



The Impact of Technological Orientation on Small Service Firms' Business Performance in Botswana

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Abstract

The study focused on investigating the impact of technological orientation among small service firms in Botswana. The study was quantitative and Questionnaires for owner managers of small service firms were administered in Gaborone, Francistown, Maun and Selebi-Phikwe for representativeness and generalisability. The survey questionnaires were administered using a drop-pick method on a cross-sectional population based on a sample size of 321 owner managers or informants; using snowball sampling technique on the basis of firms' subsectors, size, and location. Data were mainly from a range of manufacturing; Hotels, Restaurants and Tourism; Supplies and Services etc. One research hypothesis that Small service firms' thrive better with innovation, is being tested. The results suggest that: management orientation, technology orientation, market orientation and market dynamics tend to have a significant influence on innovation practices, and finally, innovation practices tend to have a significant influence on business growth performance. This study makes significant contributions. It is believed to be the first empirical research study examining small service firms' technological practices and their business growth performance in the emerging Botswana market. It also provides a re-conceptualised model to guide the implementation of technological innovation practices in SMEs in emerging markets. Among the recommendations is a comparative study to investigate the technological orientation of small service firms against Botswana's neighboring countries' small service firms.

1.0 Introduction

The expanding use of technology stimulates innovation in business practices and organizational models. Technology by itself has no single objective value and the economic value of a technology remains latent until firms commercialise it in some way through their business model, as posited by Chesbrough, 2010, who postulate that technology orientation can take two distinctive forms: technology exploration and technology exploitation.

Firms emphasise exploration in seeking effectiveness in new business development or stress exploitation in seeking efficiency of operation. The adoption of new, and improvement of existing technology infrastructure can enhance firms' business performance, reduce costs, and broaden market reach. It can be used by firms to replace traditional means of communication, to manage business documentation and information databases, to perform usual business operations such as inventory control and to engage in business transactions or e-commerce (business to business or business to consumer).

This study aims to assess the impact of technological orientation on small service firms' business performance in Botswana, and the following research questions will assist to test the hypothesis that small service firms' thrive better with innovation:

1. What effect does technological orientation have on innovation practices in small firms in Botswana?
2. How are the other determinants linked to innovation practices in small service firms in Botswana?
3. What are the various nexus of business growth among small service firms in Botswana?

Spiezia (2011) looked at firms in eight countries that subscribe to the Organisation for Economic Co-operation and Development (OECD) and found that technology enables firms to adopt new processes and practices, particularly resulting from product and market innovations. Brendan Galbraith, Rodney McAdam, Judith Woods & Theresa McGowan (2017) hold the assertion that positive correlations exist between technology and innovative practices, especially with regard to the development of export markets and improvement of production management (product quality and cost reduction). Therefore, it is expected that access to technology infrastructure is an enabling factor for small firms to innovate based on evidence from the aforementioned.

Galbraith *et al.*, (2017) argued that the impact of the use of modern technological products and/or services such as websites, online sales and computerized production systems by small firms has a bearing on innovation

practices and business performance. Small firms involved in e-commerce attract high earnings and hence grow faster because of their ability to cover a wide range of potential buyers at a low operational cost. Productivity and growth of small firms in the late 1990 in the US was to a large extent explained by the high degree of technological adoption in their business operation (OECD, 2002).

The objectives that guided this study are:

- To determine the effect of technological orientation (TO) on innovation practices among small firms in Botswana.
- To establish the impact of innovation practices on business performance of small firms in Botswana.
- To evaluate the nexus of business growth among small service firms in Botswana

2.0 Innovation Practices and Business Performance

Forsman & Temel (2011) argue that innovation has created many opportunities for firms to not only improve their current business operations and comprehensive advantages but to engage in new ones as well. Firms are increasingly relying on innovation to face competitors, to create value for customers, and to increase their performance asserts (Australian Chambers Business Congress, 2011). However, Mahemba & De Bruijn, 2003; Laforet & Tann, 2006); Grissemanm Plank & Brunner-Sperdin (2013) posit that previous research has focused mainly on the relationship between a firm's capabilities and performance outcomes and on the sources internal to the firm's capabilities of the firm. Randhawa & Scerri (2015) suggest that there are important sources, internal as well as external, for the firm to utilize and acquire more capabilities and competencies.

According to Chesbrough (2006, 2010), introducing innovative products, processes, or business models creates opportunities for small firms to stand out in the competitive landscape. The theoretical support provided by the resource-based view simplifies the understanding of the homological web between the antecedents and consequences of innovative practices as contended by Brulhart & Torstensson (1996) and Damanpour, Wang & Wang (2012). According to the theoretical model, companies which have specific resources and skills will have the competitive edge and thus attain superior performance as argued by Camison & Villar Lopez 2012; Bing *et al.*, (2018).

An organisation's ability to innovate is influenced by the resources available within the organisation. In this context, one decisive prerequisite is organisational slack as postulated by Yan & Yan, 2013, which arises when the resources available do not need to be consumed for normal business operations but can be partly invested in innovation projects and learning processes as concluded by Mazzarol & Rebound (2009); Tavitiyaman, Zhang & Qu (2012). They contend that three key indicators of overall organisational performance to evaluate success of innovation implemented include market success, financial success and employee related success. In the Case Study by Christian Glanz (2019) in <https://www.maturity.com/en/case-studies/dvag-242.html> it is asserted that a few comprehensive, consolidated and customized applications that provide real business benefits may be more beneficial than using many simple solutions with perceived low prices. With reference to small firms, since innovation strategies look increasingly similar and commoditized, more and more organizations try to further improve their innovation performance through intensifying collaboration across industry networks and partnerships, opening up their innovation processes in line with the open innovation framework as posited by Chesbrough, (2006).

3.0 Methodology

A quantitative descriptive study was used to determine the relationship of technological orientation and mediating (innovation practices); and one dependent construct (business performance construct).

The views of management of small service firms in Gaborone, Selebi-Phikwe, Maun and Francistown were obtained through structured questionnaire administration. The entire population sampled was involved in the study. Data collected was subjected to descriptive statistical analysis. Ethical principles of research were well complied to.

3.1 Sample size

A convenient sampling method was used for this study, and given that the study population was small business owners and/or managers, businesses were conveniently selected as the study population base. The sampling scheme was convenient because it was a non-probability sampling method.

The questionnaire was administered to 321 respondents from a pool of 500 small service firms. A drop pick method was administered for the 321 questionnaires by five data collectors who were under the Researchers' supervision. The 321 questionnaires distributed were returned and were all duly completed, representing a response rate of 100%.

3.2 Sampling procedure

Snow-ball sampling method was used to develop the sample of the research. According to this method, which belongs to the category of non-probability sampling techniques, sample members were selected on the basis of their knowledge, relationships and expertise regarding a research subject (Polit & Beck 2004). In the current study, the sample members who were selected had a special relationship with the phenomenon under investigation. Within this context, the participants of this study were owners/directors and/or managers of small service firms carefully selected from Gaborone, Selebi-Phikwe, Francistown and Maun. The Botswana Telephone directory's yellow pages and Statistics Botswana were helpful in availing contacts of businesses for ease of reach.

3.3 Research Instrument

In this study, a structured questionnaire was developed (refer to Appendices B1 and B2) and administered. The use of structured questionnaires enhances the objectivity of the findings and support statistical analysis. The questionnaire contained pre-developed closed ended questions and a rating scale with pre-determined response options.

3.4 Data Collection Procedures

Questionnaires for owner managers or key informants of small service firms were administered in Gaborone, Francistown, Maun and Selebi-Phikwe as these were strategically selected due to their industrialised nature, being considered more metropolitan and with a broad host of business entities. Since there is a representation of every industry sector in these towns, it allows for representativeness and generalisability of data. The total number of questionnaires distributed to respondents was three hundred and twenty-one (321). All the questionnaires were administered at over a period of two months through a drop pick method from the data collectors who were engaged by the researchers. All the questionnaires distributed were returned and captured giving 100% response rate. The data collected from the questionnaires was coded and analysed using SPSS.

Likert scale was adopted for the scale items and psychometric nomenclature was conducted to explicate validity and reliability of the scale items. Scale sites for market dynamics was adopted from Bao, Chen & Zhou (2012); Management orientation from Wheeler, McFarland & Kleiner (2007); Organisational culture from Kenny & Reedy (2006); Technological orientation from Gatignon & Xuereb (1997); Market Orientation from Jaworsk & Kohli (1993); Innovation Practices from Dort and Byers (2008); and Performance from Aragon-Sanchez & Sanchez-Marin (2005).

3.5 Descriptive Statistics

Holcomb (2016) views that the nature of descriptive statistics is to assist in summarising and organising enormous amounts of data. In this study, descriptive statistics was used to summarise data into simple graphs, tables, means, standard deviations and frequencies (Bryman & Bell, 2014). Babbie (2011) indicates that the reason why descriptive statistics are used is that it makes it easy to manage quantifiable data in a more sensible way, and it allows for simple summaries of data.

4.0 Analysis and Interpretation of Data

The Section presents data obtained by a questionnaire administered to owners of small service firms in Gaborone, Francistown, Maun and Selebi-Phikwe. The data from the questionnaire was presented and analysed in accordance with the objectives of the research and as guided by the research questions. Demographic data was also used.

The questionnaire sought to address the variables as embodied in the research questions as follows, with a description of Demographic Information;

- 1 What effect does technological orientation have on innovation practices in small firms in Botswana?
- 2 How are the other determinants linked to innovation practices in small service firms in Botswana?
- 3 What are the various nexus of business growth among small service firms in Botswana?

4.1 Demographic information analysis

This section depicts the demographic data of the respondents as presented in the figure below:

Figure 4.1.1 Gender

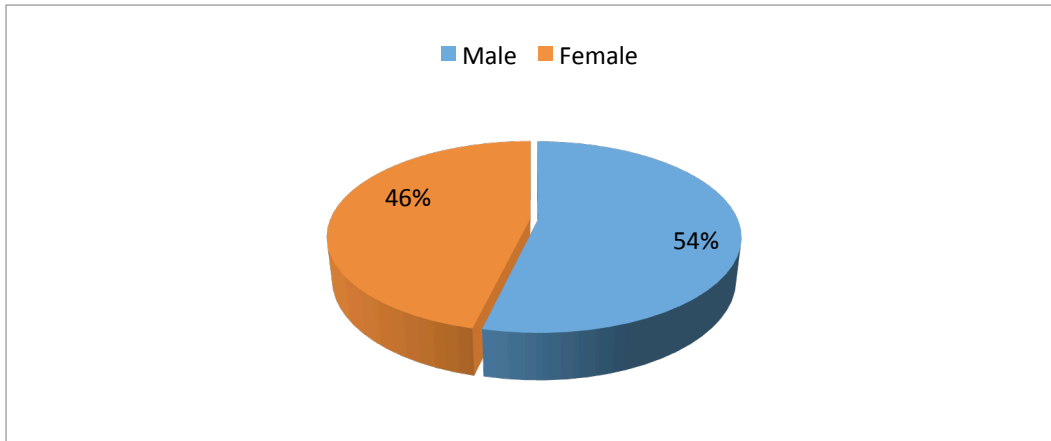


Figure 4.1.1 above shows that the majority of the respondents were males with 54%. The minority were females with 46%.

Figure 4. 1.2 Age Category in Percentages (3.3%-41%)

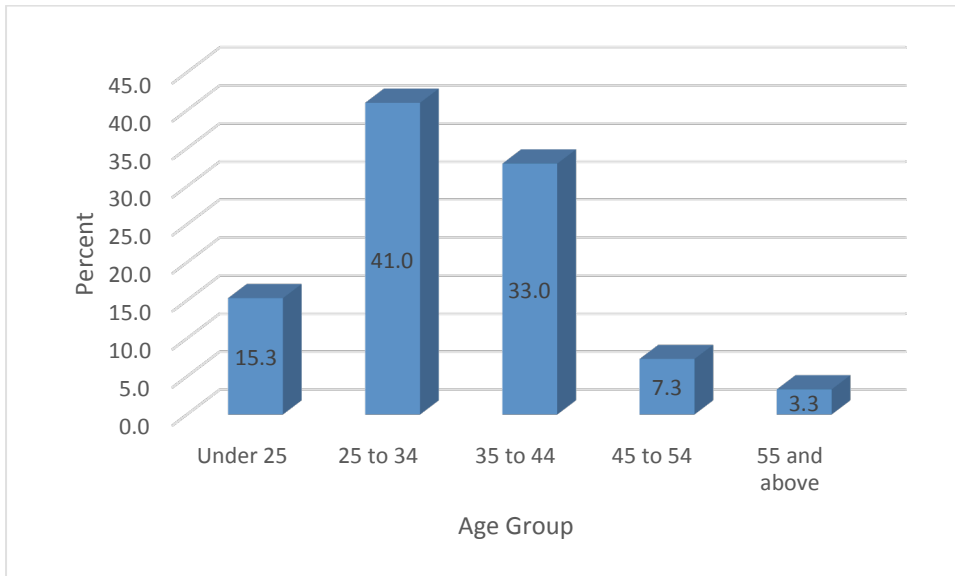


Figure 4.1.2 depicts the age categories of the respondents in which the majority (74%) of the respondents were between the ages of 25 to 44 years.

Figure 4.1.3 Highest Educational Qualifications

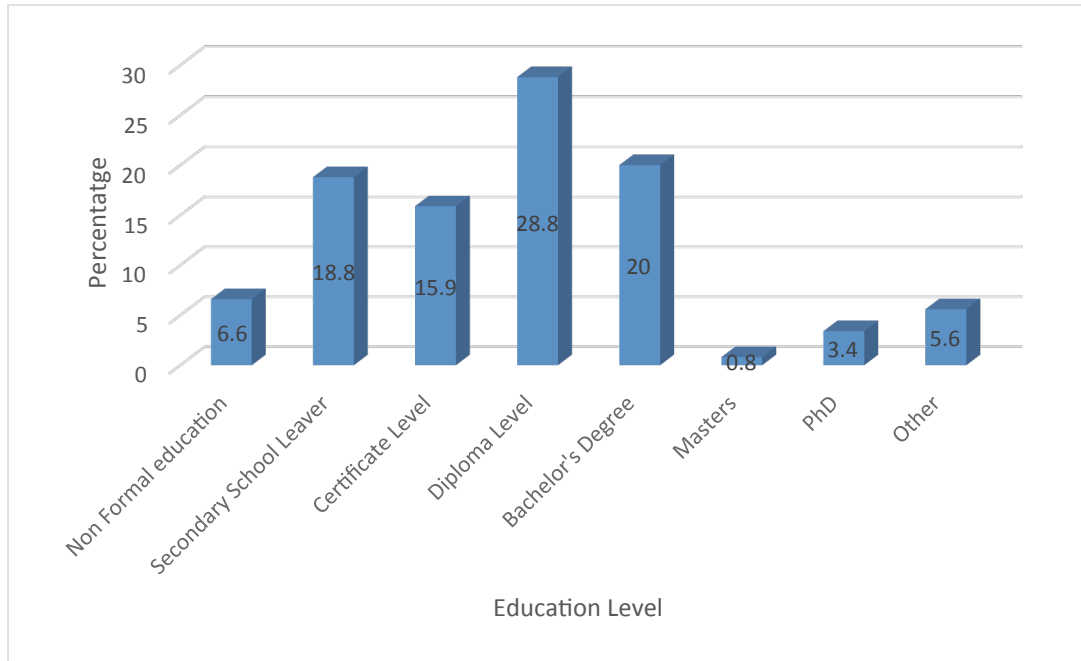


Figure 4.1.3 above shows that 28.8% of the respondents indicated that they hold a diploma, followed by 20% with Bachelor's degree, 18.8% hold a secondary school level, 15.9% holds a certificate level, 6.6% have no formal education, whilst 5.3% held unspecified qualifications. The doctorate was 3.4% and least was masters at 0.9.

Figure 4.1.4 Computer Application Percentage (%)

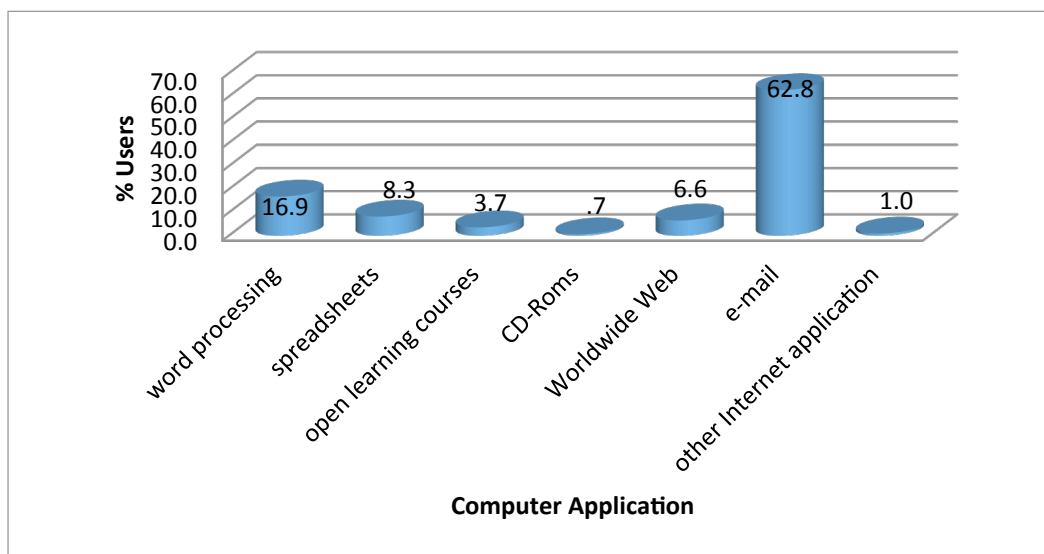
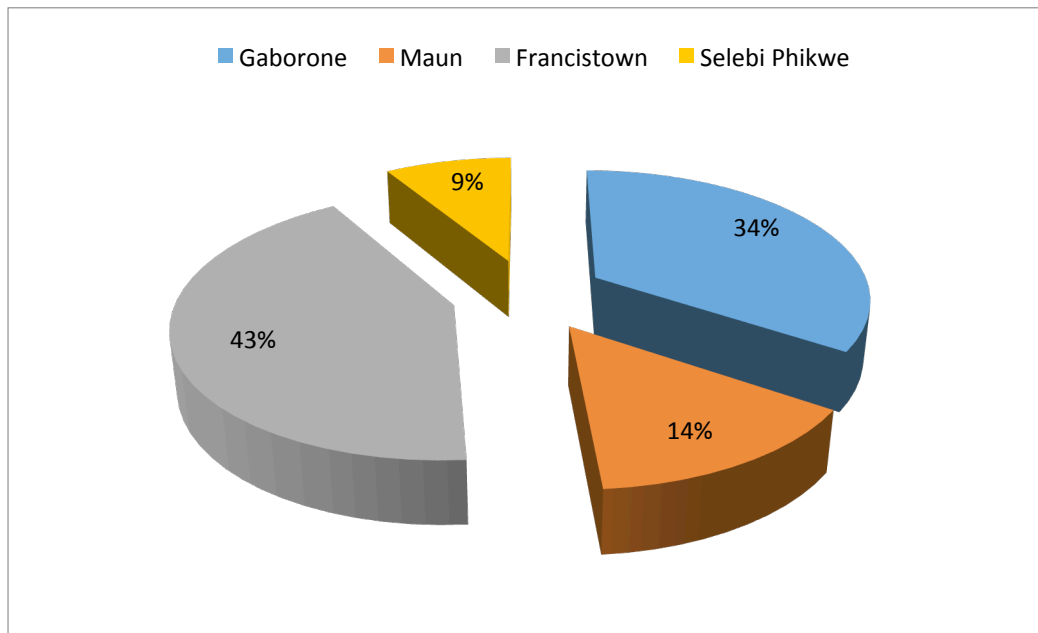


Figure 4.1.4 above shows % of users and computer application indicate that the mostly used application (62.8%) is the email and followed by the word processing with 16.9% and the least is CD-Rom with only 0.7%.

Figure 4.1.5 Firm Location



The above figure 4.1.5 illustrates that the majority (43%) of the firms are located in Francistown, followed by those firms located in Gaborone with 34%, 14% are located in Maun and the least 9% is located in Selebi Phikwe.

Figure 4.1.6 Industry sector percentage analysis

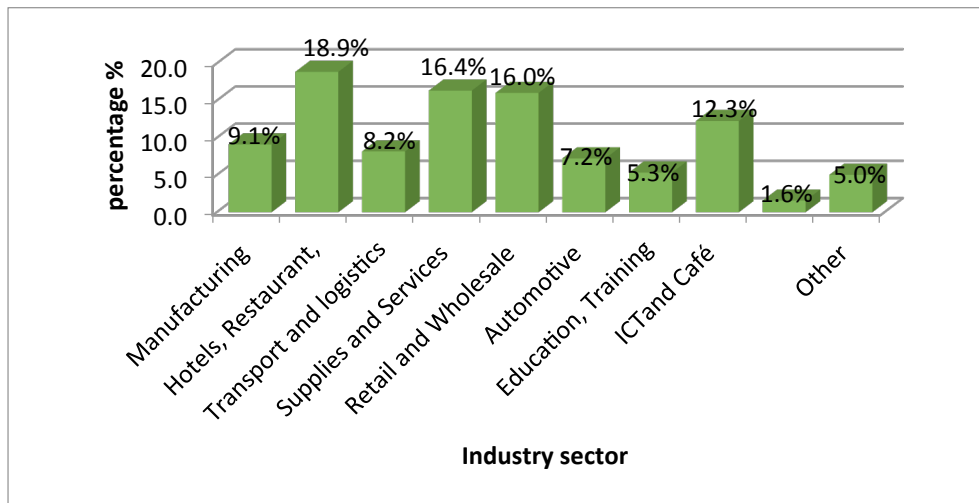


Figure 4.1.6 shows the distribution of the firms according to different industry sectors being hotel, restaurant, tourism at 18.9%; supplies and services at 16.4%; retail and wholesale at 16% and the least at 1.6% is financing, real estate.

Figure 4.1.7 Firm’s Approximate Research and Development Investment in the last 1 to 3 years

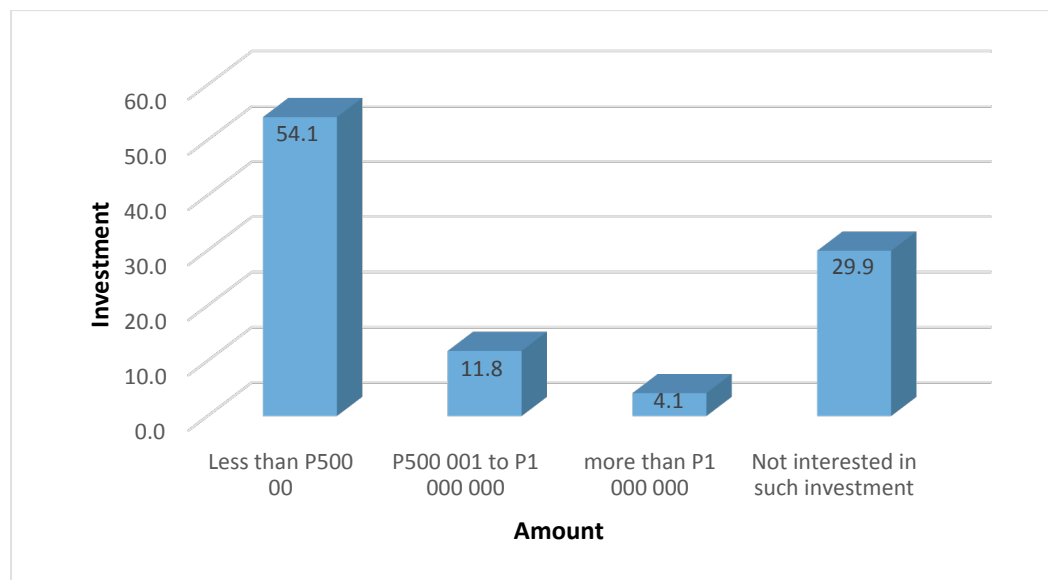


Figure 4.1.7 illustrates that the majority (54.1%) of the firm’s approximate research and development investment in the last 1 to 3 years was less than P500 000 followed by those that were not interested in such investments at 29.9%. A small/insignificant proportion (4.1%) was more than P1 000 000.

4.2 Descriptive Statistics of the Effect of Technological Orientation on Innovation Practices Among Small Firms in Botswana

Table 4.2.1 on Appendix B1 presents the statements used to determine the effect of technological orientation (TO) on innovation practices among small firms in Botswana. In addition, it presents the responses to the ten statements the respondents were requested to respond to. They were asked to rate each item on a scale of 1 to 4 (1=strongly agree; 2=agree; 3=disagree and 4= strongly disagree).

The findings indicated that, 85.8% of respondents agreed that their firm’s policy was to adopt up to date technologies; 83.5% conceded that their firms purchased and used technologies to position themselves ahead of competitors; 60.4% agreed their firm was often first to try out new methods and technologies; and 83.3% were of the view that their firm frequently improved internal processes such as speed, reliability and information management.

Further analysis indicates that, 77.4% agreed that their firm allocated resources for investing in latest technologies and future forecasted technological changes; while 87.5% of the respondents agreed that the use of recent technological developments in the industry impacted positively on introducing the new innovations leading to new products and services; then 92.5% concurred that constant and consistent use of recent technologies enhanced the firm’s ability to compete in the highly innovative environment; and 55% believed that they were satisfied with their firm’s ability to compete in the global arena; additionally, 84.1% agreed that there was effectiveness of government micro-policies and advancement in technology henceforth, enhancing their firms’ innovation capability; and lastly 73.1% agreed that their firm used up to date technologies.

4.2.1 Discussion of Findings

Keeping up to date with technology is essential for every business owner, even those who do not run technology companies. The study revealed that the majority of the respondents were of the view that the policy of their firm was to adopt up to date technologies and their firm purchases and uses technologies to position itself ahead of competitors. Their firm allocated resources for investing in latest technologies and future forecasted technological changes; it used the recent technological developments in the industry impacting positively on introducing the new innovations leading to new products and services and the constant and consistent use of

recent technologies enhanced the firm's ability to compete in the highly innovative environment. The majority of the respondents believed that they were satisfied with their firm's ability to compete in the global arena; there was effective government micro-policies and advancement in technology that enhanced their firms' innovation capability.

In support of the findings above, Shelton *et al.*, 2016 argue that smaller firms will almost perpetually dominate the global construction industry landscape, and although the level of innovation within these firms was widely perceived to be low, there was ample proof that significant innovation occurred within these firms. The findings suggest that Technology was inescapable and that it is vital for firms to keep up with the advancements of technology to stay on top. In the business world, it is like the newer, the better. This resonates well with the hypothesis of the study. Technology does not wait for firms to upgrade their technologies and if organizations are not keeping up with it, they risk being left behind by one of their competitors. Hjalager, 2010 provides evidence that a firm's acceptance and exploration capabilities of new technologies enables firms to produce new products and services henceforth gain better quality and productivity which is in line with what the discussion of the findings above suggest.

4.3 Descriptive statistics of the impact of innovation practices on business performance of small firms in Botswana

Table 4.3.1 on Appendix B2 presents the responses to the questions relating to the impact of innovation practices on business performance of small firms in Botswana. The respondents were requested to respond to ten statements. They were asked to rate each item on a scale of 1 to 4 (1=strongly agree; 2=agree; 3=disagree and 4= strongly disagree). The findings are that, 81% of respondents agreed that their firm frequently tries out new ideas; and on another statement 81.2% said that their firm introduced number of new products, services and processes; then 58.4% believed that their firm was first to market with new products or services; and largely 92.5% agreed that their management seeks out new ways of doing things.

Findings from other statements indicate that, 84.6% agreed that their firm is creative in its methods of operation; and that 68.2% conceded that their firm used up to date technologies; 78.4% agreed that firm develops new market segments; 89.7% agreed that their firm developed new ways of establishing relationships with customers; 81.5% were of the view that their firm spent resources on research and development for new products, services or processes; and finally 80.6% believed that each team within the firm had a set of monthly targets to meet and review continually.

4.3.1 Discussions of findings

Themba & Godfrey (2015) suggest that the theoretical framework that informs the study of innovation was based on the Schumpeterian school of thought, which views an entrepreneur as an innovator. Furthermore, Themba & Godfrey (2015) posit that the theory suggests that at the core of entrepreneurship was the ability to innovate or create something new with the hope of making a living or profit out of it. The findings above suggest that innovation and entrepreneurship is not confined to the creation of new products but rather extended to activities ranging from introduction of new methods of production, finding new sources of funding, finding new markets, and new sources of raw materials to creation of monopolies states (Kristiansen, 2001). These form a connection or nexus, indicating that the success of small services firms depends on an interlink of different factors as shown by the study. There is also broad understanding that a business that fails to innovate runs the risk of:

- Losing market share to competitors
- Falling productivity and efficiency
- Losing key staff
- Experiencing steadily reducing margins and profit and
- Going out of business

The findings further suggest that innovation ought to be part of a business strategy and a strategic vision of how you want your business to develop. If a business dedicates time to monitoring trends in its business sector, and focus its innovative efforts on the most important areas then innovation can be realized. Innovation would not only improve the chances of a business surviving, but also help it to thrive and drive increased profits.

5.0 Conclusions and Recommendations

5.1 Conclusions

It is evident from the study that small service firms' management in Botswana recognizes and makes necessary efforts to consider improvements on the current technological innovations. Innovation is enshrined in the small service firm's strategic goals and future vision. Support was provided to cater for and to enrich research and development into innovative products or services. Management of the small service firms appreciate that change was vital and following current trends improves quality of life. There is a general understanding that the firms ought to be current with their innovations in order to attract customers and to capture the share of the market.

The market in Botswana on the small service firms encourages firms to adopt up to date technologies and their firm to purchase and use technologies to position themselves ahead of their competitors. It was evident that the new innovations lead to new products and services and the constant and consistent use of recent technologies enhances the firm's ability to compete in the highly innovative environment.

5.2 Managerial Implications

Policy makers and managers will reap new insights from this study in relation to innovation practices. There was also a new dimension studied on business performance in small service firms in Botswana market context that included various levels of implications as illustrated. At policy level, there should be a national plan or policy that should guide the small service firms in Botswana. At the moment there is also lack of common understanding for definition of small service firm, henceforth, the need to provide this and set up flexible laws that would guide small service firms and provide some incentives for this business category.

5.3 Theoretical Implications

The study presents new insights into establishing small service firms in Botswana on the existing knowledge of innovation practices and business performance. The study shows that the small service firms are the primary driving force of their own innovative practices by using their own resources and capabilities. Empirically, the study conducted a positivism paradigm quantitative research henceforth drawing generalizable conclusions based on statistical analysis and a hypothesised conceptual model in the Botswana market. The study focused on determinants of innovation practice capabilities on small service firms and proved empirically that internal driven factors are more beneficial than external-driven factors in terms of innovation.

The study provided empirical evidence of a link between management orientation, technology orientation, market orientation, dynamic orientation, innovation practices and business performance. There was no evidence of empirical support for the relationships between government of Botswana and supported financial resources, academic, industry collaborations, market dynamics, organisational culture and innovative practices. The study further illustrated the importance and interdependency of variance in research designs when establishing link between determinants and outcome validation.

This study also expanded the existing literature on innovation through developing a hypothesised conceptual model from a variety of disciplines that include, for example, the concept of national innovation system and the theory of the firm perspective, and is adjusted to suit the context of the study.

5.4 Further Research Direction

The study envisions the following directions: -

- A comparative study to investigate the performance of Botswana small service firms against its neighboring countries' small service firms.
- A similar study to review the different innovations as presented by the small service firms in Botswana.
- A study to develop a matrix in relation to management orientation, marketing dynamics and technological orientation and to establish correlation (interrelationships amongst the three contrasts) if it exists and its strength.
- A seminar to share the findings of the study to further encourage the small service firms in Botswana to continue using innovations in relation to new technology advancements, the market dynamics and management orientation.

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APPENDIX B1

Table 4.2.1 Summary of Questionnaire Responses to determine the effect of Technological Orientation on Innovation Practices among Small Firms in Botswana

No.	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	No Response	Total
		1	2	3	4		
1.	Our firm's policy is to adopt up to date technologies	90 (28.0%)	181 (56.4%)	42 (13.1%)	2 (0.6%)	6 (1.9%)	321 (100%)
2.	Our firm purchases and uses technologies to position itself ahead of competitors	71 (22.1%)	196 (61.1%)	47 (14.6%)	6 (1.9%)	1 (0.3%)	321 (100%)
3.	Our firm is often to be first to try out new methods and technologies	71 (22.1%)	122 (38%)	121 (37.7%)	4 (1.2%)	3 (0.9%)	321 (100%)
4.	Our firm frequently improves internal processes such as speed, reliability and information management	84 (26.2%)	180 (56.1%)	49 (15.3%)	4 (1.2%)	4 (1.2%)	321 (100%)
5.	Our firm allocates resources for investing in latest technologies and future forecasted technological changes	52 (16.2%)	195 (60.7%)	66 (20.6%)	6 (1.9%)	2 (0.6%)	321 (100%)
6.	The use of recent technological developments in the industry impact positively on introducing the new innovations leading to new products and services.	132 (41.1%)	149 (46.6%)	36 (11.2%)	4 (1.2%)	0 (0%)	321 (100%)
7.	Constant and consistent use of recent technologies enhances the firm's ability to compete in the highly innovative environment.	122 (38%)	175 (54.5%)	22 (6.9%)	2 (0.6%)	0 (0%)	321 (100%)
8.	I am satisfied with our firm's ability to compete in the global arena.	38 (11.8%)	138 (43%)	131 (40.8%)	13 (4%)	1 (0.3%)	321 (100%)
9.	Effectiveness of government micro-policies and advancement in technology enhance our firms' innovation capability	80 (24.9%)	190 (59.2%)	40 (12.5%)	5 (1.6%)	6 (1.9%)	321 (100%)
10.	Our firm uses up to date technologies	65 (20.2%)	168 (52.3%)	81 (25.2%)	5 (1.6%)	2 (0.6%)	321 (100%)

APPENDIX B2

Table 4.3.1: Summary of Questionnaire Responses to establish the impact of innovation practices on business performance of small firms in Botswana

No.	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	No Response	Total
		1	2	3	4		
1.	Our firm frequently tries out new ideas	97 (30.2%)	155 (48.3%)	57 (17.8%)	2 (0.6%)	10 (3.1%)	321 (100%)
2.	Our firm introduces number of new products, services and processes	91 (28.3%)	169 (52.6%)	55 (17.1%)	5 (1.6%)	1 (0.3%)	321 (100%)
3.	Our firm is first to market with new products or services	71 (22.1%)	114 (35.5%)	126 (39.3%)	6 (1.9%)	4 (1.2%)	321 (100%)
4.	Our management seeks out new ways to do things	95 (29.6%)	198 (61.7%)	23 (7.2%)	1 (0.3%)	4 (1.2%)	321 (100%)
5.	Our firm is creative in its methods of operation	90 (28%)	181 (56.4%)	48 (15%)	1 (0.3%)	1 (0.3%)	321 (100%)
6.	Our firm uses up to date technologies	76 (23.7%)	141 (43.9%)	99 (30.8%)	2 (0.6%)	3 (0.9%)	321 (100%)
7.	Our firm develops new market segments	109 (34%)	141 (43.9%)	67 (20.9%)	2 (0.6%)	2 (0.6%)	321 (100%)
8.	Our firm develops new ways of establishing relationships with customers	125 (38.9%)	162 (50.5%)	33 (10.3%)	0 (0%)	1 (0.3%)	321 (100%)
9.	Our firm spends resources on research and development for new products, services or processes	84 (26.2%)	176 (54.8%)	57 (17.8%)	2 (0.6%)	2 (0.6%)	321 (100%)
10.	Each team within the firm has a set of monthly targets to meet and are continuously reviewed.	92 (28.7%)	166 (51.7%)	59 (18.4%)	3 (0.9%)	1 (0.3%)	321 (100%)