study (25.93%).

Results of data analysis obtained from cross-tab analyses showed that 22 of the 134 variables of study were significant predictors of lack of efficiency in adhering to WHO standards on the management of essential medicines at the 5% level of significance. These 22 predictor variables of study were: failure to use efficient methods of management, failure to use effective methods
of management, inadequate storage of essential medicines, poor forecasting, failure to follow policy on order, failure to follow policy on recruitment, failure to adhere to the principle of “first-expiry-first-dispensing” (FEF), inadequate supply of medicines, inventory problems, use of unreliable transport, poor communication, failure to follow policy on the storage of essential medicines, type of facility, excess supply, wrong lead-time, failure to follow policy on stock properly, lack of efficiency in ordering system, ineffective ordering system, poor handling of essential medicines, small size of storage space, problems related to distribution, and use of unqualified staff, in a decreasing order of strength. Results obtained from binary logistic regression analysis showed that Results of data analysis obtained from logistic regression analysis showed that 3 of the 26 variables of study were significant predictors of adherence to WHO standards on the proper management of essential medicines at health facilities at the 5% level of significance. These 3 predictor variables of study were: adherence to recruitment policy, taking inventory of essential medicines regularly, and the availability of adequate storage facility for essential medicines, in a decreasing order of strength.

The key aim of study was to identify and quantify key predictors of adherence to standards set out by the World Health Organization (WHO) for the proper management of essential medicines at health facilities in the province of Limpopo. The study found that only 25.93% of the 135 respondents who took part in the study believed that there was adequate adherence with WHO standards, whereas 74.07% of respondents believed that there was inadequate adherence with WHO standards. The study found that the overall efficiency with which essential medicines are managed in the province of Limpopo was adversely affected by three factors. These three factors were lack of adherence to recruitment policy, failure to take inventory of essential medicines regularly, and lack of adequate storage facility for essential medicines.
RECOMMENDATIONS OF STUDY

Based on findings obtained from the study, the following recommendations are made to the Limpopo Provincial Department of Health with a view to enhance the current quality of management of essential medicines in health facilities operating in the province:

- The performance of employees working on essential medicines must be monitored and evaluated objectively on a regular basis;
- Key Performance Indicators (KPIs) must be used for assessing and evaluating the performance of all employees working on essential medicines;
- Training opportunities must be provided to employees who need to improve their degree of performance;
- There should be strict adherence to good governance principles by all employees working on the management of essential medicines;
- A comprehensive monitoring and evaluation programme must be used for monitoring employee performance on a monthly or quarterly basis;
- Inventory of essential medicines must be taken on a regular basis;
- All employees working on essential medicines must be required to comply with the South African Essential Medicines Control Act at all times;
- All essential medicines must be stored and distributed according to WHO guidelines at all times;
- Infrastructural requirements such as building maintenance should be addressed promptly by all employees working on essential medicines;
- All employees working on essential medicines must be encouraged to promote the concept of individual responsibility for health, preventive care and informed decision-making;
The measurement of performance must be done from a multi and interrelated perspective;

All procurement procedures must be objective, transparent and accountable;

All guidelines used for the management of essential medicines must be reliable, up-to-date and easy to understand and implement; and

All guidelines on essential medicines must be linked to the organization’s value and strategy.

LIST OF REFERENCES


Abstract

There is no model for human resources management in the public universities in Ghana and for that reason human resource practices follow western culture, i.e. what was inherited from the colonial masters where the needs of staff are not so much of a priority. Instead of developing and managing human capital for retention the colonial human resources practices inherited by the public universities focus mostly on recruitment and placement of staff with less interest in strategies to train and develop human capital in the form of experts, researchers and best academics. In an era of war on talent most universities loose the most knowledgeable and experienced academic employees because of lack of strategies to train, nurture and retain them. In Africa organisations that want to be ahead of others put the needs of employees first. This paper advocates for an African way of putting people first in human resources development and management to retain human capital. As a human resource practitioner in a Public University in Ghana for two decades this researcher has realized the need to make a paradigm’s shift to people-centred human resource practices. That is, to decolonize human resources practices in the public universities its value and recognised academic employees to make them aware that they are indeed part of the institution they work for. The study employed qualitative research approach in the form of interviews in data collection. It revealed that making human resources more people-centred can ensure staff commitment, increased productivity and retention, things institutions cannot take for granted.

Key words: human capital, people-centred, decolonisation, Africanisation, colonialism, paradigm’s shift, retention.
INTRODUCTION

The public Universities in Ghana do not have a model for human resources management. In the absence of such a model human resource practices in Ghanaian public universities follow western culture and practices, i.e. what was inherited from the colonial masters where the needs of academic staff are not so much of a priority compared to the institution’s agenda. Instead of developing and managing human capital as asset and retention for sustainability the colonial human resources practices inherited from the West focus on recruitment and placement of staff. Seems to be less interest in strategies to train and retain human capital in the form of experts, researchers and best academics who could carry and maintain the image of the universities as institutions of higher learning. In an era of war on talent, most universities could often lose the best, knowledgeable and experienced academic employees because of lack of strategies to train, nurture and retain them such best brains can be poached by other universities which provide academic employees with better conditions of service.

In Africa organisations that want to be ahead of others put the needs of employees first and this is what Ghanaian public universities have to do in order decolonize their human resources practices. This paper advocates for an African culture of putting people first in human resources development and management in Ghanaian public universities as a strategy to realise the commitment of staff and retain them as human capital base for the institutions. As a human resource practitioner in a Public University in Ghana for two decades this researcher has realized the need to make a paradigm’s shift to people-centred human resource practices. That is, to decolonize human resources practices in the public universities in Ghana to arrive at a situation where employees are valued, recognised and made aware that they are indeed part of the institution they work for. The study employed qualitative research approach in the form of interviews in data collection. The analysis of the data revealed that making human resources more people-centred can ensure staff commitment, increased productivity and retention, things higher educational public universities institutions such as cannot take for granted.
THEORETICAL FRAMEWORK

This paper is grounded in the African philosophy of *Ubuntu*. The term *Ubuntu* is a Zulu word meaning humanness, love, kindness, support or cooperation. Ubuntu is seen as traditional African concept which in English translation means “humanity towards others” ‘I am because we are; a person becomes human through other person’. It also means a person is a person because of other persons (Boaduo & Quan-Baffour, 2011:45; Poovan, 2005:16; Mbigi, 1997:2). The philosophy of Ubuntu indicates that a person is a person through other persons and no one is an island unto himself. *Ubuntu* is uniquely and proudly African and its origins can be traced back to the traditional indigenous societies living in South Africa where the people led communal lifestyle (Broodryk, 2002). Traditionally, African communities lived together and shared symbiotic relationships with each other. Broodryk (2002) and Mbigi and Maree (1995:7) share the common belief that the origin of *Ubuntu* lies in communities which were underprivileged, poor and could not survive on individual efforts alone. No man is an island unto himself and in order to survive the indigenous and rural African communities shared basic human needs such as shelter, food and water. Poovan (2005:15) affirms that *Ubuntu*, originated from Nguni language family, which comprises of Zulu, Xhosa, Swati and Ndebele. *Ubuntu* as a philosophy and praxis developed along deep spiritual lines within the traditional indigenous African family system. *Ubuntu* has become a way of life that Africans believe in, trust and practice in their daily interaction with others (Pooven, 2005:15). Nelson Mandela (2006:6), described *Ubuntu* as a philosophy constituting a universal truth, a way of life, which underpins an open society.

The philosophy of *Ubuntu* portrays an African world view of unity, respect, care and love for fellow human beings no matter where they come from. As humans we lead gregarious lives where we are connected to others (Quan-Baffour, 2014: 240). This is an affirmation of the fact that one is a human being because of being with other human beings. In deed without others we cease to be human. Human life is defined in terms of our relationship with others hence the need to cooperate, share, love, respect and have compassion for others. To be human is to affirm one’s humanity by recognising the humanity of others in its infinite variety of content and form (Quan-Baffour, 2014). The individual is not just a social being but a being inseparable from the community. Individuals are born into the community and they are physically, spiritually, emotionally attached to the community and will always remain part of that community till death.
Louw (2006:1-10) asserts that *Ubuntu* inspires us to expose ourselves to others; to encounter the differences of their humanness, so as to inform and enrich our own. This indigenous philosophy illustrates how an African is anchored with a community and connected to the members of the community (Poovan, 2005:16). In other words, if we are to be human then we need to recognize the genuine otherness of our fellow citizens, acknowledge the diversity of languages, histories, values and customs; all of which constitute the African society (Louw, 2006:1-10).

The philosophy of *Ubuntu* (humanness) has important implications for human resources management in every organization. It implies that Africans should look at whether what they are doing will enable or empower the community around them and help it to improve. The philosophy indicates that if an organisation treats its employees humanly they are likely to reciprocate by being committed, loyal and performing better. The *Ubuntu* philosophy implies that one can only increase one’s good fortune by sharing with other members of the society and thereby also enhancing their status within the local communities (Broodryk, 2005:75). This therefore simply means organisations like the universities which want to be ahead of others need to embrace their staff, especially academics, treat them humanly to ensure their commitment and loyalty to the employer. Under African governance and management practices, respect, dignity, caring, and sharing are considered critical values that build African communities (Bekker, 2006:1-15; Poovan et al., 2006:17-24).

The fundamentals of sharing, love, cooperation and compassion are prevalent in most African communities because true Africans do not discriminate against anyone in terms of language, tribe, religion or background. The attributes of *Ubuntu* show that an African society, which is humanist in nature, is also more community-based and socialist than Western society. Socially, organisations may be motivated to train their employees using *Ubuntu* as a philosophy, because doing so can help African organisations to develop a better understanding of African society and their roles as an integral part (corporate citizens) of that society. The positive attributes of *Ubuntu* also demonstrate what an organisation can gain in terms of understanding the seriousness of embracing a corporate conscience that is in line with African society (Kangaude-Ulaya & Khomba, 2013: 675).
African culture is very different from Western cultures in many ways which implies that in an African framework, social and cultural linkages are considered to be a key determining factor for the success of any organisation that operates on the continent (Karsten & Illa, 2005:607-620; Mangaliso, 2001:23-33).

The theory has lessons for human resources management in institutions of higher learning in that it is people who work to bring about production hence people must come first, before productivity, products, and profits. Once people have been given priority and are treated well in their daily endeavours, productivity, products, and profits may automatically be realized (Kangaude-Ulaya & Khomba, 2013: 676). The Ubuntu philosophy encourages people to work hard within their communities/organisations as a team. In an African organisation, efficiency and competitiveness can be achieved by an emphasis on social well-being rather than on purely technical rationality. By seeing people as humans whose efforts increase productivity workers will be proud to be part of the institution and work with dignity because they are not regarded by management just as numbers.

The emerging African human resources management practices should regard the higher education institution such as the university as a community of people made up of workers with a common goal. An African ‘Ubuntu’ management system must recognise the significance of group solidarity that is prevalent in African cultures, acknowledging that an African leadership style involves group and community supports, sharing and cooperation. Ubuntu-based leadership dictates sharing burdens during hard times, because by doing so, suffering is also shared and diminished. (Mbigi & Maree, 20051-7).

What is distinctive about the Ubuntu philosophy is the premise of a short memory of hate (Mazrui, 2001). Africans teach children to communicate effectively, reconcile, and find ways to cleanse and let go of hatred and give children the skills to do so. The Ubuntu approach to life enables people to express continued compassion and perseverance within communities and institutions (Kangaude-Ulaya & Khomba, 2013: 676). Thus both employers and employees should live and work as families where conflicts could be solved peacefully or amicably for the sake of the institution’s progress.
In this regard African human resource practices that are grounded in compassion, love, cooperation and humanness should apply the philosophy of *Ubuntu* with its original good intentions (Tambulasi & Kayuni, 2005:147-161). The application of the *Ubuntu* philosophy should be in harmony with the good governance principles of institution of higher learning. Human resources practitioners and employers must not divorce their human resources management from the teachings of *Ubuntu* or pay lip services to it.

In Africa, the traditional heritage in many regions reflects the cultural norms of working together, developing a sense of co-operation, and helping one another in times of adversity and prosperity. Supporting the family is a symbol of solidarity and the interests of the family are always a priority (Mwenda & Muuka, 2004:143-158). Thus, if an organisation can function as a kind of community or family, similar employee values can be harnessed through the development of that sense of honour and good relationships with employees, as family members of the organisation.

**Problem Statement**

In the wake of competition (war of talent) universities face the challenge of retaining the best academics. If universities are to retain the best academic staff then they need to Africanise their human resource practices. This study was set up to investigate the ways and means of Africanising the human resource practices in order to retain their best academics.

**Objective of the study**

The objective of this study was to explore African human resources management practices that recognize the values of employees, make academics more committed and remain with the employer.
Research Design and Methodology

This was a qualitative research study which took the form of ethnographic investigation. Ethnographic study seeks and explicates the experiences of the participants in order to bring out meanings they assemble to specific issues (Johnson & Christenson, 2000).

The Research Design

From the stand point of the interpretivist paradigm truth is negotiated through dialogue because there is no single way of arriving at the truth. The researcher therefore employed the interpretivist paradigm which is in line with the philosophy of Ubuntu; the conceptual framework for the study. The philosophy of Ubuntu is aligned to interpretivist viewpoint in that humanness can only be expressed through social interaction i.e. dialogue. It is through good human interaction that academics in the public universities and their employers can understand the needs of each other.

Ubuntu practice deals with good human interaction and relationship and this can be realised through the qualitative – ethnographic research methods. Through genuine human interaction based on dialogue the experiences and the perception of the people being studied can be captured in order to obtain an accurate ‘measure’ of reality researcher can only solicit meanings from those being studied; he cannot impose it (Wiersma & Jurs, 2005).

Population and Sample

This study was on the public universities in Ghana but for logistic and time constraints the researcher focused on three of the universities, one (1) from the coastal area and two (2) from the hinterland. It was assumed that the human resources practices in the three (3) public universities were similar to other seen (7) and the findings of the study from the three (3) could be of value to the rest. The researcher used simple random sampling technique to select the three (3) public universities as sites for the study. She used the same method to select ten (10) academics (made up of the lecturers, senior lecturers and professors) from each of the three (3) universities, making the total participants thirty (30). The researcher used the following eligibility criteria to select the participants. The participant in the study should be;
academic staff members (lecturers, senior lecturers or professors)
- at the particular institution for at least four (4) years.

The above criteria were used in order to include only participants who were deemed information rich so that reliable data could be obtained for the study.

Data Collection
Data were collected through semi-structured interview items with the selected academics. The collection of data which lasted three weeks covered the following items;
- Human resources practice in public universities in Ghana
- The ways and means of putting people first in human resources practices
- How human resource practices can be Africanised.
- Views of participants on how they expect human resources to work for them

Data Analysis
After the interviews the researcher pruned the data to ensure that incomplete information was deleted. The researcher perused the data and picked up specific ideas that emerged from the interviews. She then arranged the text under four (4) main items used in the interviews. Using the interpretive approach the researcher analysed the data manually and wrote her report.

Results and Discussion
The study was conducted to find out how human resources practices in public universities in Ghana could be decolonised. To solicit the views of the academics on the topic 30 academics were selected from public universities in Ghana and were interviewed. The responses provided by the participants were arranged under specific themes, analysed, interpreted and discussed as follows:

**Theme 1: Human resources practices in Public Universities in Ghana**
Although the 30 participants were interviewed individually they seemed to corroborate in their responses. For example 28 of the participants (80.4%) agreed that public universities follow the
colonial human resource practices where issues about employees are dealt with through top down approach.

The participants agreed that the human resource departments do not involve academics in finding out their views on issues affecting them. As one senior academic from one of the public universities said, reproduced verbatim;

*I have worked in three public universities throughout my 20 years academic career and have observed that human resource departments do not consider academic employees as part of decision makers. They only recruit and place us to work and focus on clerical issues pertaining to annual leave, resignation and retirement.*

The top down approach to human resource practices in public universities in Ghana are illustrated by the above responses from the participants. The responses indicate that a clear majority of the academics 80.4% (i.e. 28) in public universities see themselves alienated by the colonial human resource practices that do not put people first. The top down approach to human resource practices which do not seem to recognize employees as important role players in the institution’s decision making curtail loyalty among employees in general and academics in particular.

The 6% (N=2) said they were not happy with the human resource departments in their universities because according to them human resource sections seem to own the universities. The two participants agreed in their responses that the human resource departments are too powerful, earn too much salary but do little to project the image of the universities.

**Theme 2: Strategies to put people first in human resource practices**

All the 30 participants (100%) agreed in their responses that the human resource departments of the public universities should put their employees first. However regarding how this could be achieved the participants were divided in their responses. Twenty two (22) of the 30 participants (i.e. 73.3%) agreed that to put people or employees first the human resource departments of public universities should always solicit the views of their academic employees on issues that
affect them as employees. One participant seemed to have summarised the views her colleagues when she said;

We should be consulted on all major issues that affect our welfare and that of the universities. It is through discussions and interaction that our input for the advancement of the institutions can be realized. Academic employees will always show loyalty when they see themselves as part of the institution.

The information gathered from the respondents indicate that to make academic employees more committed and loyal to the employer they should feel part of the institution and not just mere workers who only render services for payment.

The other 8 (i.e. 26.6%) of the 30 participants share the view that human resource practices should adopt African approach where community members and members of an organisation or their representatives do need analysis and sit down with the employer to discuss the way forward to advance organisation goals. The views of this second group of respondents resonates the first, the majority, in that they all advocate the need for a dialogue between employers and employees. Such a dialogue could be a break away from the colonial top down human resource practices where academic employees have no input in human resource matters affecting them.

**Theme 3: Africanisation of human resource practices**

Regarding strategies to decolonize or Africanise human resource practices participants agreed in their responses that the human resource practices can Africanise by putting people first. Sixteen (16) out of the 30 participants went further to clarify the above response by adding that putting people first means human resource activities should be people-centred, humane, loving, co-operative and supportive.

Fourteen (14) of the 30 participants also agreed in their responses that in order to Africanise their practices human resource departments and practitioners should often interact with academic employees to get their views and inputs on employee wellness.
The above responses indicate a clear consensus among the participants the need to create a warm relationship between human resource academic employees of public universities. As one participant summed it up, reproduced verbatim.

_We are Africans and we expect the employer to see us as such. In the African way employees need to feel at home in the organisation they work for. We should be seen as part of the family and not strangers._

The above sentiment expressed by the participant epitomises the discontentment of human resource practices in the public universities. It is time that the colonial top down human resource management style gave way to people first approach as a strategy to retain human capital and expertise in the public universities.

The last item requested participants to provide any suggestions that can improve human resource management practices in the public universities in Ghana. The main suggestions made by the participants are listed here below.

- Human resource practitioners should always see academic staff as part of the institution and not just employees selling their labour.
- The colonial human resource practices where human resource departments and personnel seeing themselves as employers and not employees should stop.

The above viewpoints and suggestions tell that all is not well in most public universities because some human resource personnel regard themselves as employers and not as employees of the universities. The perception of the ‘boss’ and the ‘subordinate’ between human resource department and academics can be removed if human resource practices adopt African philosophy of people first.

**CONCLUSION**

Public universities in Ghana were modeled on British higher education system and their human resources practices are no exception. In this era of competition for best academics Ghanaian universities should decolonise their human resource practices. This paper advocates for human resource practices that are based on humanness, compassion, love, respect and cooperation i.e.
putting people first. The paper concludes that in order to train, nurture and retain the best academics human resources practices in public universities in Ghana should be people centred. That is they should base their human resources practices on African values of humanness, compassion, love, cooperation, and respect of academic employees – that put people first if they are retain the best academics.
References


MUNICIPAL SERVICE DELIVERY AND SHORTAGE OF CIVIL ENGINEERS

Reginald Legoabe and Zeleke Worku
Tshwane University of Technology Business School

Abstract

The objective of study was to identify and quantify key predictors of job satisfaction among civil engineers working in South African local municipalities. The design of study was cross-sectional, descriptive and evaluative. The study was conducted against the background of shortage of suitably qualified, adequately motivated and skilled civil engineers working in local municipalities. The degree of job satisfaction of respondents was assessed by using a composite index developed by Turkyilmaz, Akman, Ozkan & Pastuszak (2011) for conducting a similar study. A combination of quantitative and qualitative methods of data collection and analyses were used in the study. As part of the quantitative aspect of study, data was collected from a stratified random sample of size 250 civil engineers working in various South African local municipalities. As part of the qualitative aspect of study, individual in-depth interviews were conducted with 37 civil engineers working in various local municipalities. Four focus group interviews were conducted as part of the study. Respondents who took part in the study came from municipalities in KwaZulu-Natal, North West, the Free State, Eastern Cape, Western Cape, Gauteng, Limpopo and Mpumalanga provinces. No responses were received from local municipalities in the Northern Cape Province. Four focus groups were used in the study in which focus groups were established in Gauteng (Pretoria), North West (Rustenburg), the Free State (Bloemfontein) and Mpumalanga (Middleburg) provinces in the period between April and November 2016.

Data was collected by using a structured, pretested and validated questionnaire of study. Quantitative data analyses were conducted by using methods such as frequency tables, cross-tab analyses (Pearson’s chi-square tests of associations) and binary logistic regression analysis. The results showed that 171 of the 250 respondents who took part in the study (68.40%) were satisfied with the job that they were performing in the various local municipalities, whereas the remaining 79 of the 250 respondents in the study (31.60%) were not satisfied with their jobs. Based on results obtained from cross-tab analyses at the 5% level of significance, the degree of job satisfaction of civil engineers at the workplace was significantly and adversely affected by too much workload, poor working conditions, lack of budget for construction projects, low salary and remuneration, lack of training opportunities, lack of cooperation and appreciation, too much bureaucracy and red tape, short duration of service, and poor relationship with supervisors, in a decreasing order of strength. Results obtained from binary logistic regression analysis showed that the degree of job satisfaction of civil engineers at the workplace was significantly and adversely affected by 3 factors. These 3 factors were too much workload, poor working conditions, and lack of budget for construction projects in a decreasing order of strength. Results obtained from individual and focus group in-depth interviews led to similar findings.

Key words: Civil engineering, Local municipalities, Municipal service delivery, Job satisfaction, Odds ratio
INTRODUCTION TO STUDY

Municipal service delivery has always generated significant public interest due to the frequent service delivery protests occurring throughout the country as well as risks generated by infrastructure breakdowns to public health, environmental integrity and municipal financial sustainability. According to the Department of Cooperative Governance and Traditional Affairs (CoGTA 2012:4) and Municipal IQ Hotspot Monitor (2012), the primary causes of service delivery protests throughout the country remains the delivery of basic municipal services such as running water, electricity and toilets especially in informal settlements. According to CoGTA (2012: 4) the above is exacerbated by high unemployment and high levels of poverty, poor and failing infrastructure and the lack of housing. Ntuli (2010) has argued that protests in local municipalities were caused by poor quality of municipal service delivery and the acute shortage of technical and artisan skills. The strategic link between service delivery and the civil engineering profession has long been established. Pillay and Watermeyer (2012: 46) have pointed out that a major portion of the work undertaken by civil engineers involves public infrastructure. According to Pillay and Watermeyer (2012), the civil engineering discipline currently accounts for just less than half the number of professional engineers and technologists registered with the Engineering Council of South Africa (ECSA) and is involved in the following:

- The detailed planning, design, construction and optimisation or condition assessment of infrastructure;
- The development of short-, medium- and long-term infrastructure plans at both a portfolio and project level, and the administration of works contracts for the acquisition, refurbishment, rehabilitation and maintenance of infrastructure;
- The strategic planning and management of the operation and maintenance of infrastructure; and
- Specific duties relating to health, safety and environmental aspects of infrastructure as provided for in legislation.

Civil engineering is part of the regulated professions within the built environment professions regulated by statute in South Africa. There are other regulated built environment professions such as construction managers, construction project managers, engineers, architects, quantity surveyors, property valuers and landscape architecture which are regulated by their own statutory professional bodies and also fall within the regulatory domain of the Council for the Built Environment (CBE). The Council for the Built Environment (CBE) is the overall statutory body established by legislation in terms of the CBE Act 43 of 2000 which mandates the CBE to oversee and coordinate the activities of its six professional councils (including the engineering profession) and fulfils the following regulatory functions.

The South African civil engineering profession is regulated through the Engineering Professions Act 46 of 2000 which enables the establishment of the Engineering Council of South Africa (ECSA), a statutory professional registrations body which has been statutorily mandated to set professional standards and enforce these standards for the benefit of the civil engineering practitioners, the country and the profession. Within the context of this study, civil engineering local government built environment practitioners refers to the officials contracted / employed by
a municipality for infrastructure management, service delivery and maintenance in the water, electricity, solid waste, roads and sanitation sectors.

BACKGROUND OF STUDY

The study is being conducted in the context of relative scarcity of requisitely qualified and professionally registered civil engineering staff in the South African local government sector and paucity in empirical data relating to professionalization in the local government built environment professions. There is paucity in empirical data on the reasons behind the turnover of local government built environment practitioners out of the sector and why some operate outside the regulated provisions of their professions. The scarcity of requisite qualified and experienced municipal engineers is indirectly linked with the challenges relating to poor infrastructure asset management, tendering irregularities, collapsing infrastructure and its related public health and safety problems as well as service delivery community protests that infrastructure collapses typically elicits.

In order to be able to address the challenge or poor infrastructure institutional capacity besetting municipal infrastructure departments and utilities, it is important that an in-depth study that focuses on the root cause analysis of the problem be implemented. The study also aims to develop interventional measures to promote professionalization of municipal civil engineering practitioners and the development of civil engineering institutional management capacity by the local government sector in general. In assessing the causes and barriers affecting civil engineering built environment professionals and poor institutional management capacity, the study will seek to test the assumptions behind the structuration and institutional theories especially the institutional entrepreneurship role of local government built environment officials as public entrepreneurs. The study aims to test the relevance and veracity of the institutional and structuration theoretical underpinnings (Paauwe & Boselie 2003: 59) which avert that “organisational practices are either a direct reflection of, or response to, rules and structures built into their larger environment”.

The South African Local Government Association (SALGA) Skills Profiling Survey (2006:1) found that only 4% of Councillors have a university degree, 16% a diploma and that 30% of municipal Councillors have a certificate qualification. The survey also found that at least 50% of municipal Councillors have only grade 12 qualifications or below. The study also found that 67% of municipal Councillors are in office for the first term, with 25% of Councillors in office for the second term and that only 8% of municipal Councillors are in office for a third term or longer. This study indicated that there is a capacity disjuncture in terms of experience and educational levels of Councillors and that this is caused by loss of institutional management skills due to the labour turnover of Councillors as a result of re-elections and redeployments of Councillors amongst others implying that after every 5 yearly election of local government Councillors, the new cohort of Councillors need to be trained and developed for local government leadership and management. With regards to infrastructure related management skills or built environment skills, the National Planning Commission (NPC) published its Diagnostic Report (2011: 8) which highlighted how amongst others, poor municipal service delivery, technical skills insufficiency and poor operations and maintenance of municipal infrastructure constrain the capacity of the South African economy to grow.
The National Development Plan (NDP) focuses on local government to make it a career of choice by emphasising skills and experience in the recruitment of senior managers to ensure that local government is equipped with the necessary specialist and technical skills required for service delivery (Municipal Demarcation Board, 2012: 1). In its sector analysis study, the Municipal Demarcation Board (MDB) capacity study (2010: 32 -34) found that the scarcity of relevant infrastructure management skills and experience has led to municipal vacancy rates as high as 40% in local municipalities. The Sector Skills Plan (2005 -2010) of the Local Government Sector Education and Training Authority (LGSETA) on the other hand estimated municipal vacancy to be as high as up to 90% in municipal infrastructure departments affecting built environment-related professions and occupations such as artisans, plant operators, civil engineers, town planners and water/ wastewater process controllers.

OBJECTIVES OF STUDY

The objective of this study is to identify and quantify factors that are known to adversely affect the practice of civil engineering in the South African local government sector. The study aims to identify key barriers constraining the professionalization of the civil engineering professionals in South African local municipalities (Meyer & Rowan, 1977; Paauwe & Boselie, 2003:59).

The study has the following three specific objectives:

- To investigate the barriers preventing the attainment and maintenance of professionalization by municipal civil engineering practitioners;
- To develop interventional measures to promote professionalization of municipal civil engineering practitioners in the local government sector; and
- To develop interventional measures to ensure the development of institutional capacity by municipalities and the local government sector in general.

The objective of this chapter was to chart the research topic as well as explore the interconnectivity between municipal service delivery, municipal institutional and management capacity and the civil engineering profession.

From the above-mentioned, it becomes clear that municipal service delivery is strategically linked to the civil engineering profession and is critical due to the risks generated by infrastructure breakdowns to public health, and safety as well as environmental integrity. From the above-mentioned, it is clear that the institutional and management capacity of municipalities for service delivery is severely constrained by the shortages in the supply of civil engineering skills within the local government sector.

From the above-mentioned it becomes clear that there has been over the years various support programmes implemented by national and provincial government, foreign development agencies and the private sector aimed at supporting municipalities. These include support interventions in municipal governance, administration; infrastructure project planning, service delivery, gap filling and regulation. Whilst such capacity interventions have been implemented, the impact
thereof appears quite negligible. From the above-mentioned it also becomes clear that the most critical cause of municipal service delivery protests by disaffected communities is the delivery of basic municipal services such as running water, electricity and toilets and is exacerbated by the prevalent high unemployment and poverty levels.

METHODS AND MATERIALS OF STUDY

A combination of quantitative and qualitative methods of data collection and analyses were used in the study. Fresh data was collected from respondents of study by using quantitative and qualitative methods. In addition to this, historical data sets were analysed as part of the study. As part of the quantitative aspect of study, frequency tables, bar charts, pie charts and descriptive statistical tests, binary logistic regression analysis (Hosmer and Lemeshow, 2013) and factor analysis (Field, 2010) were used for data analyses. According to Cooper and Schindler (2003), data analysis enables the Researcher to reduce all the accumulated data to a manageable size, develop summaries and look for emerging patterns. As part of the qualitative aspect of study, data was collected from 37 individual respondents by using a tape recorder. Additional 4 focus group interviews were conducted as part of the study. The interviews were transcribed later. Responses were tallied and coded. Thematic and text analyses as well as triangulation were used for performing qualitative data analyses.

RESULTS OF DATA ANALYSES

A total sample of two hundred and fifty (250) Respondents from eighteen (x18) low-capacity local and district municipalities (excluding high capacity metropolitan municipalities) were selected through stratified random sampling targeting Infrastructure Directors, Project Management Unit managers as well as junior officials employed as engineers irrespective of experience; professional registration status (Professional Engineer, Technician, Technologist, Candidate or unregistered); level of management experience and seniority and irrespective of the civil engineering sub-functional area of work (water, sanitation, roads and storm water, solid waste, housing, asset management, designs, energy). Respondents who took part in the study came from a total of 12 municipalities in KwaZulu-Natal, North West, Free State, Eastern Cape, Western Cape, Gauteng, Limpopo and Mpumalanga provinces. No Respondent responses were received from Respondents based in municipalities in the Northern Cape Province. Four focus group discussions were held with municipal engineering Respondents in Gauteng (Pretoria), North West (Rustenburg), Free State (Bloemfontein) and Mpumalanga (Middleburg) provinces in the period from 01 April to 30 November 2016. Blacks accounted for 62.8% of respondents, whereas 19% of respondents were white, 10.25% of respondents were coloured, and 7.69% of respondents were Indian.
Table 1: Highest level of education of respondents (n=250)

<table>
<thead>
<tr>
<th>Highest level of education</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matric level only</td>
<td>1.28%</td>
</tr>
<tr>
<td>Matric + certificate</td>
<td>14.10%</td>
</tr>
<tr>
<td>NQF level 3 to NQF Level 6</td>
<td>17.94%</td>
</tr>
<tr>
<td>National Diploma</td>
<td>32.00%</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>24.35%</td>
</tr>
<tr>
<td>Master’s degree or more</td>
<td>10.25%</td>
</tr>
</tbody>
</table>

The percentage of respondents with Bachelor’s degree was equal to 24.35%. The percentage of respondents with Master’s degrees or more was equal to 10.25%. The majority of respondents had national diplomas (32.0%). The percentage of junior employees was equal to 6.41%. The percentage of skilled junior employees was equal to 24.36%. The percentage of employees who were junior managers was equal to 42.3%. The percentage of employees who were senior managers was equal to 26.9%.

Table 2: Salaries of respondents in Rand (n=250)

<table>
<thead>
<tr>
<th>Salary in Rand</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>R15, 000 to R25, 000</td>
<td>6.41%</td>
</tr>
<tr>
<td>R25, 001 to R35, 000</td>
<td>15.35%</td>
</tr>
<tr>
<td>R36, 001 to R45, 000</td>
<td>34.60%</td>
</tr>
<tr>
<td>R45, 001 or above</td>
<td>20.50%</td>
</tr>
<tr>
<td>Others</td>
<td>23.0%</td>
</tr>
</tbody>
</table>

Out of the total questionnaire responses received from municipal engineering Respondents (n = 78), a minority of Respondents constituting 37% of Respondents indicated that they are indeed professionally registered with the Engineering Council of South Africa (ECSA) either as Candidates (15.4%), Professional Technicians (8.9%), Professional Technologists (6.41%) as well as registered with Other Councils (1.28%). The majority of respondents were either not professionally registered with ECSA (34.6%) or were previously registered but currently de-registered (28.2%) due to several reasons primarily the non-payment of professional registration.
fees. Of those Respondents who were professionally registered, the vast majority of Respondents were registered Candidates.

Table 3: Registration status of respondents (n=250)

<table>
<thead>
<tr>
<th>Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not registered</td>
<td>34.6%</td>
</tr>
<tr>
<td>De-registered</td>
<td>28.2%</td>
</tr>
<tr>
<td>Registered candidate with ECSA</td>
<td>15.4%</td>
</tr>
<tr>
<td>Registered candidate with other councils</td>
<td>1.28%</td>
</tr>
<tr>
<td>Registered technician</td>
<td>8.9%</td>
</tr>
<tr>
<td>Registered technologist</td>
<td>6.41%</td>
</tr>
<tr>
<td>Registered engineer</td>
<td>5.12%</td>
</tr>
</tbody>
</table>

Out of the Focus Group interviews held with Respondents (n = 37), a smaller percentage of Respondents (32%) indicated that they are indeed professionally registered with the Engineering Council of South Africa (ECSA) either as Candidates (8.10%), Professional Technicians (8.10%) and were also members of a Voluntary Association (8.10%). An overwhelming majority of Respondents are not registered (32%) or were initially registered but subsequently deregistered (27%). During the Focus Group interview discussions with Respondents, it became clear that a significant number of Respondents who initially indicated that they are indeed professionally registered on the questionnaires were in fact alluding to their membership of Voluntary Associations most notably the Institute of Municipal Engineers of SA (IMESA) as well as the South African Institute of Civil Engineering (SAICE) and that some of the Respondents were not professionally registered with ECSA as the regulatory professional body regulating the civil engineering profession.

Out of the total questionnaire responses received from municipal engineering Respondents (n = 78), a significant number of Respondents (n =30) constituting 38% of Respondents confirmed that they received their Experiential Learning or initial workplace exposure in the private sector. A further 19.2% of Respondents (n = 15) confirmed that they received their Experiential Learning at a public sector state entity. 15.3% of Respondents indicated that they received their Experiential Learning at the same municipality whilst a further 12% of Respondents confirmed that they received their initial workplace exposure with another municipality. The vast majority of Respondents about 62% of Respondents confirm that they have received their Experiential Learning exposure within the public sector either with a municipality, national/ provincial government or a state entity.

When municipal engineering Respondents were asked about their duration of employment with their current municipality, the majority of Respondents (82%) out of the total questionnaire
responses received (n = 78), indicated that they have between 2 - 6 years duration of employment with their current municipality. A significant number of Respondents (n = 22) constituting 28.2% of the total Respondents indicated that they have worked for the same municipality for a period of 3 years. This was followed by Respondents with 5 years (23%), 6 years (15.38%) and 2 years work experience with the same municipality. Only a minority of Respondents constituting (2.56%) had the longest duration of employment with the same municipality at 13 years in total whilst 15.38% of Respondents had the shortest duration of employment with their current municipality at two (2) years. During subsequent focus group discussions, when municipal engineering Respondents were asked about the duration of their total work experience prior to employment by the municipality, the majority of Respondents out of the total questionnaire responses received (n = 39), indicated that they have between 5 - 10 years practical working experience. The Respondents with the highest work experience has worked for more than 11 years in total whilst the Respondents with the lowest working experience have worked for the municipality for less than 2 years.

When municipal Respondents were asked to describe their current responsibilities, municipal Respondents cited project management responsibilities, project monitoring of infrastructure management projects, providing support to Accounting Officer on engineering projects, management of roads & stormwater, water/ wastewater, sanitation, waste, electrical and town planning services, providing strategic and technical leadership to infrastructure department as well as managing budget and performance of department as part of their responsibilities.

The Pearson chi-square test of association (Hair, Black, Babin and Anderson, 2010) was used for performing a preliminary screening of influential factors that were significantly associated with job satisfaction by 250 respondents who took part in the study. The degree of job satisfaction of respondents was measured by using a composite index developed by Turkyilmaz, Akman, Ozkan & Pastuszak (2011) for conducting a similar study. The results showed that 171 of the 250 respondents who took part in the study (68.40%) were satisfied with the job that they were performing in the various local municipalities, whereas the remaining 79 of the 250 respondents in the study (31.60%) were not satisfied with their jobs. Pearson’s chi-square tests of association were performed between values of variable Y and each of the factors that are known to affect job satisfaction in South African local municipalities. The results showed that job satisfaction was significantly associated with 5 factors at the 5% level of significance. At the 5% level of significance, significant two-way associations are characterized by large observed chi-square values and P-values that are smaller than 0.05. Table 4 shows 9 significant two-by-two associations obtained from cross-tab analyses at the 5% level of significance.

Table 4: Significant associations obtained from cross-tab analyses (n=250)

<table>
<thead>
<tr>
<th>Factors adversely affecting job satisfaction</th>
<th>Observed chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too much workload</td>
<td>12.084</td>
<td>0.000***</td>
</tr>
</tbody>
</table>
Based on results obtained from cross-tab analyses, at the 5% level of significance, it can be concluded that the degree of job satisfaction of civil engineers at the workplace is significantly and adversely affected by the following 9 factors in a decreasing order of strength: Too much workload, poor working conditions, lack of budget for construction projects, low salary and remuneration, lack of training opportunities, lack of cooperation and appreciation, too much bureaucracy and red tape, short duration of service, and poor relationship with supervisors.

The 9 predictor variables shown in Table 4 were used for performing subsequent multivariate analysis by using binary logistic regression analysis. Results from binary logistic regression analysis are theoretically more reliable than results from Pearson’s chi-square tests of association (Hosmer & Lemeshow, 2013). This is because the measure of effect in binary logistic regression is the odds ratio, and not two-by-two significant associations. Binary logistic regression of analysis was performed by performing the regression of variable Y

<table>
<thead>
<tr>
<th>Poor working conditions</th>
<th>10.1257</th>
<th>0.000***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of budget for construction projects</td>
<td>9.8224</td>
<td>0.000***</td>
</tr>
<tr>
<td>Low salary and remuneration</td>
<td>8.1077</td>
<td>0.000***</td>
</tr>
<tr>
<td>Lack of training opportunities</td>
<td>7.3257</td>
<td>0.000***</td>
</tr>
<tr>
<td>Lack of cooperation and appreciation</td>
<td>6.4114</td>
<td>0.000***</td>
</tr>
<tr>
<td>Too much bureaucracy and red tape</td>
<td>5.9454</td>
<td>0.003**</td>
</tr>
<tr>
<td>Short duration of service</td>
<td>4.2116</td>
<td>0.004**</td>
</tr>
<tr>
<td>Poor relationship with supervisors</td>
<td>3.2039</td>
<td>0.007**</td>
</tr>
</tbody>
</table>

**Legend**: Significance at * P<0.05; ** P<0.01; *** P<0.001 levels of significance
(viability) on the 8 predictor variables of study that were identified by performing cross-tab analyses. At the 5% level of significance, influential predictors of motivation have odds ratios that are significantly different from 1, P-values that are smaller than 0.05, and 95% confidence intervals of odds ratios that do not contain 1.

Table 5: Odds Ratios (OR) estimated from binary logistic regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>P-value</th>
<th>OR and 95% Confidence Intervals of Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too much workload</td>
<td>0.000</td>
<td>4.24 (2.28, 7.66)</td>
</tr>
<tr>
<td>Poor working conditions</td>
<td>0.000</td>
<td>2.68 (1.89, 5.89)</td>
</tr>
<tr>
<td>Lack of budget for construction projects</td>
<td>0.001</td>
<td>2.57 (1.74, 5.56)</td>
</tr>
</tbody>
</table>

At the 5% level of significance, 3 of the 9 variables used for binary logistic regression analysis were highly influential predictors of job satisfaction. These 3 predictor variables of study were: too much workload, poor working conditions, and lack of budget for construction projects, in a decreasing order of strength.

Interpretation of odds ratios

The odds ratio of the variable “too much workload” is equal to 4.24. This indicates that an employee who experiences too much workload is 4.24 times as likely to be dissatisfied at work in comparison with another employee who does not experience too much workload. The odds ratio of the variable “poor working conditions” is equal to 2.68. This indicates that an employee who experiences poor working conditions is 2.68 times as likely to be dissatisfied at work in comparison with another employee who does not experience poor working conditions. The odds ratio of the variable “lack of budget for construction projects” is equal to 2.57. This indicates that an employee who experiences lack of budget for construction projects is 2.57 times as likely to be dissatisfied at work in comparison with another employee who does not experience lack of budget for construction projects.

The percentage of overall correct classification for the fitted binary logistic regression model was equal to 80.44%. This figure is above 75%, and shows that the fitted binary logistic regression model is highly reliable. The P-value obtained from the Hosmer-Lemeshow goodness-of-fit test is equal to 0.1491 > 0.05. This shows that there were no reason to doubt the theoretical reliability of the fitted logistic regression model.

DISCUSSION OF RESULTS

Studies conducted by Edoho (2015), Turkyilmaz, Akman, Ozkan & Pastuszak (2011) and Yau-De, Yang & Wang (2012) have shown that local municipalities must invest in tailor-made and
skilled based training opportunities by collaborating with academic and research institutions as a means of improving their capacity to deliver quality municipal services. The results showed that 171 of the 250 respondents who took part in the study (68.40%) were satisfied with the job that they were performing in the various local municipalities, whereas the remaining 79 of the 250 respondents in the study (31.60%) were not satisfied with their jobs. Based on results obtained from cross-tab analyses at the 5% level of significance, the degree of job satisfaction of civil engineers at the workplace was significantly and adversely affected by too much workload, poor working conditions, lack of budget for construction projects, low salary and remuneration, lack of training opportunities, lack of cooperation and appreciation, too much bureaucracy and red tape, short duration of service, and poor relationship with supervisors, in a decreasing order of strength. Results obtained from binary logistic regression analysis showed that the degree of job satisfaction of civil engineers at the workplace was significantly and adversely affected by 3 factors. These 3 factors were too much workload, poor working conditions, and lack of budget for construction projects in a decreasing order of strength. Results obtained from individual and focus group in-depth interviews led to similar findings.

The majority of Respondents (62%) received their initial workplace exposure within the public sector either with a municipality, national/provincial government or a state entity. About 38% of Respondents received their initial workplace exposure in the private sector. The majority of Respondents (82%) have worked between 2 - 6 years with their current municipality. 28.2% of Respondents have worked for the same municipality for a period of 3 years followed by 23% of Respondents with 5 years of work experience and 15.38% Respondents with 6 years’ work experience with the same municipality. Only 2.56% of Respondents had the longest experience at 13 years with the same municipality whilst a further 15.38% of Respondents had the shortest work experience with their current municipality at only two (2) years of work experience.

The professionalization of municipal civil engineers is constrained by the following factors:

1) Lack of interest in professional registration due to a perceived lack of benefits to the registered professional
2) Perceived lack of “power” by ECSA over unregistered engineers and municipalities employing unregistered / unregistrable persons
3) Little or no financial subsidy assistance provided by municipalities for CPD and annual membership fees
4) Appointments of Underqualified, Inexperienced and Unregistrable “Deployees”
5) Compromised Supply Chain Management (SCM) Practices
6) The Removal of PMU and Infrastructure Asset Management Functions and Budgets from the Infrastructure / Technical Director’s Duties
7) Political Appointments of Underqualified and Inexperienced Consulting Engineers and Contractors
8) Poor Support from other municipal functions such as Supply Chain Management (SCM) and HRM
9) A Hostile Politicised Work Environment with Lack of Support
10) Low Salaries on offer
11) High costs of family relocation to rural workplaces
12) Poor Career growth
13) Perceived Unfair Municipal Recruitment and Promotion Practices
14) Lack of Study opportunities
15) Lack of Functional Design offices
16) High Workloads;
17) Unwillingness by Registered persons and Employer Municipalities to undertake Statutory Compliance
18) Underfunding & Lack of budgets
19) Professional Integrity and Work Ethics not protected and respected by Senior Municipal Management and Councillors (the Executive)
20) Career Frustration & Lack of Exposure (only project management work)

The majority of municipal engineering Respondents have cited lack of interest in professional registration due to a perceived lack of benefits deriving from professional registration for the both municipal engineers as well as the employer municipality as well as hostile work environment as the key underlying reasons for poor professionalization.

Other contributory factors is a lack of understanding of the profession; lack of political support; poor support from other municipal functions such as Supply Chain Management (SCM) and HRM; low salaries on offer; high costs of family relocation to rural workplaces; poor career growth; perceived unfair recruitment and promotions; lack of study opportunities; lack of functional design offices; high workloads; unwillingness on the side of the registered persons and employer municipalities to undertake statutory compliance with the Engineering Professions Act of 2000; a lack of resources as well as little or no financial subsidy assistance provided by municipalities to its registered engineering professionals to comply with Continuing Professional Development (CPD) and the payment of annual membership fees.

FRAMEWORK FOR IMPROVED SERVICE DELIVERY

Voluntary associations representing individual membership-based municipal civil engineers such as Institute of Municipal Engineers (IMESA) and the South African Institution of Civil Engineering (SAICE) whose members are directly affected, need to actively engage Contractors such as the South African Federation of Civil Engineering Contractors (SAFCEC) and Consultants in the form of the Consulting Engineers of South Africa (CESA) because Contractors and Consultants also play a direct contributory role in the loss of institutional capacity by municipal infrastructure departments since most Consultants and Contractors derive their income from the sector and have directly or indirectly caused institutional weaknesses and dependencies by municipalities to their services and expertise. The professionalization process will entail a series of negotiations with other agents or players in the sector, careful balancing of interests and if required, the direct exercise of institutional, statutory and structural power that civil engineers wield individually in their municipalities and collectively within the sector by compelling their own subordinates to register professionally with the statutory body. Based on the above-mentioned, it is clear that unless the Engineering Council of South Africa (ECSA) and other built environment professional Councils strengthen their regulatory oversight role over municipal engineers whether registered or unregistered, that the quality service delivery interests of communities and the professionalization of the local government civil engineering profession
will forever remain a neglected key consideration resulting in declining quality of municipal service delivery and further agitations by disgruntled communities.

Figure 1 shows a suitable framework that could be used by South African local municipalities for attracting, motivating, retaining and empowering civil engineers. The framework consists of four sequential phases. Phase 1 entails a needs assessment survey. Phase 2 entails the task of designing a suitable training plan that could be used for fulfilling the training needs and requirements of civil engineers. Phase 3 entails implementation of the plan. Phase 4 entails evaluation of the plan. The framework is adapted from the framework developed by Barg, Ruparathna, Mendis and Hewage (2014) and could be used for motivating, retaining and empowering construction workers and civil engineers working in the public sector and local municipalities.

Figure 1: Framework for South African local municipalities

The framework shown in Figure 1 proposes the establishment of the following bodies:

- A team comprising monitoring and evaluation experts that specifically focuses on training and development
- The team takes a leading role in needs assessment, setting standards, initiating and ensuring accreditation and quality assurance at national, institutional and departmental levels. Specific criteria for monitoring and evaluation and performance indicators with regards to training and development must be drawn.
Every phase must comprise of liaison officers who ensure proper and effective consultation and communication with officers in the other phases.

It is strategically beneficial for South African local municipalities to provide civil engineers with career growth paths and development programmes. Tailor-made and skills based training opportunities and attractive remuneration packages should be provided to civil engineers as a means of attracting productive and highly motivated civil engineers into local municipalities. Training programmes must be provided to civil engineers as an incentive. Such programmes of training must be aligned with the operational and business needs and requirements of local municipalities. Local municipalities must forge strategic partnerships and collaborations with key stakeholders such as research and academic institutions with a view to acquire suitable training and development programmes. A comprehensive monitoring and evaluation programme is vital for monitoring the progress made in this regard.

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FACTORS THAT AFFECT THE PERFORMANCE OF EMPLOYEES IN THE CITY OF TSHWANE

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Abstract

The overall objective of study was to identify and quantify factors that affect the performance of employees of the City of Tshwane. Studies conducted by Khale (2015) and Marivate (2014) have found that the survival of business enterprises conducting business in and around the City of Tshwane depends upon the quality of municipal services that are provided to business enterprises and the general public by employees of the City of Tshwane. According to Marivate (2014), poor municipal service delivery is one of the root causes of protests over poor quality of municipal services. The study was conducted in order to identify key predictors of performance among employees of the City of Tshwane who are responsible for the provision of routine and essential municipal services. Data was collected from 131 respondents (119 questionnaires + 12 in-depth interviews). Factor analysis was used for performing data analysis. In addition to that, individual in-depth interviews were also conducted with 12 officials of the City of Tshwane. The results showed that 52% of employees fulfilled their performance requirements. Results obtained from factor and logit analyses showed that the top three barriers to satisfactory
performance by employees were lack of tailor-made and skills based training opportunities, low level of formal education, and lack of job satisfaction.

**Keywords:** City of Tshwane, Performance monitoring, Skills-based training, Odds ratio

**Introduction and background to study**

The City of Tshwane is home to the seat of the South African Government and Pretoria. The quality of municipal services provided to residents, business enterprises and other stakeholders are known to affect viability in business enterprises. Several researchers have conducted surveys in the past decade with a view to identify obstacles that undermine the quality of municipal services delivered by employees of the City of Tshwane. In this regard, developmental challenges that stifle profitability in start-up enterprises have been reported by Seeletse (2012), Bezuidenhout & Nenungwi (2012), Booysens (2011), Brownson (2014), Marivate (2014), Worku (2015) and Khale (2015). The authors have reported that small, micro and medium-sized enterprises (SMMEs) often fail due to poor or inadequate municipal services, over-regulation, unnecessary bureaucratic procedures, lack of transparency, lack of good governance, lack of efficiency in the administration and management of license applications, inability to assess and evaluate tax, lack of entrepreneurial skills, lack of accounting and auditing and bookkeeping skills, inability to draw up business plans, inability to make oral presentations, inability to network with business rivals and competitors, difficulty in securing loans from commercial banks and micro-lending financial institutions and lack of infrastructure.

The study was conducted in order to assess the potential benefits of tailor-made skills based training programmes to improved performance among employees working in the City of Tshwane. The study was conducted by using a combination of quantitative and qualitative methods of data collection and analyses. A review of the literature shows that there is a significant relationship between providing tailor-made skills based training programmes to employees and improved performance to clients and stakeholders. The City of Tshwane (Khale, 2015) has received qualified audit reports from the Auditor-General in the past several years due to factors that are known to affect service quality in local governments and municipalities.
Studies conducted by Khale (2015) and Marivate (2014) have shown that the quality of municipal services provided to customers, ratepayers and newly established small enterprises is a key predictor of sustained growth and economic development. According to Seeletse (2012) and Henrekson (2014), there is a statistically significant association between the perception held by residents about service quality and overall economic growth and development in the major metropolitan cities of South Africa. The study by Horn (2010) has shown that it is impossible to alleviate unemployment and poverty among the urban population without improving the quality of essential municipal services. Shree and Urban (2012) have found that the rate at which small enterprises grow depends upon the quality of municipal services that are provided routinely.

Findings from the study are vital for improving the quality of essential municipal services that are routinely provided to residents, businesses, clients, stakeholders and the general public. The results are vital for developing training and development plans for the City of Tshwane for improving the current quality of municipal service delivery. The study will propose feasible remedial actions for addressing issues such as poor performance and poor service delivery.

Objectives of study
The research study aims to achieve the following objectives:

- To identify and quantify key predictors of satisfactory municipal service delivery by employees of the City of Tshwane; and
- To assess the degree to which a comprehensive monitoring and evaluation programme could be used for performance monitoring and evaluation;

Research problem

Studies conducted by Seeletse (2012), Bezuidenhout & Nenungwi (2012), Booyssens (2011), Brownson (2014), Marivate (2014), Worku (2015) and Khale (2015) have shown that the quality of essential municipal services provided by employees of the City of Tshwane depends upon socioeconomic factors such as level of education, the provision of skills-based and tailor-made training programmes to employees and the implementation of a comprehensive monitoring and
evaluation programme to employees. Khale (2015) has reported that small, micro and medium-sized enterprises (SMMEs) often fail due to poor or inadequate municipal services, over-regulation, unnecessary bureaucratic procedures, lack of transparency, lack of good governance, lack of efficiency in the administration and management of license applications, inability to assess and evaluate tax, lack of entrepreneurial skills, lack of accounting and auditing and bookkeeping skills, inability to draw up business plans, inability to make oral presentations, inability to network with business rivals and competitors, difficulty in securing loans from commercial banks and micro-lending financial institutions and lack of infrastructure. The study aims to assess the degree to which skills based and tailor-made training programmes are helpful in ensuring satisfactory and efficient service delivery by employees of the City of Tshwane.

Literature review

The contribution made by small, micro and medium-sized enterprises (SMMEs) to the national economy has been acknowledged by the South African Chamber of Commerce and Industry (2016). According to the report, about 20% of all units exported by South Africa are produced by small and medium-sized enterprises. Although it is generally accepted that growing the SMME sector of the economy is vital for the alleviation of poverty and unemployment, the support provided to the sector since April 1994 has been grossly inadequate (Marivate, 2014). The South African SMME sector is characterized by lack of entrepreneurial skills (Edoho, 2015; Worku, 2014; Seeletse, 2012; Asah, Fatoki & Rungani, 2015), over-regulation (Shree and Urban, 2012), too much bureaucracy (Henrekson, 2014), difficulty in securing loans (Brownson, 2014) and poor municipal services (Khale, 2015).

The annual report issued by the South African Chamber of Commerce and Industry (2016) for the financial year 2014/2015 has confirmed that problems of over-regulation and lack of good governance stifle growth and sustained profitability in start-up enterprises. Asah, Fatoki and Rungani (2015) have reported that lack of basic entrepreneurial skills, difficulty in securing loans, cumbersome bureaucracy and corruption hinder profitability in the SMME sector. Edoho (2015) has argued that it is essential to provide tailor-made skills based training opportunities to aspiring entrepreneurs as a means of addressing the critical shortage of business and
entrepreneurial skills among black Africans. Reports published by Khale (2015) and Marivate (2014) have shown that poor service delivery by local governments and municipalities as well as lack of adherence to good governance principles stifle sustained development in SMMEs.


Mafunisa (2004) and Snyman & Vorster (2011) have reported that skills based training programmes are essential for improving service quality standards in areas such as water and lights, road maintenance, finance, tax collection and waste management. According to Phago (2009) and McNamara (2008), the training of employees must be aligned to key performance areas and indicators. Such a goal could only be achieved by assessing the training needs of employees. In this regard, Sanderson (2011) has proposed a guideline that could be used for aligning the training needs of employees with key performance areas. The author has pointed out that performance monitoring and evaluation should be used as a tool for aligning the training needs of employees with key performance areas of employees.

The City of Tshwane is home to a large number of businesses and government departments. The City of Tshwane has been operating as a metropolitan municipality since 2000. It is located in Gauteng Province and includes Pretoria (Breetzke and Horn 2006). In 2008, the municipality merged with Metsweding, Cullinan and Bronkhorstspruit forming the single-largest metropolitan municipality in Southern Africa. It comprises 7 regions, 105 wards, 210 councillors and residents estimated at 2.5 million (Phago 2009; Horn 2010; Snyman and Vorster 2011; Aigbavboa and Thwala 2013). Because of its size and composition, it is classified as Category A Grade 6 Urban Municipality under the Municipal Demarcation Board in terms of Section 4 of Local Government Municipal Structures Act, 1998 (Act 117 of 1998). Its management comprises an executive mayoral system (Phago 2009; Horn 2010; Snyman and Vorster 2011; Aigbavboa and Thwala 2013).
The formation of the new City of Tshwane was consistent with the Gauteng Global City Region Strategy aimed at reducing the number of municipalities in the province and instituting new structures by 2016. In line with the new structures, the Mayoral Executive System combines with a ward participatory system along with Section 2 (g) of the Determination of Types of Municipality Act, 2000 (Act 1 of 2000). These change processes were geared towards local government transformation and aimed at enhancing the performance of employees in their positions of providing service delivery (Diedericks and Joubert 2006; Horn 2010). In fact, the Constitution of the Republic of South Africa (1996) states that municipalities must structure and manage their administration, budgeting, and planning processes in such a manner as to prioritise the provision of essential needs of communities and promote social and economic development.

The efficient provision of services remains a priority as stated in the municipalities’ charter. Yet, municipalities in South Africa are constantly faced with challenges of how best to advance the status quo (Cameron and Sewell 2003; Cameron 2005; De Waal and Gerritsen-Medema 2006; Diedericks and Joubert 2006; Aigbavboa and Thwala 2013). Government and such bodies as South African Local Government Association (SALGA) instituted a number of changes for stepping up the efficient provision of services. Notwithstanding those change processes and prioritisation, municipalities particularly City of Tshwane continue to encounter challenges relating to improving service delivery in their areas of jurisdiction (Nel and Rogerson 2005; Phago 2009). Thus, employees’ performance in municipalities is under close scrutiny.

The potential benefits of skills based training opportunities to employees of large municipalities such as the City of Tshwane have been shown in studies conducted by Seeletse (2012), Bezuidenhout & Nenungwi (2012), Booysens (2011), Brownson (2014), Marivate (2014), Worku (2015) and Khale (2015). The authors have reported that small, micro and medium-sized enterprises (SMMEs) often fail due to poor or inadequate municipal services, over-regulation, unnecessary bureaucratic procedures, lack of transparency, lack of good governance, lack of efficiency in the administration and management of license applications, inability to assess and evaluate tax, lack of entrepreneurial skills, lack of accounting and auditing and bookkeeping skills, inability to draw up business plans, inability to make oral presentations, inability to network with business rivals and competitors, difficulty in securing loans from commercial banks and micro-lending financial institutions and lack of infrastructure.
Methods and materials of study

The design of study was cross-sectional and descriptive. The sample size of study was equal to 131 (119 questionnaires + 12 in-depth interviews). Purposive sampling was used for selecting eligible respondents working for the City of Tshwane in various Departments. A structured, pre-tested and validated questionnaire of study was completed by 119 municipal employees. In-depth interviews were conducted with an additional 12 municipal managers, directors and deputy directors working for the City of Tshwane. Quantitative data analyses were performed by using frequency tables, cross-tab analyses, factor analysis (Hair, Black, Babin & Anderson, 2010) and logit analysis (Hosmer & Lemeshow, 2013). Qualitative data analysis was performed by using coding, tallying, text analysis and triangulation.

Results of study

Table 1 shows the general characteristics of the 131 respondents who took part in the study. The table shows that 49% of respondents have had past training opportunities. The percentage of employees with satisfactory performance was equal to 52%. It can be seen from the table that 60% of respondents have matric level academic qualifications. The percentage of respondents with degree level qualifications is only 14%. The table shows that 60% of residents rent property. The table shows that 61% of respondents earn salaries of 10,000 Rand or less. It can be seen from the table that respondents who took part in the study are characterized by low level of skills, low level of formal education, and lack of expertise in areas that require advanced operational competence in municipal service delivery.
Table 1: General characteristics of respondents (n=131)

<table>
<thead>
<tr>
<th>Characteristics of respondents</th>
<th>Frequency and percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past training opportunity</td>
<td>Yes: 64 (49%)</td>
</tr>
<tr>
<td></td>
<td>No: 67 (51%)</td>
</tr>
<tr>
<td>Performance in most recent quarter</td>
<td>Adequate: 68 (52%)</td>
</tr>
<tr>
<td></td>
<td>Inadequate: 63 (48%)</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>Satisfied: 79 (60%)</td>
</tr>
<tr>
<td></td>
<td>Not satisfied: 52 (40%)</td>
</tr>
<tr>
<td>Highest level of education</td>
<td>Matric or below: 71 (54%)</td>
</tr>
<tr>
<td></td>
<td>Certificate or diploma: 30 (23%)</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s degree: 22 (17%)</td>
</tr>
<tr>
<td></td>
<td>Master’s degree: 4 (3%)</td>
</tr>
<tr>
<td></td>
<td>Doctorate or more: 4 (3%)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male: 68 (52%)</td>
</tr>
<tr>
<td></td>
<td>Female: 63 (48%)</td>
</tr>
<tr>
<td>Age category</td>
<td>20 years or less: 4 (3%)</td>
</tr>
<tr>
<td></td>
<td>21 to 30 years: 33 (25%)</td>
</tr>
<tr>
<td></td>
<td>31 to 40 years: 49 (37%)</td>
</tr>
<tr>
<td></td>
<td>41 to 50 years: 35 (27%)</td>
</tr>
<tr>
<td></td>
<td>51 years or more: 10 (8%)</td>
</tr>
<tr>
<td>Duration of service</td>
<td>Less than 5 years: 16 (12%)</td>
</tr>
<tr>
<td></td>
<td>5 to 10 years: 34 (26%)</td>
</tr>
<tr>
<td></td>
<td>11 to 20 years: 29 (22%)</td>
</tr>
<tr>
<td></td>
<td>21 or more: 52 (40%)</td>
</tr>
<tr>
<td>Race</td>
<td>Black or African: 116 (89%)</td>
</tr>
<tr>
<td></td>
<td>White: 8 (6%)</td>
</tr>
<tr>
<td></td>
<td>Coloured: 5 (4%)</td>
</tr>
<tr>
<td></td>
<td>Asian: 2 (2%)</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single: 56 (43%)</td>
</tr>
<tr>
<td></td>
<td>Married: 42 (32%)</td>
</tr>
<tr>
<td></td>
<td>Divorced: 5 (4%)</td>
</tr>
<tr>
<td></td>
<td>Windowed: 4 (3%)</td>
</tr>
<tr>
<td></td>
<td>Others: 24 (18%)</td>
</tr>
</tbody>
</table>
Table 2 shows results obtained from cross-tab analyses. At the 5% level of significance, the results show that inadequate performance is significantly associated with lack of training opportunities, low level of formal education, lack of job satisfaction, lack of performance monitoring and evaluation, short duration of employment, perception of low salary, perception of poor employee benefits, perception of poor career development, perception of lack of incentives for employees, and perception of lack of appreciation from customers, in a decreasing order of strength.

Table 2: Results obtained from Pearson’s Chi-square tests of associations (n=131)

<table>
<thead>
<tr>
<th>Inadequate performance</th>
<th>Observed Pearson chi-square value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of training opportunities</td>
<td>16.9754</td>
<td>0.000***</td>
</tr>
<tr>
<td>Low level of formal education</td>
<td>16.2946</td>
<td>0.000***</td>
</tr>
<tr>
<td>Lack of job satisfaction</td>
<td>16.0558</td>
<td>0.000***</td>
</tr>
<tr>
<td>Lack of performance monitoring and evaluation</td>
<td>14.3888</td>
<td>0.000***</td>
</tr>
<tr>
<td>Short duration of employment</td>
<td>13.4939</td>
<td>0.000***</td>
</tr>
<tr>
<td>Perception of low salary</td>
<td>13.3229</td>
<td>0.001**</td>
</tr>
<tr>
<td>Perception of poor employee benefits</td>
<td>13.3229</td>
<td>0.002**</td>
</tr>
<tr>
<td>Perception of poor career development</td>
<td>11.3609</td>
<td>0.004***</td>
</tr>
<tr>
<td>Perception of lack of incentives for employees</td>
<td>11.3295</td>
<td>0.007**</td>
</tr>
<tr>
<td>Perception of lack of appreciation from customers</td>
<td>10.9430</td>
<td>0.017*</td>
</tr>
</tbody>
</table>

Legend: Significance levels at * P<0.05; ** P<0.01; *** P<0.001

Results obtained from logit analysis
Table 3 shows results obtained from logit analysis. At the 5% level of significance, the results show that inadequate performance is significantly associated with lack of training opportunities, low level of formal education, and lack of job satisfaction, in a decreasing order of strength.

### Table 3: Results obtained from logit analysis (n=131)

<table>
<thead>
<tr>
<th>Factors that affect inadequate performance</th>
<th>Odds Ratio</th>
<th>95% C. I.</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of training opportunities</td>
<td>6.80</td>
<td>(4.87, 8.36)</td>
<td>0.000</td>
</tr>
<tr>
<td>Low level of formal education</td>
<td>4.12</td>
<td>(2.89, 6.02)</td>
<td>0.000</td>
</tr>
<tr>
<td>Lack of job satisfaction</td>
<td>3.76</td>
<td>(2.28, 5.69)</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The odds ratio of the variable lack of training opportunities is equal to 6.80. This indicates that an employee who is not trained on the job is 6.80 times as likely to underperform in comparison with another employee who is trained on the job. The odds ratio of the variable low level of formal education is equal to 4.12. This indicates that an employee who has a low level of education (matric level or less) is 4.12 times as likely to underperform in comparison with another employee whose level of formal education is high (above matric level). The odds ratio of the variable low level of job satisfaction is equal to 3.76. This indicates that an employee who has no job satisfaction is 3.76 times as likely to underperform in comparison with another employee who has job satisfaction.

**Results obtained from factor analysis**

Factor analysis (Field, 2010:134) was used for identifying and quantifying key predictors of inadequate performance among employees. The following procedures were followed while performing factor analysis (Computation of the correlation matrix for all variables, Extraction of initial factors, and Rotation of the extracted factors as a terminal solution). Factor analysis produced 3 influential predictor variables that influenced inadequate performance by employees. Factor analysis is useful in cases where the correlation among the variables of study is significant. The correlation matrix in this study showed that several pairs of variables had correlations exceeding 0.3, thereby showing that factor analysis was appropriate. In this study, a
cutoff point of 0.3 was used as is recommended by Field (2010:138). The Cronbach Alpha test for internal consistency was used for testing the suitability of the 29-item structured questionnaire of study. The test gave a value of 0.881 and an associated level of significance that was smaller than 0.001. Furthermore, Bartlett’s test of Sphericity was used for testing the adequacy of the correlation matrix, and gave an estimate of 0.848, a figure that was greater than the cut-off point of 0.5, thereby confirming the suitability of factor analysis.

Table 4: Estimates obtained from the Kaiser-Meyer-Olkin and Bartlett's test

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy</th>
<th>0.848</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed value of chi-square statistic for KMO test</td>
<td>1108.07</td>
</tr>
<tr>
<td>Bartlett’s Test of sphericity degrees of freedom</td>
<td>248</td>
</tr>
<tr>
<td>P-value for Bartlett’s Test of sphericity degrees of freedom</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Table 5 shows the total variance explained by the top 3 influential variables of study.

Table 5: Results estimated from factor analysis

<table>
<thead>
<tr>
<th>Factors that affect inadequate performance</th>
<th>Eigen value</th>
<th>Percentage of explained variance in viability</th>
<th>Cumulative percentage of explained variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of training opportunities</td>
<td>5.119</td>
<td>39.159</td>
<td>39.159</td>
</tr>
<tr>
<td>Low level of formal education</td>
<td>4.708</td>
<td>27.308</td>
<td>66.467</td>
</tr>
<tr>
<td>Lack of job satisfaction</td>
<td>3.619</td>
<td>13.650</td>
<td>80.117</td>
</tr>
</tbody>
</table>

The results shown in Table 5 provide estimates for the percentage of variance explained by the 3 factors that were extracted by using the principal axis factoring method. Each of the 3 extracted factors has an Eigen value of magnitude greater than 1, thereby indicating its level of importance in terms of accounting for viability in business. The 3 extracted factors collectively account for 80.117% of the total variability in viability (the dependent variable of study). Based on the estimates shown in Table 5 above, it can be concluded that inadequate performance is significantly associated with lack of training opportunities, low level of formal education, and lack of job satisfaction, in a decreasing order of strength. The 3 factors listed above accounted for 80.117% of total variability. This figure is above 75%.
Summary of key results obtained from in-depth interviews

The key findings obtained from in-depth interviews conducted with 12 employees of the City of Tshwane could be summarised as follows:

- Providing training opportunities to employees on a regular basis is vital, and needs to be adequately planned, resourced and funded so that all employees could benefit from such training programmes.
- Training programmes must be modelled after key performance areas and key performance indicators as a means of saving valuable resources and time.
- Promotion opportunities must not be given to employees who fail to improve their performance after taking a training opportunity.
- A comprehensive performance monitoring and evaluation programme must be implemented with a view to identify the training needs and priorities of employees.
- All sorts of complaints made by customers on poor service delivery must be duly investigated by suitably qualified and independently appointed bodies in order to address performance-related problems promptly and efficiently.
- Employees who had a training opportunity were relatively more productive and better motivated at work in comparison with employees who did not have training opportunities. Training and development opportunities provided to employees by the City of Tshwane were not aligned to the skills needed for performing Key Performance Areas (KPAs). Although the municipality continues to provide training via its respective departments, its training academy and external service providers, there is rampant service delivery protests in City of Tshwane particularly in the townships.
- The evaluation of performance of employees was plagued by the perception of racism, partisanship and political interference.
- There was an acute shortage of adequately trained experts in key areas of service delivery. Although the City of Tshwane has initiated internship and learnership programs that are aimed at offering training and development programmes, such efforts were not implemented vigorously.
• Performance monitoring and evaluation was not done in the context of seeking to improve service delivery but to increase salaries and determine whether bonuses could be awarded.
• There was insufficient follow-up after training and development programs to determine if the performance of trainees has improved significantly.
• Regionalisation was hampered by lack of trained, suitably qualified and dedicated personnel.

**Key findings of study**

The study has shown that inadequate performance is significantly associated with lack of training opportunities, low level of formal education, and lack of job satisfaction, in a decreasing order of strength. Results obtained from in-depth interviews have also shown that the City of Tshwane lacks effective monitoring and following up systems for training and development. Training and development programmes need to be aligned to the key performance areas of employees. The City of Tshwane is characterized by erratic and inept approaches to training and development which result in the absence of accountability and necessary resources for ensuring employees are given power to and adequately prepared to deal with the service delivery challenges. There is a need for a strategic, well-planned, needs-based, outcomes-based and competency-based approach to training and development which is closely linked to the expected performance of municipal employees as stated in the IDP and allied policy documents.

**Recommendations of study**

Based on findings obtained from the study, it is recommended to the City of Tshwane to develop and implement a comprehensive performance monitoring and evaluation programme as a means of ensuring adequate performance and service delivery by all employees of the City of Tshwane. It is strategically beneficial for the City of Tshwane to provide employees with career growth paths and development programmes. Tailor-made and skills based training opportunities should be provided to employees as a means of providing them with incentives and motivation at work. The training programmes must be aligned with the operational and business needs and requirements of customers of the City of Tshwane. The City of Tshwane should forge strategic
partnerships and collaborations with key stakeholders such as research and academic institutions with a view to acquire suitable training and development programmes.
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DEVELOPMENTAL CHALLENGES FACED BY THE ZIMBABWEAN ECONOMY: 
THE LINK TO THE ECONOMY STRUCTURES

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ABSTRACT

Sub-Saharan Africa (SSA) holds the largest proportion of the world’s precious resources’ deposits. However, numerous country studies bemoan the lack of policies in SSA that can transform its natural resources into industrial development. This paper focuses on the Zimbabwean case, a low-income country characterised by political instability and conflict as well as economic decline (International Monetary Fund (IMF), 2014). After independence in 1980, the Zimbabwean economy realised a notable upward trend. It is believed that this economic growth can be attributable to the prospects of democracy and majority-rule. Given the strategic importance of the agricultural sector, the government failed to be fully supportive of agriculture to ensure continued economic viability. A closer inspection reveals that the Zimbabwean government did not prioritise this sector at a policy level. This purpose of this paper is to discuss the developmental challenges faced by the Zimbabwean economy. To present this argument, the paper addresses three issues. First, it outlines the several risks that emanated from these challenges. Second, the paper establishes a link between the structure of the economy and some identified developmental challenges. Third, an explanation on how the identified challenges help to create a peculiar risk pattern in the economy will be provided. The paper concludes by proposing some practical solutions that may resolve these challenges.

Keywords: Challenges, development, economy, government

INTRODUCTION

Sub-Saharan Africa (SSA) holds the largest proportion of the world’s precious resources’ deposits. However, numerous country studies bemoan the lack of policies in SSA that can transform its natural resources into industrial development (Page, 2014). While this problem is widespread in Africa, this paper focuses on the Zimbabwean case.

Zimbabwe is a low-income country characterised by political instability and conflict as well as economic decline (International Monetary Fund (IMF), 2014). This negative spiral in the economy has resulted in numerous investors’ side-lining trade with Zimbabwe (Page, 2014). The Zimbabwean economy, however, was not always in the doldrums. For instance, soon after attaining its independence in 1980, the Zimbabwean economy realised a notable upward trend. It is believed that this economic growth can be attributable to the prospects of democracy and majority-rule.
The Zimbabwean economy is generally agro-based. As said by Maiyaki (2010), agriculture is the backbone of the Zimbabwean economy and accounted for 18 percent of the Gross Domestic Product (GDP) in 2005. As previously noted, Zimbabwe is an example of an economy that has failed to transform its abundant natural (i.e., agricultural) resources into economic development. To illustrate, given the strategic importance of the agricultural sector, the government failed to be fully supportive of agriculture to ensure continued economic viability. Closer inspection reveals that the Zimbabwean government did not prioritise this sector at a policy level. Consequently, much of the agricultural resources were dilapidated; resulting in the economy being reduced to a “begging basket”, an economy that was once revered as the bread basket of Africa.

The purpose of this paper is to discuss the developmental challenges faced by the Zimbabwean economy. To present this argument, the paper addresses three issues. First, it outlines the several risks that emanated from these challenges. Second, the paper establishes a link between the structure of the economy and some identified developmental challenges. Third, an explanation on how the identified challenges help to create a peculiar risk pattern in the economy will be provided. Lastly, the paper concludes by proposing some practical solutions that may resolve these challenges.

DEVELOPMENTAL CHALLENGES FACED BY THE ZIMBABWEAN ECONOMY: THE LINK TO ECONOMIC STRUCTURES

Corruption

Corruption is the abuse of entrusted power for private gain. Corruption can be classified as grand, petty and political, depending on the amount of money lost and the sector where it occurs. (Transparent International, 2016). Corruption has become one of the biggest impediments to development because those entrusted with power only focus on their private gain rather than the collective benefit for all citizens.

There are numerous examples in Zimbabwe where corruption has continued to marginalise the ordinary citizens and hence undermining development (Hove, Nyamunda & Mukwambo, 2014:72). The gap between the wealthy elite and the poor (the have not) continues to grow. People expected to benefit from one of the Indigenisation and Empowerment Act (hereafter called “Act”) (Republic of Zimbabwe, 2008) that was gazetted by the government. Those entrusted with power, abused the Act for their own personal benefit. This Act requires a lot of revisions in the manner in which it is being implemented if the ordinary people of Zimbabwe are to benefit. The government had an objective to push for radical economic transformation by empowering ordinary black Zimbabweans. However, only those related to individuals in power or support certain political parties ended up benefiting (Shumba, 2014).

From 2006 to 2009, there was a diamond rush in Marange in Eastern Zimbabwe. Thousands of Marange residents were displaced to pave way for the mining of the gems. Community Ownership Trust Schemes were established to empower and benefit the local people in that area. However, due to corrupt activities those in power (especially in the Ministry of
Mines and the Mineral Marketing Corporation of Zimbabwe (MMCZ) amassed a lot of wealth depriving those who were dispersed to pave way for the diamond operations. Consequently because of corrupt activities the diamonds in Zimbabwe’s Chiadzwa area resulted in gross human rights abuses, punctuated by loss of human life, displacements during and after the government’s direct involvement. (Hove et al, 2014)

As said by José Ugaz (2016), Chair of Transparency International. “In too many countries, people are deprived of their most basic needs and go to bed hungry every night because of corruption, while the powerful and corrupt enjoy lavish lifestyles with impunity.” Zimbabwe was ranked 154 out of 176 countries with a score of 22 out of 100 on the Corruption Perceptions Index 2016. The score indicates the perceived level of public sector corruption on a scale of 0 (highly corrupt) to 100 (very clean). (Transparent International, 2016).

Transparent International acknowledges that corruption and inequality feed off each other, creating a vicious circle between corruption, unequal distribution of power in society, and unequal distribution of wealth. It is only when corruption has been fought that development can take place that will result in the lives of ordinary Zimbabweans to improve.

Poverty

In Zimbabwe, poverty is also a hindrance to development as the scarce resources that are raised by the State go towards consumption alone excluding the betterment of social services. Currently more than 80 percent of government revenues go towards government spending. The resultant factor is that there is no advancement of basic amenities to benefit the citizens and it means that the next generation is being disadvantaged. Currently the greater part of the country’s road network system is in a deplorable state because of the unavailability of funds for maintenance or the lack thereof of resources.

As acknowledged by Nnadozie (2003:405) there existed protracted periods where the economic performance of African economies was declining. Population growth rates have been running ahead of real growth rates (refer to Figure 1), implying that output per capita has been declining. It was also evident in Zimbabwe that on occasions where there is an increase in population statistics, consumption is highly likely to increase. Ultimately, the need arises for more resources to be allocated to respond to the needs of a burgeoning population. This then led to Zimbabwe to rely on foreign aid rather than mobilising local savings.

Figure 1: Zimbabwean Population & GDP Annual growth Rates
The reliance of Zimbabwe on foreign aid is a result of the financing gap. The financing gap is the difference between domestic savings and the required investment (Nnadozie, 2003:409). As argued by some economists, foreign aid crowds out export industries, for example, bidding up the price of skilled workers. Aid may make governments dependent on their paymasters in the rich world, not their taxpayers at home (The Economist, 2005). Sanjeev Gupta (2005) of the International Monetary Fund (IMF) once said, “For every extra dollar of aid they are given, governments raise 28 cents less in tax in their local countries.” Foreign aid cannot make poverty history; however, it can do harm.

The political and economic crises in Zimbabwe between 2000 and 2008 nearly halved the country’s (GDP). The state of being poor increased to more than 72 percent, with about 20 percent of the Zimbabwean population living in abject poverty. Basic services like the education and public health systems which were once regarded as regional models collapsed. In 2011 the Human Development Index (HDI) was 173 out of 187 countries (World Bank, 2016).

The assistance from donors made it possible for some of the social services to recover. This resulted in the country’s HDI ranking to be 155 in the year 2015. Some of the notable changes were in the health and education systems. The World Bank actually estimated that these changes were more or less at the same levels that the country was at in the nineties. Part of these positive changes was the reduction in HIV prevalence to approximately 15 percent from 2014 relative to a level above 40 percent in 1998. The maternal mortality rate declined from 960 deaths per 100,000 live births in 2010-2011 to an estimated 614 deaths in 2014; under-five mortality fell from 94 per 1,000 in 2009 to 75 in 2014 (World Bank, 2016). However, with all these notable positives changes noted above, the country failed to achieve a number of the Millennium Development Goals (MDGs).
The rudimentary for development and poverty reduction is strong should Zimbabwe tackle its political fragilities and begin the journey of building strong and reliable policies that may attract and boost investors’ confidence in which the country is doing its business. Policy makers need to prioritise policies that attract and not scare away investors.

**Ineffective policies, poor governance and mismanagement (of the economy?)**

Effective and efficient good governance is a paramount key ingredient to the development of an economy. Governance refers to a process by which institutions are run and directed. Good governance appears not to exist in most sectors of the Zimbabwean economy and this has a negative impact on the development of the economy. In particular, the public sector or State Owned Enterprises (SOE), Municipalities etc. tend to misplace their objectives. Those charged with governance tend to benefit rather than the ordinary people. Instead of channeling the meagre resources to development, resources are used to buy executive vehicles and improving their livelihoods by increasing executive remuneration.

The challenge in Zimbabwe is that poor governance is initiated by those charged with governance. There is need for public policy management so that the allocation of public resources is transparent and that those charged with governance are able to account for their actions.

**External debt burden and capital flight**

Another challenge facing Zimbabwe is its external debt burden. A huge external debt burden is a major constraint to growth not only to Zimbabwe but to a majority of SSA countries. This unsustainable debt problem for a majority of African countries persists despite almost 20 years of debt relief efforts from bilateral aid donors and other funders (The African Capacity Building Foundation (ACBF), 2002:12). The external debt burden has also caused the Zimbabwe’s credit rating to collapse and as the resultant factor was the disappearance of loans from abroad (Robertson, 2010:7).

Zimbabwe’s external debt is estimated at 76 percent of Gross Domestic Product (GDP). Both public and external debt ratios remain at high levels with most of the external debt in arrears. After a debt reconciliation exercise for end 2014 and 2015, the country’s total public and publicly guaranteed (PPG) external debt was estimated at about 49 percent of GDP (US$6.96 billion), 79 percent of which is in arrears (International Monetary Fund (IMF), 2016).

The external debt burden almost cuts across the entire economy. This level of debt burden continues to mount pressure on authorities and it crowds out any possibility of borrowing to fund development. This is one of the reason why most of the country’s development projects are stalling. The country is heavily indebted. The following are some of the risk patterns that have emanated from this burden of a growing external debt;
• Stalling of government developmental projects because of lack of funding;
• Inability of the State to attract funders because the country is classified to have a risk of default;
• Exponential increase in road carnage because of a poor road network. Roads not being maintained because of lack of funding; and
• Under developed economy because investors don’t feel safe to inject capital because of poor debt management policies

One of the practical solutions to mitigate or resolve the increasing external debt from a development finance perspective is for Zimbabwe to pursue stringent, viable measures that respect the lenders (financiers) debt covenants. The IMF in 2016 acknowledged that with the clearing of arrears to the International Financial Institutions (IFIs), the result is that this will unlock concessional financing, the country’s debt burden would only marginally improve, requiring the need for the country to follow sound economic policies.

\(^1\) Equivalent of R82.6 billion using average exchange rate for 2014 and 2015 of US$1 to R11.87.

Some economists have even argued that capital flight is a result of heavily indebted countries’ or inability to recover from debt problems (Makochedanwa, 2007). The absence of capital in Zimbabwe has continued to affect meaningful development. Makochedanwa (2007) estimated that the Zimbabwean capital flight stood at US $10.1 billion over the 1980 to 2005 period, with capital flight-to-GDP ratio roughly 5.4 per cent. Simply put, for every US dollar of GDP accumulated by Zimbabwe annually from 1980 to 2005, private Zimbabwean residents accumulated (US) 5.4 cents of external assets annually during the same period. However, should better management policies for Foreign Direct Investment (FDI) transactions be put in place, it may prevent leakages of the same to leave the country.

Exodus of skills and experience (human capital flight)

Human capital flight is one of the major developmental challenges in Zimbabwe. The country lost thousands of talented individuals who are crucial to the development of the economy. The loss of trained and highly skilled Zimbabweans to developed countries has continued to hamper development in private and public sector economic structures. Human capital is not only central to the development of the Zimbabwean economy but also to the present development age in which knowledge and brain power gives the country a competitive age (ACBF, 2002).

The human capital flight continues to hamper losses in capacity which is attributed to socio-economic instability, inappropriate economic policies and poor infrastructure (ACBF, 2002). The experience of Zimbabwean companies has been severe, most of the people that left were the highest paid in these companies and the most experienced. The exodus of these experienced professionals also negatively affected the tax revenue base of the Zimbabwe
government and not only the resident organisations (employers) (Scientific and Industrial Research and Development Centre (SIRDC), 2002). The country survey by African Development Bank Group (AfDB) (2013) estimated that over three million individuals migrated from Zimbabwe between 2006 and 2008. The brain drain further exacerbated the pressure on the dwindling tax revenue base that support the country budget.

The following are some of the risk patterns that have emanated as a result of this great exodus of the skilled and the experienced:

- Very minimal research and development is taking place in the country (about 0.2 percent of the Gross National Product is invested in research and development). This affects innovation in new technologies that support development. Experienced researchers left Zimbabwe in search for other nations that offer better working conditions ("greener pastures") including job security to support their families; and

- The country’s tax revenue base continues to shrink because of the emigration of educated individuals. Shrinking of government funding will definitely result in reduced country resources needed for development.

To mitigate brain drain, the government should put in place policies that discourage emigration ("push factors"). However, these polices need to be favourable to citizens for example meaningful rewards as salaries and benefits. SIRDC, (2002) emphasised the necessity for the government to reward workers appropriately (market related benefits) to encourage staying in the country attractive. Expertise and knowledge possessed by people (the measure of economic value for an employee’s skills) is the cornerstone to a country’s meaningful and sustainable economic development. (Chimboza, 2012).
### Five Phases of the Zimbabwe Brain Drain Problem

<table>
<thead>
<tr>
<th>Period</th>
<th>Nature of Migrants</th>
<th>Size of migrants based on Main Secondary Sources</th>
<th>Destinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Migration of political exiles and employment seekers to South Africa</td>
<td>Approx. 210 000 political exiles, Approx. employment seeking to South Africa</td>
<td>Botswana, Mozambique, South Africa, United Kingdom, Zambia</td>
</tr>
<tr>
<td>Phase 2</td>
<td>Flight of white Zimbabweans</td>
<td>Approx. 142 000</td>
<td>Australia, Canada, New Zealand, South Africa, UK, USA</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Ndebele migration</td>
<td>Approx. 5000</td>
<td>Botswana, South Africa, UK</td>
</tr>
<tr>
<td>Phase 4</td>
<td>Migration of skilled professionals</td>
<td>Approx. 200 000</td>
<td>Australia, Botswana, South Africa, UK, USA</td>
</tr>
<tr>
<td>Phase 5</td>
<td>Mass exodus following political and economic crises</td>
<td>Approx. 3-4 million</td>
<td>Australia, Botswana, Canada, New Zealand, South Africa, UK, USA</td>
</tr>
</tbody>
</table>

*Flight commenced when the war of liberation escalated in 1972*

*source (Pasura, 2008)*

#### PRACTICAL SOLUTIONS TO RESOLVING THE DEVELOPMENTAL CHALLENGES WITH EMPHASIS ON A DEVELOPMENT FINANCE PERSPECTIVE

The country’s revenue collection system is not robust and as result there is a lot of revenue leakages. There is need for strong punitive measures for the evasion of tax especially in the mining sector where policy makers have actually identified falsification by some mining companies when they submit their returns. Policy makers need to demonstrate respect for the rule of law and not condone corruption irrespective of political affiliation. The suspension of the Zimbabwe Revenue Authority (ZIMRA) Commissioner General in 2016 because of engaging in fraudulent activities is a good example of not condoning corruption by policy makers. A robust revenue collection system will definitely improve domestic savings. These domestic savings may in turn be channelled to development and probable repayment of some of the country’s external debts. The country’s boarders are very porous and infiltrated with corrupt individuals. As a result, Zimbabwe loses millions of dollars from goods not declared and smuggled into the country.

There is need to liberalise some of the Indigenous Empowerment Act regulations so as to attract new capital preferably in form of equity rather than loans. The policy makers need to address challenges with regards to access to financing, policy instability and inadequate supply of infrastructure. The later will indicate the seriousness of the country about investment policies.
and the quest for real development. The importation of second hand vehicles especially from Japan must be strictly regulated so as to protect the local car manufacturing industry. However, this must be preceded by the local car manufacturing industry being in a position to produce the right products at the right quality before strict measures can be put on the importation of second hand vehicles. The manufacturing of local vehicles should meet the consumer demands To initiate policy drafting, the age (year of manufacture of the vehicle) for imported vehicle can be used to regulate importation. For example allowing importation of vehicles not older than 10 years.

Zimbabwe must devise its own poverty alleviation mechanisms in wide consultation with the civil society before inviting donors to support the plan. The closure of companies because of the increase in operating expenditure has resulted in a significant increase in the informal trading by citizens. There is a greater need for support of these informal, small and micro enterprises through Development Financial Institutions (DFIs) and Venture Capital Institutions (VCIs). DFIs or VCIs maybe in a position to bridge the financing gap by taking some of the risks that the traditional commercial banks may not be willing take as depicted by the diagram in Figure 2, below.

**Figure 2: Development Finance “Niche”**

![Diagram of Development Finance Niche](http://www.financialgazette.co.zw/unpacking-the-role-of-development-finance-institutions/)

DFIs normally assists in addressing market failure in capital markets. Examples of DFIs and some intervention programmes include inter alia venture capitalists, development banks, industrial development corporations, and credit guarantee schemes. In the United States of America venture capitalists have been the driving force for many years in assisting exponential growth for a number of firms. Some examples of these firms are Microsoft and Oracle which are
companies that were incorporated some years ago and have become forces to reckon with in the
technology landscape (Afrasia Kingdom, 2014).

The country has a generous endowment of natural resources for example, arable land. After
the controversial Land Redistribution Programme around the year 2000, food production
decayed significantly because of the lack of expertise from the new farmers. However, the
country also experienced drought during the same period. There is need for capacity building for
the new farmers and support financially. The current government programme termed Command
Agriculture, where the government is providing inputs may go a long if implemented and
monitored properly.

Policy makers need to implement the agreed measures with creditors to reduce the burden of a
ballooning external debt rather than reneging. Reneging on promises as agreed with creditors
will negatively affect the country. In the nineties, the World Bank proposed a programme of
trade liberalisation measures aimed at reducing the country’s budget deficit. In the following
year, during the country’s budget speech, plans that were contrary to the agreed measures were
announced by the government. This announcement plunged the country into a downward trend
(Robertson, 2010:6).

The national budget should prioritise the development of essential social services inter
alia public health and education. In the previous fiscal years more than 90percent of budgeted
resources in Zimbabwe are mainly channelled to consumption (payment of salaries and
allowances) rather than development. This is one of the reasons why the country’s education
system which was once a model for Africa has seriously deteriorated. Once there is no
development especially in the education sector, it may also mean that economic development has
been affected because of a possible shortage of professionals that are supposed to come through
the education system.

CONCLUSION

Zimbabwe’s developmental challenges are however not insurmountable. The country possesses
numerous resources which policy makers should take advantage of to benefit all the
Zimbabweans. Experienced professionals should be attracted back into the country to assist in
the rebuilding of the economy. To take advantage of her resources and to realise her potential,
Zimbabwe requires prompt action to correct fiscal policies, re-stabilize the monetary system, and
resolve arrears to the international funders which would probably allow for a resumption of
development financing. It will also require the continued renewal of institutional and operational
capacity in the public sector as well as deep reforms in the investment climate (World Bank,
2016)

It is of paramount importance that the policy makers prioritize the eradication of rampant
corruption especially in the public sector entities. Perpetrators of corruption must be brought to
book without fear or favour so as to send a strong message that anyone convicted of this crime
will face serious penalties. A good example is what the current President of Tanzania (Dr John
Magufuli) is currently implementing to combat corruption in his country. Some executives at
Muhimbili National hospital were fired unexpectedly because they were failing to implement correct measures to the proper functioning of the hospital. The focus of the government must be to provide basic essential public services. Unnecessary government expenditure must be cut and those resources should then be diverted to essential public services.

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