

The Impact of Research and Innovation on SMMEs in Gauteng Province South Africa

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Abstract: Small, Micro and Medium Enterprises (SMMEs) have always played a key role in the economies of major industrial societies in both Gross Domestic Product (GDP) and employment levels. Their survival and growth depended mainly on extensive research and innovation. As we enter the 22nd century, globalisation has become an influential force in world trade. It is important to view SMMEs as instruments capable of responding to globalization. While it is true that globalization creates opportunities for SMMEs to be effectively involved in global markets, it also poses numerous challenges and problems. While their flexibility and adaptability promise their success in global trade, SMMEs can only achieve this through effective research and innovation, hence making them competitive in terms of price, quality of goods and their ability to meet delivery requirements. Research and innovation is particularly important especially in the developing countries such as South Africa where SMMEs are important contributors to the economy. They provide employment opportunities and create economic wealth resulting in poverty reduction and increased employment. In order to succeed and prosper, SMMEs need to establish continuous research and innovation strategies in-order to allow them to evolve and adapt to the global stature. This paper therefore seeks to reveal a deeper understanding of the strategies being used to encourage SMMEs in the Gauteng Metropolitan area to invest in research and innovation. The study therefore aims to improve the level of research and innovation in Small, Micro and Medium enterprises in Gauteng province. The data used in the study was gathered by administering structured questionnaires to businesses within the Gauteng Metropolitan, selected randomly through probability sampling method. The analysis of the results was based on descriptive statistics arrived at through SPSS tools. The results indicated that most SMMEs in the Gauteng Metropolitan are not adequately involved in research and innovative activities due to various reasons including lack of skills and expertise. Recommendations were made for Business owners to have workshops and to share innovative ideas. A one stop shop centre for SMMEs to have access to new ideas and to learn more about the current trends in research and innovation was suggested. Finally policy matters were also considered and suggestions made to policy makers.

Keywords: SMMEs; Innovation; Research; Entrepreneurship Gauteng

1. Introduction:

The study focusses on identifying the networks and the alliances built through innovation dissemination and sharing. For small and medium scale enterprises to succeed in the current economic environment, forming networks and building alliances is important. Building alliances and networks can give rise to an idea of 'clusters' of SMMEs which reinforce each other through networking and improve their productivity and international competitiveness.

Despite the country's economic growth in recent years, the unemployment rate hasn't reduced substantially. Developing small, medium and micro enterprises (SMMEs) is a key driver of government's economic development, poverty alleviation and job creation strategy (SA DTI, 2008). The small businesses offer a great redistribution effect and restructures society (Njiro, Mazwai and Urban, 2010). By the second quarter of 2014, the official unemployment rate of South Africa was estimated to be 25.5% (Statistics SA, 2014). SMMEs contribute to socio-economic development of a nation by creating employment. They thus will play a vital role in achieving the vision 2030 of the National Development Plan (NDP) to reduce the employment to 6% through the creation of about 90% jobs in small and expanding firms (NPC, 2011). SMMEs in South Africa cover about 91% of formal businesses, and contribute substantially to GDP (52% - 57%) and employment (61%) (Abor and Quartey, 2010). SMMEs contribute up to 90% of GDP in some developed countries (Munshi, 2009). Eight out of every ten jobs created in South Africa are in SMMEs (Statistics S.A, 2014). In 2010, about 11.61 million jobs were created by small businesses in South Africa – 67% of small businesses did not create any jobs other than the owner, 27% of small businesses hired between one and four employees in addition to the owner, and 6% of small businesses hired five or more employees (Fin Scope, 2010). The term SMME in South Africa is used for small, medium and micro enterprises and is interchangeably used with SME. According to the National Small Business Act, small businesses in South Africa can be classified into five categories (NCR, 2011):

- The informal survivalist businesses include hawkers, vendors and subsistence farmers with minimal assets and incomes below the poverty level;
- Micro enterprises lack formality in registration and taxation and have limited capital base. fewer than five employees with the turnover of less than the value-added tax (VAT) registration limit, i.e. R150000 per year;
- Very small businesses operate in the formal market with access to technology, and employ 10 to 20 people with annual turnover of R200000 to R500000;
- Small businesses are more established, tax registered, and employ up to 50 people with annual turnover of R2 m to R25 m; and
- Medium enterprises employees 100 to 200 people and have an annual turnover of R4 million to R50 million.

In 2010 Small Business Survey (Fin Scope, 2010), the small businesses in South Africa are categorized into seven sophistication segments from informal street vendors (BSM 1) to more sophisticated and sustainable businesses (BSM 7) using Business Sophistication Measure (BSM). The survey reported that Gauteng province has the highest number of small business owners (22.9%), followed by Eastern Cape (14.9%), KwaZulu-Natal (13.8%), North West (12.9%), Limpopo (9.8%), Western Cape (8.1%), Free State (8.0), Mpumalanga (6.9%), and Northern Cape (2.8%). The survey also reported that about 40.9% of the small businesses in South Africa were in their start-up phase (been in operation for 1.5 to 2.5 years), about 21.4% were in growth phase (been in operation for 2.5 to 5.5 years), and about 36.5% were established (been in operation for more than 5.5 years).

In 2010, South Africa has estimated SMMEs of about 5.6 million (Fin Scope, 2010). Between 1994 and 2006, SMMEs in South Africa has grown by an annual rate of 6.5%, the majority of which were owned by black and women (Njiro et al., 2010). The growth of SMMEs has jumped to 24% between 2004 and 2007 (SA DTI, 2008). In 2010, about 84% of the country's small business owners were Africans and 58% of the country's business were owned and managed by women (Fin Scope, 2010). Most of the South African SMMEs are micro and survival enterprises with little potential for growth, which are less dynamic with low survival rate for start-ups (SA DTI, 2008).

The South African government outlined their SMME policy in the 1995 White Paper to illustrate the national strategy for the development and promotion of small businesses in South Africa. In 2005, the Integrated Small Business Development Strategy was formulated as a way forward for the development of South African small businesses over the next ten years from 2005 to 2014 (SA DTI, 2005). The ten year strategy focusses on (i) increasing the supply of financial and non-financial support; (ii) creating demand for SMME products or services; and (iii) reducing regulatory constraints (SA DTI, 2008). The institutions responsible for implementing the strategy include the Small Enterprise Development Agency (SEDA), South African Microfinance Apex Fund (SAMAF), Khula Enterprise Finance for small and medium enterprise, National Empowerment Fund (NEF), etc. The Gauteng SMME Policy Framework was established to provide a comprehensive framework for the development of SMMEs in Gauteng province. The framework targets different segments of businesses based on BSM to stimulate entrepreneurship across the Gauteng province (DED, 2009). The policy constitutes six pillar frameworks:

- non-financial support initiatives;
- financial support initiatives;
- capacity building initiatives;
- regulatory reform and supporting the informal economy SMME sub-sector;
- research on specific sectors and the role of SMMEs in building partnerships; and
- employment retention and linking with the National Training Layoff Scheme.

In Gauteng province, small and mainly informal retail businesses offering basic products and services to a relatively low income consumer market dominated the pre-2000 era, which has been now replaced by the development of large shopping malls catering for a sizeable market (Njiro et al., 2010). SMMEs in Gauteng are contributing to the transformation of the socio-economic conditions of the townships in the province, thus improving the quality of the life.

2. Literature Review:

Innovation means creating something new or improving an existing product or service, thereby generating new socio-economic value (Krause, Schutte and du Preez, 2012). Research and development (R&D) helps create new knowledge, application of new knowledge creates innovation, and innovation helps businesses to survive and outperform competitors with regard to market share, profitability and growth (Essays UK, 2013). Research has shown that innovative businesses report

higher profits and growth compared to non-innovative ones. The change in the economy from traditional to knowledge-based requires SMMEs to increase their flexibility, adaptability and innovative ability (Jones and Tilley, 2003). Innovation provides new opportunities for creating new firms and expanding the existing ones. It thus helps transformation to a knowledge-based economy (Booyens, 2011). The innovation in small businesses depends upon many factors, including;

- investment in R&D - reflects to high growth potential;
- public support to private innovation - reflects the saleability of new ideas;
- skilled labour - reflects the degree of human capital;
- knowledge spill over - reflects spill overs from large organizations and universities;
- knowledge networks - reflects the exchange and transfer of information and spill overs through networks and collaborations;
- entrepreneurship, internal determinants and creativity - reflects innovation accompanied by creative entrepreneurship (Booyens, 2011).

Different sizes of SMMEs require different types of innovation (Wagner and Hansen, 2005). Researchers argue about the conflicting results on the relationship between innovation and firm size - some researchers claim that large businesses are responsible for innovation, while others claim that small businesses tend to have a relative innovative advantage (Booyens, 2011). Laforet (2008) mentioned that medium enterprises tend to be more innovative than large ones, and argued that small and medium enterprises need to be more creative to develop competitive products. The types and approach of innovation for SMMEs also depends on the sector (innovations in capital intensive industries are mostly incremental), sources of capital (public firms mostly focus on return on invested capital compared to private firms which do not have limited focus), stage or phase (incremental innovation in mature vs radical innovation in emerging firms), hostility of the environment (innovation is likely to be successful in the firms operating in highly competitive markets), and types of customers (high-end specialty customers may value SMMEs innovation more than low-end customers) (USDC, 2006).

Innovation can be open and closed (Krause et al., 2012). The closed innovation model basically focusses innovation within the organization, whereas open innovation incorporates outside ideas, technologies and skills in addition to own knowledge to innovate. Open innovation can be defined as a two-way process. Companies bring in ideas, technologies or other resources needed to develop their own business and also sell their ideas, technologies and resources to other companies (Lindegaard, 2010). These two processes can also be coupled together to create strategic networks, joint ventures and alliances among the companies. The open innovation model helps to bring diversity, pool resources and exploit synergies (Lindegaard, 2011; OECD, 2008). It thus can provide SMMEs in South Africa with an access to global input through collaboration and social innovation, and make them more innovative and competitive. The majority of research on the open innovation model is focused on large enterprises, and very little research is conducted on SMMEs. Since SMMEs play a vital role in the economy, it is evident that more research on the application of open innovation models in SMMEs is important.

Business incubators or science parks are increasingly becoming instrumental for the growth and promotion of SMMEs (Ndabeni, undated). In South Africa, technology stations programme and business incubators have been established to stimulate the economic growth of SMMEs. The South African Department of Science and Technology (DST) developed the technology stations programme with an objective to strengthen and accelerate the interaction between the Universities of technology, Universities and SMMEs. The universities of technology provide technology support, R&D, and transfer of knowledge and technology into SMME applications. Booyens (2011) revealed that there is a weak relationship/collaboration between South African SMMEs and universities/research labs and foreign businesses, and thus recommended more emphasis on industry and university partnerships in the future public policy.

The GODISA programme, which is located at the Council for Scientific and Industrial Research (CSIR) in Pretoria, is the South African technology incubation movement which ensures the economic growth, sustainable employment, technological innovation and technology transfer, and international competitiveness of SMMEs (Ndabeni, undated). This programme consists of a Pilot Innovation Support Centre, a Pilot Technology Demonstration, and several Technology Incubators. Innovation Hub, a most advanced business incubator, is the first internationally accredited science park in Africa.

The hub creates an environment where international businesses can access a regional centre of knowledge creation.

The government policies on SMMEs support developmental purposes (such as the National Research and Development Strategy), but less attention has been given to the development of innovative or knowledge-based SMMEs (Booyens, 2011). The government supported R&D development programmes (such as the Technology and Human Resources for Industry Programme (THRIP), the Support Program for Industrial Innovation (SPII), and the Innovation Fund) support innovative hi-tech companies, technology diffusion, scientific research and technology. The Innovation Fund also supports patent, seed and R&D funding to SMMEs. SEDA, Technology for Women in Business, and the Tshumaniso Trust help SMMEs with technology accessing and transfer. During the period of 2007 – 2008, the government provided R189.0 million (US\$26.8 million) for R&D and innovation funding for SMMEs which is much less than the R1475.5 million (US\$209.3 million) provided for general funding for SMMEs.

Booyens (2011) found that the innovation rate of SMMEs (the number of SMMEs with innovative activity as a percentage of total SMMEs) is relatively high (51.1%), with small enterprises reporting the highest innovation rate (39.9%), followed by micro enterprises (9.6%) and medium enterprises (2.2%). Product and process innovations for SMMEs were found to be 40.9% and 34.8%, respectively. The innovation rate for South African small and medium enterprises was found to be relatively higher compared to that in Europe, but the innovation rate for SMMEs co-operating with others was found to be lower. Innovative SMMEs co-operated mostly with customers, suppliers, competitors and enterprises in their own group. Innovation expenditure for South African SMMEs was 3.2%, which is comparable to Switzerland (3.5%). Government support for innovation was about 6.1% for innovative SMMEs, of which 3.5% was provided by national funding agencies (such as NRF). The SMME sector in South Africa is slowly moving from dial-up connections to high-speed connections (SA DST, 2007). Between 2003 and 2005, the number of SMMEs using ADSL high speed connections has increased from 2% to 25%.

There are various barriers which impede innovation activities in SMMEs, including (i) competence barriers, such as shortage of qualified personnel for innovation projects, lack of information on market and technology relevant for innovation projects; (ii) financial barriers, such as lack of funds, high costs of innovation; (iii) organizational barriers, such as internal resistance to innovation; (iv) risk barriers, such as high risk related to feasibility, success of innovation; and (v) legal barriers, such as legislation and regulations (Essays UK, 2013). However, SMMEs have behavioural flexibility and can cultivate intimacy relationships with a small number of captive customers which helps make up for lack of resources (USDC, 2006). According to the 2005 South African Innovation survey, more than 26% of all enterprises indicated a lack of market information as the reason hampering the development of innovative activities within their enterprises, followed by lack of funds within the enterprise (25%), innovation costs being too high (20%), and lack of qualified personnel (17%). The relatively low annual turnover of SMMEs compared to large firms makes it almost impossible for SMMEs to consider innovation, as they find it extremely costly (Essays UK, 2013). Based on a research on open innovation in South African SMMEs, Krause et al. (2012) found that only 17.6% of the surveyed respondents had strong knowledge on both personal and organizational open innovation models. The highly used open innovation was found to be collaboration - customers (53%) were ranked highest as ideal collaborator, followed by suppliers (33%), universities (28%) and consultants (26%), while the government development agencies were ranked at the bottom (10%). The respondents identified finance, resources and organization/culture as top three barriers to using open innovation. No respondents considered open innovation to be ineffective.

In this study the definition of SMMEs use is adopted from the Fin Sope small business survey report of 2006 (Fin Mark Trust 2006). SMMEs were categorised into (07) seven Business Sophistication Measures (BSM). These seven categories were developed from a wide range of variables measured from the initial pilot Survey. The level of Sophistication of Business was gauged by the empirical variables which the Business had or did not have.

3. Research Methodology:

The main methodologies that were used in the study are as follows: Desktop research and document review; 334 SMMEs in different sectors and locations were selected, and questionnaire surveys were administered to them; Quantitative statistical analyses were conducted. The following activities were done: Development of a research design; The development and piloting of questionnaires; Conducting the field survey; Data collection, collation, uploading and analysis; Reporting on findings, results and general discussions; Recommendations and conclusions were drawn on Innovative activities that were conducted on a sample of SMMEs and Cooperatives across sectors and in different municipalities. The aim of this survey is to determine the constraints faced, and what needs to be done to address these. The study applied the probability random sampling method. The study sampled 334 SMMEs of all types in the different parts of Gauteng; these include Johannesburg, Ekurhuleni, Tshwane, Metsweding, Sedibeng and the West Rand. The following table illustrates the number of questionnaires that were completed in the specific regions to date.

Table 1: Questionnaires administered per region

Regions	Ekurhuleni	Johannesburg	Metsweding	Sedibeng	Tshwane	West Rand	Total
Total Questionnaires administered	100	81	5	45	33	70	334

Table 2: The research areas of the first 334 respondents

Areas in Gauteng Province where the respondents Operate Businesses			
Alberton	Grasmere	Mzimihlophe	Sedibeng
Atteridgeville	Irene	Naturena	Roodepoort Royal Place
Bagit	Jabulani	Olwese	Sebokeng
Bara Mall	Johannesburg CBD	Orange Farm	Southgate
Boksburg	Katlehong	Orlando West	Soweto
Brackenhurst	Kenilworth	Orlando	Trade Route Mall
Centurion	Lenasia	Palm Ridge	Vaal
Carletonville	Letsoho	Palm Springs	Vereeniging
De-Deur	Malvern	Palmsprings Mall	Vosloorus
Denneboom	Maponya Mall	Pretoria CBD	Wadeville
East Rand Mall	Meredale Midvaal	Rietfontein	West Gate
Evaton	Mntanami Mofolo	Rondebult	Westgate Mall

4. Results

The data analysis was done using SPSS. The analysis is descriptive through the use of frequency tables.

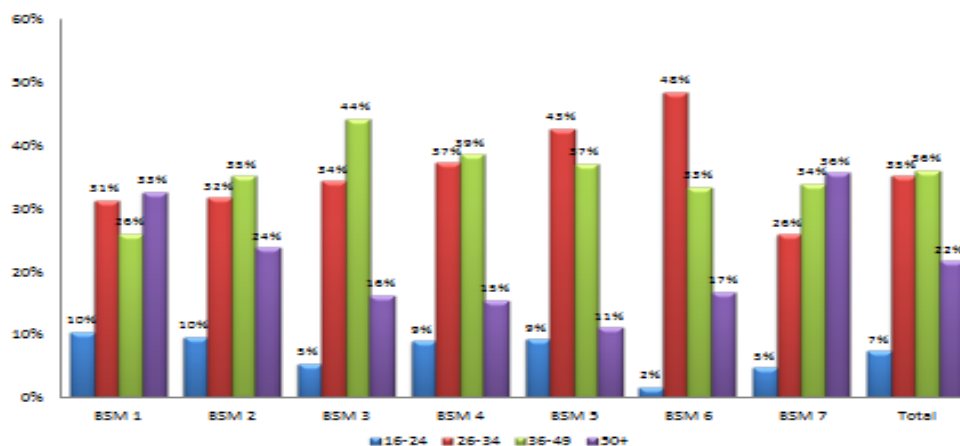


Figure 1: The Age of business Owners.

The figure above shows the Age groups of business owners interviewed in Gauteng. It is evident that the majority of these business owners are middle aged and between the ages of 25 to 34 and therefore have the potential to innovate and develop new ideas if given the opportunity through networking (Jones, 2008). The young owners are more prevalent in the BSM1 and the numbers drop steadily as the BSM increases. The middle class owners however increase steadily until BSM 6 then it drops a bit at BSM 7, but still level out higher than in BSM 1. This confirms the belief that most businesses in Gauteng are owned by the middle class and older population group capable of innovative activities.

The results in the Figure 2 depict the level of Education of the Business owners. Although the majority are still young and have the potential to innovate, most of them are not skilled enough due to low Educational levels. They are not well equipped to think out of the box. The Challenge is that the majority of these owners are not willing to go back to schools, colleges or Universities at this stage in their lives. The results shows that BSM 1 is dominated by owners without Education at all, and those with matric totalling up to 75%, compared to BSM 7 where only 30% of owners in the above category. The level of Education is well represented in BSM 7 where only 9% have qualifications below matric and over 27% have higher degrees. The average of all the sample businesses interviewed is reflected on the top row and it shows that on average up to 41% of the businesses have qualifications up to matric level. The total average shows 15% of the owners with Certificates, 14% with Diplomas, 8% with degrees and 4% with higher degrees.

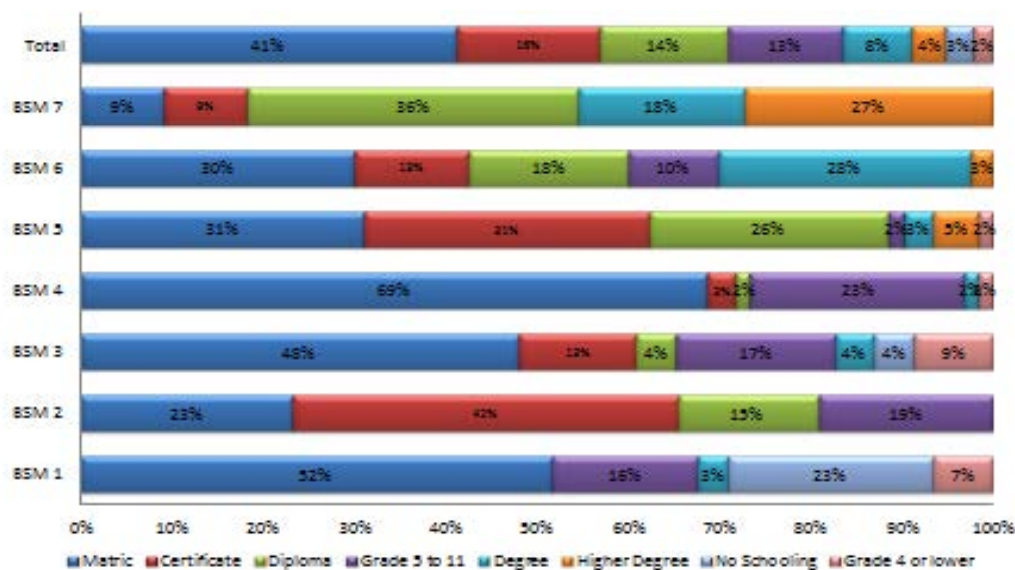


Figure 2: The level of Education

The results in the figure reveal that BSM 2, 6 and 7 have 50% indication of qualified employees for their designated positions which is the highest level among all SMME's. The average total of all the SMMEs shown as the last column in the figure registers 37% level of employees not suited for their current positions. The number of employees not qualified for their positions is highest in BMS 3 at

63% and remains high at all levels of the SMMEs, with an average total of 49% of SMME's interviewed.

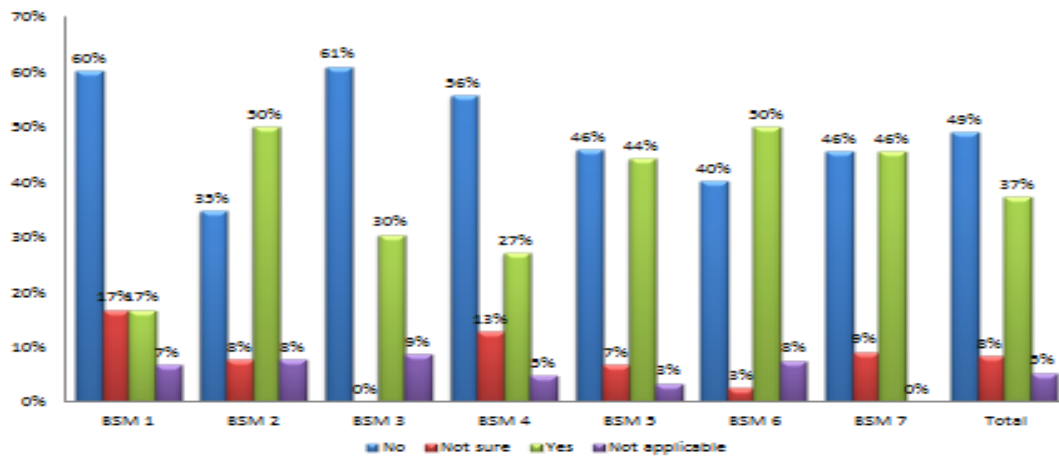


Figure 3: Employee Having Formal Qualification Related to Their Work

The following figure shows the research findings of SMMEs involved in innovative activities. Most of the SMME's have attempted to improve their innovative skills. On average 50% of all the levels attempted to come up with new ideas, with BSM 3 being the highest with well over 70%, indicating that they have been involved in out of the box innovative activities. This could be explained by the need to grow and survive at this infant stage of development. As the Business becomes more complex, more planning and control becomes evident. BSM 1 recorded approximately 36% involvement in the innovative ideas. BSM 2 has a 46% response an increase of 10% more activity. Without proper planning and control therefore the businesses would find it very difficult to improve as they would not know when and where exactly to begin improving their businesses. BSM 3 is the highest; it shows that most of these companies have more innovative strategy and plan. This might go some way in explaining that the more sophisticated the business becomes, the more important it is for it to have proper planning and control. It would also attempt to explain the high percentage shown in figure 5 in respect to BMS 3, where there was an indication of the highest levels in innovative activities.

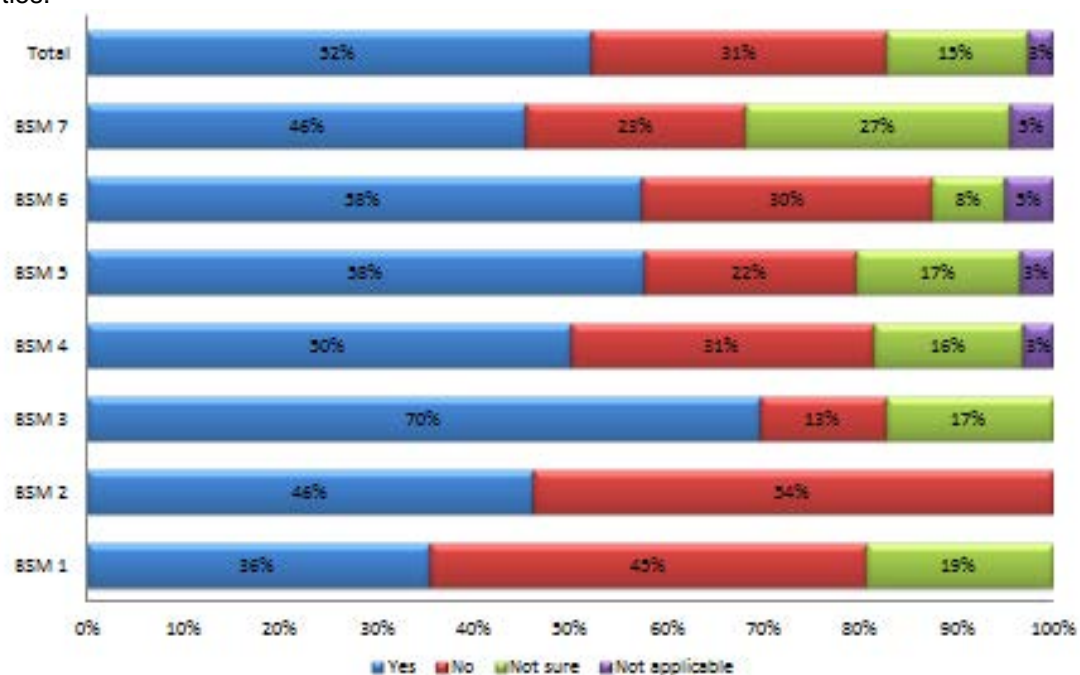


Figure 4: SMMEs Involvement in Innovative Activities.

Research and Innovation is one of the most important ways to increase competitiveness, and it gives the opportunity of exploring into the future and focusing on the day to day challenges with the view of finding a better solution as we try to solve problems involving new requirements. The figure below reflects the perception of SMMEs owners regarding research into the operations of SMMEs. The results reveal that most of the SMMEs Managers believe that passionate behavior would sustain their businesses and could be more important than carrying out a careful research. The figure below shows the highest support for passionate behavior reflected in BSM 3 at 90% of the respondents. This high support is prevalent in the lesser sophisticated businesses beginning from BSM 1 up to BMS 5. The probable reason for this could be because of cash flow problems experienced by these less sophisticated businesses. The second explanation could be that most of these less sophisticated businesses plan for immediate survival and are therefore not involved in long term strategic planning requiring research and development.

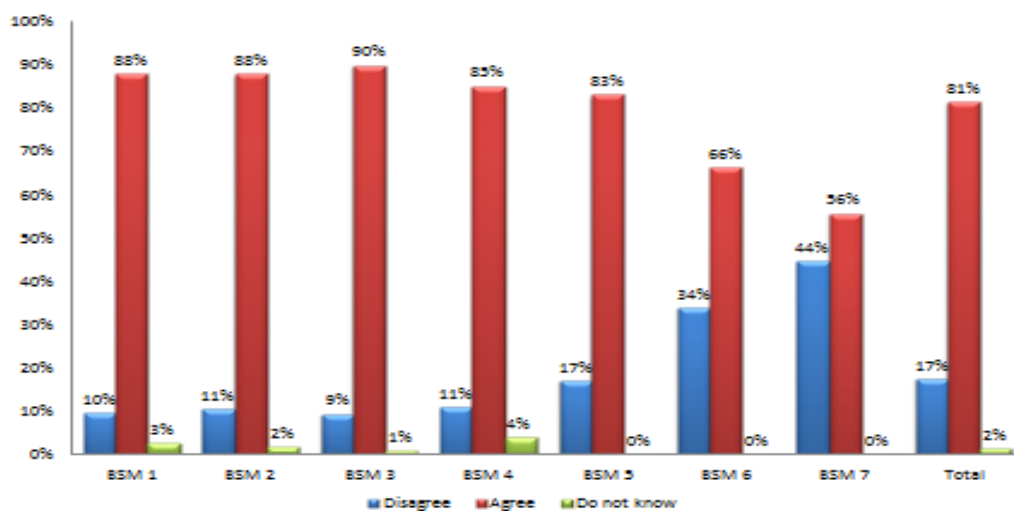


Figure 5: Passionate behavior is more important than doing careful research.

5. Recommendations and Conclusion:

Business success is mainly about innovation, creativity, and above all being able to look beyond the day-to-day challenges. In addition business innovation is also about looking into the future and focusing on the solution. Based on the studies, it is clear that the impact of research and innovation on the success of small and medium scale enterprises in the Gauteng Province of South Africa is mildly appreciated by around 52% of the business units in this category. The benefits are more marked for more sophisticated SMMEs. It would appear that the Gauteng Provincial Government would need to put in place support services that increase the sophistication of SMMEs if research and innovation is to have the desired impact.

It is noted that most SMME owners in Gauteng have the potential to innovate and compete globally through research and innovation support and focus. However they need to acquire the necessary skills to enable them to be more creative and to adopt and adapt new ideas. Change is a constant, and coping with changes of technology, products and market place will demand effective application of research and innovation. The Gauteng Government can assist through training, extension services and through programmes that support SMMEs. The SMME employees and owners can be skilled through both formal and informal courses. Most SMMEs are very similar in their scope and operations. It is therefore recommended that meetings, seminars and workshops be organized for employees in SMMEs to share ideas at provincial, municipal and local government levels.

Policy makers should guide Business owners on the importance of innovation and research, especially on its impact to society and the benefits derived for their customers. It is evident that most SMMEs experience the challenge of cash flow and are therefore reluctant to get involved in any form

of research. Development of provincial and municipal research and development Institutes and Centres can assist to subsidise such costs. Policy makers should drive the initiative and encourage the SMMEs to explore the future of their businesses by carrying out regular research especially in niche areas of business, and this can be done in collaboration with local government research institutes and centres.

In conclusion it is noted that this study has based on a large sample size of SMMEs in Gauteng Province of South Africa found out that different categories of SMMEs have different research and innovation experiences and attitudes. It has also revealed that passionate behavior within business can equal if not exceed research and innovation in determining the success of an enterprise. It has also been realized that lack of resources, manpower, financial and other resources limits engagement and benefits of research and innovation initiatives. These shortcomings show clearly that the provincial and all other levels of government can bridge the gap, by coming in to remove these barriers, by focusing on interventions that address them. Recommendations have been made, based on this.

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