

RESEARCH ARTICLE

A Non-Parametric Analysis on the Impact of Technical DFI Support on SMME Development: Evidence From the Gauteng Province, South Africa

Jacques de Jongh,¹ Suné Ferreira,¹ Zandri Dickason–Koekemoer,^{1*} and Tafirenyika Sunde²

¹North West University, South Africa, ¹Namibia University of Science and Technology

*20800274@nwu.ac.za

Abstract: The role of Development Finance Institutions (DFIs) has gained profound significance in their effort of driving the South African economy to a globally recognized developmental state. In light of prevailing lackluster economic conditions, such as high poverty levels, unemployment rates, and a subdued domestic investment climate, their mandate has far surpassed addressing purely market failures. Modern perspectives have come to characterize their ability to address more broadly the national development failure and their potential to promote SMME development, in particular. The ability to direct financial as well as technical support towards catalyzing venture creation proves to be pivotal drivers for economic revitalization and employment creation. The objective of this research is to analyze the impact of technical DFI support on the development of small, medium, and micro enterprises (SMMEs) in the Gauteng Province in South Africa. The study adopted a quantitative research approach and a pre-post single sample research design. A convenience sampling technique was used to select the sample, which comprised of 365 SMME owners involved in one of the country's national DFIs' technical support programs. Data were analyzed through the use of descriptive statistics, including frequency distributions. Furthermore, a non-parametric approach to the analysis through the use of the Wilcoxon Signed-rank test was utilized for a pre-post analysis. The results of the study provide evidence of a substantial impact of technical DFI support towards the development of SMMEs in the province. This was centered around an improvement in financial aspects, including annual turnover, gross fixed asset values, as well as quality assurance of the businesses. Further results revealed noteworthy expansions regarding the businesses' client base as well as employment figures. Key recommendations towards taking full advantage of the potential of DFI in the enhancement of SMME development include enhanced private-public sector linkages through creating enabling environments. Furthermore, these institutions need to adopt a more local and regional strategic focus, prioritizing assistance towards SMMEs specifically located in geographically disbursed areas.

Keywords: DFIs, economic development, SMMEs, non-financial support, Gauteng, South Africa.

For the majority of low-income and emerging countries, the pursuit of economic growth and development remains imperative (United Nations Conference on Trade and Development, 2018). Although these nations have made noteworthy advancements in relation to the adoption of various technologies and improvements in factor accumulation, much still needs to be done to compete with their development counterparts. This is particularly evident given the range of socio-economic concerns that have come to characterize the daily challenges facing their policymakers and community stakeholders (Organisation for Economic Co-operation and Development, 2018). Nevertheless, various significant avenues, especially throughout the last decade, have come to the fore in providing the much-needed support these countries require in their development objectives. Among the more noticeable of these, the role of small and medium enterprises has gained profound significance (Meyer & de Jongh, 2018). In the creation of these businesses, developing countries have acquired vital sources that could significantly assist towards driven contemporary employment growth, poverty reduction, and the more equitable distribution of resources (Rungani & Potgieter, 2018). Despite this potential, their contribution, especially in the South African context, has been deterred by numerous internal and external challenges (Molefe, Meyer, & de Jongh, 2018). This includes the lack of adequate finance, shortage of the required skills and human capital, as well as an uncondusive environment characterized by a tremendous amount of bureaucratic regulations and criminal activity (Nhleko, 2017). Based on these complex environments, the quality of support these enterprises receive has become a crucial prerequisite towards their development and growth (Mutoko & Kapunda, 2017). Nevertheless, as the majority of these enterprises operate in deprived areas where the provision of financial and technical support is not always possible, finding alternative forms of assistance has become imperative (David et al., 2018).

In light of these circumstances, the modern role that development finance institutions (DFIs) have played in this regard has attracted significant interest in development discourse. These institutions are well known for their common focus on sustainable development and promotion of economic growth (Abrahams, 2016). Initially conceptualized by public stakeholders as vehicles with an overarching focus

of rectifying purely market failures, their role in the modern and complex economic environments has far surpassed these earliest of understandings. Essien (2016) expressed that their role is multidimensional in improving economic and social progress, especially in the developing world. From this perspective, these institutions have increasingly acted as the much-needed link between public and private sector contributions providing an adequate framework towards improved resource allocation, productivity growth, and financial development. This is all done through the provision of both financial and technical support offered through these enterprises (Barnard, 2016). Financial support in this regard includes provisions for operating capital, acquiring much-needed assets, and assist in generating wealth in under-served markets (Derban, Binner, & Mullineux, 2005). Furthermore, DFIs contribute significantly to economic growth and development through the skills development of SMMEs and owners. It is the latter that particularly makes their role in the development of SMMEs indispensable (Demetriades & Law, 2006).

Considering the current South African socio-economic context, the ability of these institutions to instill much-needed skills towards the improvement of managerial capacities and the overall effectiveness in production processes make them key drivers towards building a more inclusive South Africa (Mpangase, 2011). In recognizing this underlining potential, government officials and key public stakeholders have increasingly emphasized these forms of support in the mandates of DFIs in the country (Qobo & Soko, 2015). This has seen the introduction of various financial and non-financial support provisions, including mentorship programs, human resource development initiatives, and assistance towards complying in various legal matters (Qunta, 2016). As such, various DFIs in the country, including the Industrial Development Corporation (IDC), Small Enterprise Development Agency (SEDA), and the National Empowerment Corporation (NEP), among others, have provided similar initiatives. Nevertheless, despite the inclusion and provision of these programmes, research surrounding their influence on the viability and sustainability of SMMEs have nonetheless remained limited. Therefore, the main objective of this study is to analyze the impact of non-financial technical DFI support on several key dimensions of SMME performance in the country. Identifying whether technical DFI support within South

Africa contributes to the financial development, as well as the inclusion of SMMEs in the mainstream economy in this regard proves pivotal. It holds significant potential for future policy development surrounding this sector's economic contribution.

Literature Review

Developing countries around the world continue to struggle in their pursuit of maintaining and improving the socio-economic living conditions of their citizens. Even in light of optimistic outlooks in achieving specific growth targets, these countries continue to be hammered by an unequal distribution of resources and pervasive poverty rates that deter their developmental progress. Not unique to this, the South African economy has experienced its own challenges. High unemployment rates, mainly due to the incapacity of job-creation, has become one of the leading policy concerns (Bold & Harris, 2018). The latest narrow unemployment rate of 27.5%t places the labor market from an international perspective, as one of the worst regarding the utilization of labor as a valuable resource (Statistics South Africa, 2018). Furthermore, with poverty rates exceeding the 50% threshold and inequality rates close to the highest level since the transition to democracy, the majority of the population face a daily struggle to meet their own basic needs (Statistics South Africa, 2017a).

Given these immense challenges, coupled with a complex social and cultural environment, the country faces an immense task of providing a more inclusive and empowering standard of living to its people. Although addressing the challenges is by far not an easy task, the provision of adequate skills training, higher educational levels, and increased job opportunities all play a fundamental role in effectively addressing the structural nature of these challenges (Harmse, 2013; World Bank, 2018). Taking cognizance of these requirements, various stakeholders, policymakers, and academics have advocated the significant role that small and medium-sized enterprises have adopted in modern South Africa. Herrington, Kew, and Mwanga (2017), in this regard, suggested that these businesses over the last decade have acted as the main drivers of job creation. The South African Reserve Bank (2015) pointed out that these businesses contributed more than 40% of the country's gross domestic output in 2015.

From this perspective, SMMEs are regarded as one

of the vital parts of the economy towards enhancing inclusive growth (Nhleko, 2017). Nevertheless, despite their attributed importance, the country is known to showcase lower levels of entrepreneurial activities when compared to other developing countries, inferring a number of challenges in the effort of maximizing their potential (Bhorat, Asmal, Lilenstein, & Van der Zee, 2018). The limited access to financial resources has undoubtedly been the most telling (Herrington et al., 2017). In fact, during 2015, only 6% of the businesses in South Africa attributed their existence in the economy towards positive reasons, which further doubled in 2016. The concern, however, is that 67% of new small and medium-sized businesses during the same year had indicated that they shut down due to financial constraints (Organisation for Economic Co-operation and Development, 2017). These constraints are related to not being profitable or the struggle to get access to financing in order to sustain the business (Rungani & Potgieter, 2018). The difficulty of obtaining financing can be ascribed to various aspects. This has been noted to include the lack of needed capital and sufficient credit records, being unaware of available development finance options, inadequate business plan development, vast geographical disparities, and an insufficient set of financial skills that all heighten the risk of extending external bank facilitated finance to these enterprises and their owners (Sarakunze, 2015).

Notwithstanding the importance ascribed to the acquisition of financing in their efforts to remain sustainable and hence adequately contribute to a more inclusive society, a growing number of concerns surrounding the available skill sets of business owners that are involved in start-ups have come to the fore (Chimuchecka & Mandipaka, 2015; Molefe et al., 2018). Given the continuous emphasis that business creation and entrepreneurship remain the answer to the unemployment conundrum, various critics have come to question whether the unemployed have the needed capabilities and business know-how to effectively run their own enterprises (Chigunta & Mwanza, 2016; Schirmer & Bernstein, 2017). It is from this debate that instilling adequate knowledge and business skills in these individuals has become an imperative prerequisite for success regarding SMMEs' sustainability.

For South Africa, however, this process has been somewhat subdued. With several authors noting that the adequate entrepreneurial educational programs,

specifically in secondary schools, have been noticeably absent (Echezona, 2015; Bux, 2016). Nchu (2015) suggested that primary and secondary education structures have failed to instill any noteworthy skills or motivation for students to pursue their entrepreneurial endeavors successfully. These programs are provided mostly on the tertiary level and hence exclude a majority of individuals that are not enrolled at these institutions (Amadi-Echendu, Phillips, Chodokufa, & Visser 2016). Because these capabilities are absent in many prospective entrepreneurs and business owners' repertoire, they most likely will not be able to effectively manage an array of complex processes that are vital to their daily operations. Nhleko (2017) suggested that key business competencies not only allow for the effective implementation of the businesses' vision and strategy but likewise allow the business to improve productivity and profitability that fosters a competitive advantage. Furthermore, attributing key operational skills and networking capabilities increases their chances of obtaining the needed financial support significantly (Zarook, Rahman, & Khanam, 2013).

In light of these challenges, while also considering the current lackluster performance of the South African economy over the last decade, the success of SMMEs have become significantly interdependent with the needed support from various stakeholders (Dhanah, 2017). This has ranged from various private financial and technical institutions to more known public development programs. Among these, the role of DFIs has interestingly gained significant prominence (Hasheela, 2016). As public tools, and through the course of their introduction, these institutions were not primarily assigned towards the support of businesses of any kind. DFIs, as initially conceptualized, were regarded as the links between public aid and private investment in terms of facilitating international capital flows (Dickinson, 2015). These institutions were primarily known for their common focus on sustainable development and promotion of economic growth. Khadiagala (2015) described their earliest roles as facilitators, which were aimed at servicing investment shortfalls and narrowing the gap between commercial investment and state development aid. As time has progressed and with the advent of more complex and multidimensional economic processes, their range of services has expanded with more modern understandings of their responsibilities, including key

providers of loans and entrepreneur guarantees, among others (Moretto & Scola, 2017).

Nevertheless, their contribution to the transition from the apartheid era towards a democratic and inclusive society has been no less than profound (Qobo & Motsamai, 2014). They were initially established with the overarching aim to accelerate sustainable socio-economic development (Manyathi, 2011). In doing so, they directed their focus on the provision of investment in those areas where the market initially failed to assist. As time progressed, public stakeholders have increasingly utilized these drivers to realize their developmental priorities and address the imperfections in the markets. These markets typically entail markets for finance and investment capital, contribution towards public goods, and to assist markets with growth (Khadiagala, 2015). In contrast to these benefits, they have been subject to some concerns. Despite their developmental roles, many critics see these institutions as measures of the state's involvement in the economy. Nevertheless, their role and ability to freely direct support where it is deemed required have seen them become important stakeholders within the SMME domain within the country (Molo, 2018).

From these perspectives, their contribution has been highlighted on various levels. Among the first of these, their development impact is based on their capacity to stimulate growth in the private sector. On the secondary level, they direct resources specifically towards structural economic changes that are a necessity for widespread and sustainable development improvements (Lemma, 2015). Finally, on a tertiary level, they have continuously been utilized to drive enterprise growth, produce positive employment changes, induce productivity pattern shifts, and also to boost competitiveness (Nkomzwayo, 2016). Given these responsibilities, several DFIs have been introduced in the country to promote SMME development. These include the Development Bank of Southern Africa (DBSA), the IDC, the Land and Agricultural Bank (Landbank), among others (South African Development Community, 2018).

The DBSA was established in 1983 and had since been providing financial support to various sectors and businesses. The primary objective of the DBSA is to make a significant contribution to the quality of life by accelerating sustainable socio-economic development by enhancing SMME competitiveness (DBSA, 2013). The IDC is a self-financing DFI and

contributes towards the development by specifically providing financial support to the owners operating in competitive industries (IDC, 2016). Landbank, which was established in 1912, has been making a significant contribution towards the agricultural sector by providing financial support to emerging farmers assisting in the acquisition of land as well as various technological advancements in their production processes (Landbank, 2015).

Although all of these institutions have primarily directed financial support towards the growth of various domains of SMMEs, they have likewise provided non-financial technical support in various forms (Qunta, 2016). These have included various skills development programs and mentorship initiatives. The provision of these programs has the objective of enhancing managerial and employee capacity (Discala, 2015). Furthermore, the programs seek to promote best practice business principles, transparent governance, adherence to regulatory requirements, and overall productivity (Malemela & Yingi, 2016). This is all done to ensure that business owners are adequately equipped to cope with the challenges of modern-day business environments. For South Africa specifically, these provisions can largely address skill inadequacies while assisting in the longevity of these enterprises and their subsequent inclusion in formal mainstream economic processes (Rajaram, 2017). Albeit the potential of these provisions, research surrounding the impact on the development and sustainability of SMMEs has been scant. Most of the previous literature has been directed to either the macroeconomic contribution of DFIs to business development and its subsequent effect on employment and growth. Other studies have focused on the impact of purely financial provisions and these enterprises' microeconomic development.

Empirical studies in this regard, for example, have analyzed the effects of DFI support on GDP growth per capita and whether these institutions actually do make a difference. Demetriades and Law (2006) made a comparison of 72 countries and found that DFI support has the most significant impact on middle-income countries. Lower income countries in this study only showed a weak improvement because these countries lacked a sound institutional framework. Evidence from Massa (2011) confirmed that multilateral DFIs do have a positive impact on economic growth and employment and that a strong impact is found

for lower-income countries rather than high-income countries. Moreover, Lemma (2015) also stated that a positive link exists between DFI investments and economic growth. Although these studies underlined the macroeconomic significance of DFI support towards employment and growth, Hasheela (2016) showed that microeconomic finance provisions increased the SME performance in Namibia. From this perspective, monetary assistance improved the SMEs' number of transactions and profits. Findings presented by Valentine (2014) further corroborated this positive relationship. The study showed that increased DFI financial support had a significant positive impact on the growth of SMMEs in Nigeria. Additionally, Qunta's (2016) study found that DFIs and their monetary provisions in Kwazulu-Natal played a significant role in the start-up of SMMEs. Nevertheless, an insightful conclusion was presented, which indicated that the sustainability of these enterprises was a concern specifically based on the lack of adequate skills. Finally, Molo's (2018) findings showed that the contributions of a DFI significantly contributed to the turnover growth of various SMMEs involved in the institution's financial support program in the Gauteng province over 10 years.

Methods

This section discusses the methodology that was utilized in the research process. The research design, study area, sample selection, and the statistical techniques that were used in the analysis of the data are explained.

Research Purpose and Design

The main purpose of the study is to analyze the impact of a non-financial DFI support program on the development of SMMEs located in the Gauteng Province in South Africa. Towards achieving this objective, the study adopted a quantitative research approach and pre-post single sample research design. A positivist research paradigm served the philosophical base of study where credence was afforded to the role of scientific methodologies and their ability to investigate social issues (Kivunja & Kuyini, 2017).

Study Area and Sample

The study was undertaken in the Gauteng Province of South Africa. The province is situated in the

North-Eastern part of the country, sharing borders with Limpopo, Mpumalanga, North West, and Free State province (shown in Figure 1). The province is regarded as the economic heartland of the country, contributing 34% of the country's GDP while playing host to approximately a third of the national labor force (Statistics South Africa, 2017b). Key economic sectors include the manufacturing, finance, and trade sectors. The province has a well-developed infrastructure, including a comprehensive road system, an international airport, telecommunications networks, and a sophisticated financial and business support infrastructure (Department: Trade and Industry, 2015). Geographically, the province is comprised of three metropolitan municipalities and two district municipalities (divided into seven local municipalities) with the primary urban areas located in Pretoria, Johannesburg, and the southern situated, Vaal Triangle region. The sample was selected with a convenience sampling technique and comprised of SMME business owners that were involved in one of the national DFIs non-financial support programs. The criteria for inclusion in the study is that participants were business owners of a small or medium-sized business operating in the Gauteng province. The business size was judged based on the number of employees the business attributed, with only businesses with no more than 50 employees included in the study.

Survey Design and Procedure Method

Data were collected through the use of a self-constructed questionnaire. The questionnaire was developed based on extensive literature reviews and comparisons on measuring instruments that were used for similar studies. It included two sections where the first section pertained to demographic information, including screening questions, to ensure that participants indeed formed part of the target population. The second section assessed the impact of the DFI support on key business indicators. Included questions were predominantly closed-ended and directed to information before and after SMMEs received the non-financial support. Questions included various ordinal Likert scale-based questions that aimed to measure several aspects of the businesses, including their annual turnover, total gross asset values (TGAV), number of employees, as well as the number of monthly customers. After the measuring instrument was completed, it was subject to a peer-review process undertaken by pertinent researchers and a group of specialists in the SMME development domain with the objective to ascertain face and content validity.

After the measuring instrument was deemed scientifically sufficient, it was distributed to a group of participants prior to the non-financial support (intervention) received from the national DFI under consideration. Data collection was carried out by a



Source: Municipalities of South Africa (2018)

Figure 1. Map of the Gauteng province and its municipal borders.

number of trained fieldworkers that telephonically contacted participants before their involvement in the program. Contact details were obtained from the particular DFI's customer database. A final sample size of 365 was deemed adequate based on a historical referencing technique with similar studies (Agwa-Ejon & Mbohwa, 2015; sample size = 334) had comparable sample sizes. All of the sampled participants were involved in an intensive non-financial support program, which was carried out over a period of four years from June 2014 to July 2018. The program was offered on an annual basis, with each year comprising subsequent stages in the training offered. Each stage of the program included a range of workshops, human resource development initiatives, operational planning, as well as financial management training projects. Further business plan development, quality control, as well as networking building and financial support acquisition projects were also provided. Subsequent to their involvement in the four-year program, participants were asked to complete the same post-intervention survey administered before their participation in the program.

Ethical Considerations

High values and norms were kept throughout the research process. Prior to participation in the study, the research purpose was fully explained to participants by the fieldworkers. After consent was given, participants were assured that responses would be recorded confidentially, and all collected data would be reported anonymously. Business owners were informed that participation was strictly voluntary and that they could withdraw at any stage without any repercussions. No incentives were provided that could encourage participation.

Data Analysis

After the quantitative data were collected, it was coded and captured through the use of the Statistical Packages of Social Sciences (IBM SPSS) version 25. Data analysis involved the use of descriptive statistics, including frequency distributions, to report the demographics of the sample. Due to the use of ordinal and Likert scale type data, normality testing using the Shapiro-Wilk and Kolmogorov-Smirnov tests were carried out. Based on the results of these tests (shown in Table 2), data were found to violate

the assumption of normality. Henceforth, the study did not make use of any parametric statistical analyses. In light of the findings, the statistical analysis rather included non-parametric techniques to analyze-group differences of the sample concerning various aspects of the business before and after their involvement in the support program. For this purpose, the Wilcoxon signed-rank test was utilized.

Oyeka and Ebu (2012) described the procedure as one that detects directional change based on changes within samples at different periods as well as offering insight into the magnitude of these changes. More specifically, the test compares the median of a single set of values against those of a hypothetical nature. For this study, Y_1 and Y_2 represent the pre-support and post-support periods, respectively. In analyzing the differences, the test considers the difference between $|Y_1 - Y_2|$ for each pair, excluding the cases where $|Y_1 - Y_2| = 0$. Subsequently, absolute differences are then ranked. Finally, a Z-statistic is computed, and the associated probability values are compared to the level of significance (5%) in order to reject or accept the following hypotheses:

H_0 : Business indicators before and after involvement in the DFI non-financial support program do not significantly differ.

H_1 : Business indicators before and after involvement in the DFI non-financial support program do significantly differ.

In addition to significance testing, the study furthermore had the purpose of estimating the size of the differences where they were indeed found between the pre- and post-support characteristics. In so doing, and in accordance with the non-parametric nature of the analysis, a Mann Whitney U effect size estimator was used. The effect size estimator is based on the following equation:

$$r = \frac{z}{\sqrt{N}} \quad (1)$$

where r represents the effect size estimate, Z the computed Z-statistic, and N representing the number of observations over both the pre-support and post-support periods. In reporting the estimated effect size

numerators, Cohen's (1988) criteria for the applicable thresholds are followed where $r = 0.1$ indicates small effect size, $r = 0.3$ a medium/moderate effect size, and $r = 0.5$ a large effect size.

Results

This section reports the results of the collected and analyzed data. Firstly, the demographic composition of the sample is reported. Secondly, the section presents the descriptive statistics of the sample pertaining to the various business aspects under consideration. After that, the results of the Wilcoxon signed-rank test depicting the impact of the non-financial support on the performance of SMMEs are shown and discussed.

Demographic Background of the Sample

As part of the first step in the analysis procedure, Table 1 represents the statistics on the demographic profile of the participants. Results from the table show that across the sampled participants, 60.8% were male, and females comprised 39.2%. Furthermore, almost half of the sample (49.1%) were between the ages of 35 and 49 years, with 30.1% between the ages of 25 and 34 years. Regarding the racial background, a significant majority were African (98.1%) with only two and five white and colored business owners, respectively. This might be indicative of the national objective of the DFI framework within the South African context to primarily facilitate the support of previously disadvantaged groups and assist in their inclusion of the mainstream economic and business environment (Gumede et al. 2011).

As the analysis pertained to SMMEs within Gauteng, various municipal areas within the province were represented. In relation to this aspect, Table 1 shows that approximately 60% of the sample were located within the metropolitan municipalities of Ekurhuleni (23%), City of Tshwane (21.4%), or Johannesburg (20%). Nevertheless, representatives from smaller areas such as Midvaal and Lesedi were also included. Although this points to a larger majority of these businesses located within more centralized economic areas, statistics regarding the monthly costs of operation, company description, and location of business operation are indicative of the micro nature of these enterprises. Here, more than 80% of the businesses reported operating costs of less than R50,000, 56.4% operated within residential office

spaces, and 82.5% reported to be smaller than the national "very small business" (employing between 6 and 20 employees) classification.

Finally, considering the economic sector of operation, Table 1 highlights a diversified nature of sampled businesses with enterprises from several sectors, such as business services (23.8%), manufacturing (14.8%), construction (8.5%), retail and wholesale trade (9.3%), ICT and communications (9.0%), as well the informal sector (18.1%).

Descriptive Analysis

The second step in the analysis is comprised of a descriptive inquiry regarding the various qualitative and quantitative business aspects under consideration. The results of this analysis are reported in Table 2. From the table, it is evident that the support program contributed positively to the performance of the businesses' annual turnover. After the intervention, 10.1% more businesses reported having an annual turnover of between R200,000 and R500,000, whereas the number with turnover estimations between R0–R200 000 dropped from 84.1% to 67.1%. These trends were also evident with respect to the businesses' TGAV values. Although the lower value of TGAV categories, such as the R0–R200,000, saw noticeable decreases (97.3% to 76.4%), businesses with asset values between R200,000 to R500,000 increased by 14.8% and those within the R500,001 to R1,000,000 increased to 5.2%. These results are in accordance with those reported by Molo (2018), which indicated significant improvements in turnover growth of various SMMEs after the acquisition of DFI financial support. Nevertheless, given that the support received by the SMMEs in this study was strictly non-financial, these results do point to the importance of more qualitative and technical assistance in improving the financial outlook of these enterprises (Owusu Ansah et al., 2017).

In addition, Table 2 further shows noteworthy changes in the businesses' performance regarding their job creation potential and the expansion of their customer base. From this perspective, the depicted results show a substantial reduction (26.5%) in the businesses that reported to only a single owner of the business or having only a single employee. Businesses that reported to have between two and three employees increased by 9%, and those that attributed between four and five employees increased from five to 13.7%.

Table 1*Demographic Profile of the Sample*

Aspect	Sub-category	f	%	Aspect	Sub-category	f	%
Gender	Male	222	60.8	Race	African	358	98.1
	Female	143	39.2		White	2	0.5
Age	25 – 34 years	110	30.1		Colored	5	1.4
	35 – 49 years	179	49.1		Ekurhuleni	84	23.0
	50 – 64 years	65	17.8		City of Tshwane	78	21.4
	Above 65 years	11	3.0	Johannesburg	73	20.0	
Business operations	House	72	19.7	Location	Randfontein LM	18	4.9
	Industrial park office	57	15.6		Mogale City LM	41	11.2
	Residential office	206	56.4		Midvaal LM	2	0.5
	Other	30	8.2		Emfuleni LM	55	15.1
Company description	Single owner	116	31.8		Lesedi LM	5	1.4
	Micro business	185	50.7		Retail/ wholesale	34	9.3
	Very small business	58	15.9		ICT / Comm.	33	9.0
	Small business	5	1.4		Tourism	17	4.7
	Large business	1	0.3		Engineering	7	1.9
Monthly running cost of the business	R1 000 – R10 000	134	36.7		Economic sector	Business services	87
	R10 001 – R50 000	169	46.3	Transport		15	4.1
	R50 001 – R100 000	39	10.7	Construction		31	8.5
	R100 001 – R150 000	9	2.5	Pharmaceuticals		3	0.8
	R150 001 – R500 000	10	2.7	Agriculture		18	4.9
	R500 001 – R1 000 000	3	0.8	Manufacturing		54	14.8
	More than R1 000 000	1	0.3	Informal activity		66	18.1

Source: Survey data (2018)

Likewise, improvements in the number of customers were also positive. As shown in Table 2, substantial increases (22.9%) and reductions (33.2%) for business with between 21 and 50 customers and those with only 0 to 10 customers, respectively, are shown. In this light, technical assistance, including financial and operations management, quality control, customer relations, and business development training, seem to have significant spillover effects for the performance of these businesses. Nwosu (2017) explained that the provision of technical assistance does potentially contribute to a wide range of dimensions within these enterprises, including product diversification, enhanced operational skills, employee retention, and capacity building while likewise contributing to enhanced partnership formation.

Finally, with the purpose of lending insight towards the progress these businesses have made towards the transition from informal to more formal business environments, participants were asked as to whether they had any form of qualification for quality assurance as well as the status of registering their business as formal operating entity at the National Business Juristic Commission (CIPC). Results presented in Table 2 indicate that prior to their involvement in the support program, approximately three-quarters of the businesses (75.6%) had no formal quality accreditation, whereas 24.4% were not formally registered. Contrastingly, after their involvement in the support program, almost all businesses (98.4%) were formally registered, but those that acquired quality assurance certificates increased two-fold. Henceforth,

Table 2*Descriptive Pre-Post Analysis Results*

Aspect	Sub-category	Before support		After support	
		<i>f</i>	%	<i>f</i>	%
Annual turnover	R0 – R200,000	307	84.1	245	67.1
	R200,001 – R500,000	37	10.1	74	20.2
	R500,001 – R1,000,000	13	3.6	29	7.9
	R1,000,000 – R10,000,001	8	2.2	17	4.8
Total gross asset value (TGAV)	R0 – R200,000	355	97.3	279	76.4
	R200,001 – R500,000	7	1.9	54	14.8
	R500,001 – R1,000,000	3	0.8	19	5.2
	R1,000,000 – R10,000,001	0	0.0	13	3.6
Number of employees	0 – 1 employee	244	66.8	147	40.3
	2 – 3 employees	78	21.4	111	30.4
	4 – 5 employees	18	5.0	50	13.7
	6 – 7 employees	10	2.7	21	5.7
	8 – 10 employees	4	1.1	16	4.4
	More than 10 employees	11	3.0	19	5.2
Number of customers	0 – 10 customers	217	59.5	96	26.3
	11 – 20 customers	119	32.6	126	34.5
	21 – 50 customers	20	5.5	102	27.9
	51 – 100 customers	7	1.9	29	7.9
	More than 100 customers	2	0.5	12	3.3
Quality assurance certificate	Yes	79	21.6	145	39.7
	No	286	78.4	220	60.3
Business registration at CIPC	Yes	276	75.6	359	98.4
	No	89	24.4	6	1.6

Source: Survey data (2018)

these findings suggest that the DFI support made a noteworthy contribution in assisting these businesses in gaining access to more mainstream economic and business environments.

Impact of DFI Support on SMME Performance

Before analyzing whether the involvement in the support program attributed any significant differences in the participants' pre-post performance indicators, it was crucial to determine the nature of the data in order to avoid any statistical misconceptions. Razali and Wah (2011) explained that failing to do so can lead to the acceptance of various assumptions and corresponding choices of statistical procedures that can potentially

lead to unreliable inferences of the selected sample. Henceforth, the study employed both the Shapiro-Wilk and Kolmogorov-Smirnov tests for normality to ascertain whether a parametric or non-parametric approach to the analysis was to be followed. Table 3 reports the results of both tests. From Table 3, it can be concluded that the used data significantly differs from a normal (Gaussian) distribution (sig. value = 0.000). Henceforth, based on these results, together with the ordinal nature of the used data, various assumptions of parametric statistical procedures are violated (Ghasemi & Zahediasl, 2012). The study, therefore, employed a non-parametric Wilcoxon signed-rank test to determine the impact of the DFI support program on

Table 3*Normality Test Results*

Business aspect	Tests of normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Annual turnover before	0.533	365	0.000*	0.150	365	0.000*
Annual turnover after	0.464	365	0.000*	0.504	365	0.000*
Total gross asset value before	0.535	365	0.000*	0.145	365	0.000*
Total gross asset value after	0.450	365	0.000*	0.543	365	0.000*
CIPC registration before	0.471	365	0.000*	0.533	365	0.000*
CIPC registration after	0.535	365	0.000*	0.104	365	0.000*
Quality assurance before	0.484	365	0.000*	0.507	365	0.000*
Quality assurance after	0.394	365	0.000*	0.621	365	0.000*
Number of employees before	0.330	365	0.000*	0.439	365	0.000*
Number of employees after	0.268	365	0.000*	0.563	365	0.000*
Number of customers before	0.284	365	0.000*	0.417	365	0.000*
Number of customers after	0.238	365	0.000*	0.615	365	0.000*

Note: ^a indicates usage of Lilliefors significance correction; * denotes significance at 5% level of significance

Source: Survey data (2018)

the businesses' performance after their involvement in the program. The results of the procedure are reported in Table 4.

Upon reflection of the depicted results shown in Table 4, it is evident that the involvement in the support program had a positive contribution to the number of businesses that were registered at the national juristic business commission. Based on the positive rank values, 86 more businesses were registered after the program (registration coded as yes = 2; no = 1) when compared to those before the program. The low sig. value of 0.000 and high Z-statistic of -8.798 suggests the difference to be statistically significant at a 1% level of significance. The magnitude of these differences is further illustrated as moderate when considering the effect size estimator ($r = 0.326$). Likewise, to these results, quality assurance qualifications in the sample also showed positive and moderate ($r = 0.273$) significant changes (sig. value = 0.000) after involvement in the support program. Results from Table 4 show that 73 more businesses had acquired these qualifications after the program when compared to those that were sampled before the program. Although these findings

support those in the aforementioned section, it does reiterate the importance of training-based provisions that allow these businesses to become more organized, systemically more diversified, while additionally improving their chances to access formalized public-private sector networks (Ndjike-Tassin, 2014).

Further results from Table 4 also depict the magnitude of the changes that occurred in the businesses' performance regarding their job creation ability as well as the size of their customer base. Results for both these aspects show relatively high Z-statistics (Customers Z-statistic = -14.425; Employees, Z-statistic = -10.214) and low p-values (Customers, p-value = 0.000; Employees = 0.000). This infers that the null hypothesis involved in the DFI support program attributed no changes in these indicators could be rejected at a 1% level of significance. Upon viewing the negative and positive rankings, 297 more businesses reported having larger customer bases as opposed to only 11 that reported smaller numbers. Furthermore, considering employee numbers, 15 businesses reported a decrease in the number of employed staff, whereas 185 attributed more employees after the four-year program. Based on the estimated effect sizes, changes

in both these aspects are considered to show moderate to large changes (Employees, $r = 0.378$; Customers, $r = 0.534$). These findings do resonate with those reported by Dhanah (2017). From this perspective, the provision of non-financial assistance in the form of incubation workshops or business development training can potentially lead to improved competitiveness, accessibility and utility of technologies, as well as productivity and effectiveness, all of which impart

significant contributions to job creation and customer acquisitions (Maloka & Dlamini, 2016).

Finally, considering the results of the participants' financial position, Table 4 shows that both the annual turnover and TGAV attributed noticeable improvements during the four-year program. For example, a total of 75 (20.6%) businesses reported higher annual turnover estimates after the completion of the program, with only a single enterprise recorded

Table 4

Wilcoxon Signed-Rank Test Results

Business aspect	Type	N	Mean rank	Sum of ranks	Z-stat.	Sig. value	r
CIPC registration after – CIPC registration before	Negative ranks	0 ^a	0.00	0.00	-8.798	0.000*	0.326
	Positive ranks	86 ^b	45.00	3870.00			
	Ties	276 ^c					
	Total	365					
Accreditation after – Accreditation before	Negative ranks	0 ^a	0.00	0.00	-7.379	0.000*	0.273
	Positive ranks	73 ^b	40.50	2956.50			
	Ties	285 ^c					
	Total	365					
Customers after – Customers before	Negative ranks	11 ^a	112.36	1236.00	-14.425	0.000*	0.534
	Positive ranks	297 ^b	156.06	46350.00			
	Ties	57 ^c					
	Total	365					
Employees after – Employees before	Negative ranks	15 ^a	116.07	1741.00	-10.214	0.000*	0.378
	Positive ranks	185 ^b	99.24	18359.00			
	Ties	163 ^c					
	Total	363					
Annual turnover after - Annual turnover before	Negative ranks	1 ^a	28.50	28.50	-7.830	0.000*	0.290
	Positive ranks	75 ^b	38.63	2897.50			
	Ties	289 ^c					
	Total	365					
TGAV after - TGAV before	Negative ranks	0 ^a	0.00	0.00	-8.203	0.000*	0.304
	Positive ranks	82 ^b	41.50	3403.00			
	Ties	283 ^c					
	Total	365					

Note: ^a shows business aspect after < business aspect before; ^b shows business aspect after > business aspect before;

^c shows business aspect after = business aspect before; * denotes significance at 5% level of significance

a decrease. Similarly, 82 more businesses reported higher TGAV scores compared to those reported prior to their involvement in the program. With Z-statistics of -7.830 and -8.203, together with low p-values of 0.000, respectively, it suggests that these changes were deemed significant (at 1% level of significance). Effect size estimates of 0.290 (annual turnover) and 0.304 (TGAV) both suggest these variations to be of a moderate-magnitude. The explanation of these findings might partly lie with the financial management training that participants were exposed to during the support program. Notwithstanding the overall improved business performance and its possible contribution to this specific dimension, enhanced cognizance of the financial matters of the business can prepare owners for more responsive and dynamic decision making in their daily practices (Čalopa, 2017). Furthermore, as these businesses are more likely to operate in environments of high risk and uncertainty, better financial management can contribute to improved strategy formulation and acquisition of finance possibilities (Karadag, 2015).

Conclusion

The main objective of the study was to analyze the impact of SMMEs involvement in a non-financial support program provided by one of the national DFIs in the Gauteng Province in South Africa. On the backdrop of the study, it is evident that the SMME sector continues to play a pivotal role in the economic and social wellbeing of the country. From this perspective, adequate support to these businesses cannot only contribute to the much-needed growth and employment creation but can likewise assist in improving societal progress and inclusivity of South Africans from all demographic backgrounds in the economic processes within the country. Although financial support in this regard has undoubtedly contributed profoundly to the likely success of these enterprises and the achievement of the objectives mentioned earlier, the study's findings do reiterate and showcase the extent to which quality and intensive technical assistance can assist in this regard. Even though these interventions focus on skill development, capacity building, and improved operational management, the findings showed that these processes do have spillover effects on various domains of business including their financial health,

core business performance, and most importantly the potential to foster the transition into more formalized and secure economic networks.

The implications of the findings are two-fold. Firstly, the results as they are presented contribute to the knowledge of the modern role that development finance institutions need to undertake, specifically in the contemporary and complex SMME environment in South Africa. Secondly, the study lends insight as to what is required to foster an improved outlook for SMME development in the country. From this perspective, public stakeholders and policymakers should prioritize support towards establishing a quality and effective business mentoring and training structures that can enable start-up entrepreneurs to develop their businesses. Not only can these programs assist with better operations but can likewise improve the connection between financial and non-financial support, such as better networking abilities and business plan development that could ultimately foster further finance access. Additionally, local private-public partnership formation needs to improve in order to facilitate a more enabling environment on which these businesses can develop, and in so doing, accelerate their transition into more formal mainstream sectors of the economy. Although the study contributes to the underlining body of knowledge on SMME development within developing regions, it is not without its own limitations. These revolve around the fact that the intervention was evaluated at only one national DFI in the country within a single province. Furthermore, given that the study was evaluated over four years, various other factors could also have contributed to the noted changes in business performance that were not measured in the study. Henceforth, future studies could seek to adopt longitudinal research designs with more frequent points of measurement or employ qualitative-based analyses to achieve a more in-depth view of business owners' experience regarding the impact of similar interventions. Additionally, studies can include businesses from other regions or provinces also involved in these support programs to compare and determine whether geographical dissimilarities impact performances.

Declaration of ownership

This report is our original work.

Conflict of interest

None.

Ethical clearance

This study was approved by the institution.

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