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Impact of Elements of Finance and Business Support on the SME Business Ecosystem in South Africa: An Econometric Analysis

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Abstract: Studies conducted in South Africa have revealed that despite SMEs' contributions to economic growth, financing is still a problem, and business supports such as management and business development training and the creation of business plans are additional obstacles to their expansion and survival. This article specifically investigates the combined effects of financing and business support on the business environment of South African SMEs. We calculated a necessary sample size of 1937 using a sample size calculator, a margin of error of 2%, a confidence level of 95%, and a response rate of 20%. As a result, 2200 questionnaires were distributed, the target population was split into 3 strata, and then samples were chosen for the survey from each stratum. The SPSS version 25.0 was employed to analyze the data in three parts, namely, descriptive, correlation, and the outcome of the regression (coefficients/model summary/ANOVA). The level of significance was determined at 5%. The test–re-test reliability method (trustworthiness assessment of the questionnaire) and Cronbach Alpha test (internal constancy) resulted in values of 0.70 and 0.875, respectively, which were regarded as satisfactory. The SME business ecosystem in South Africa was positively and significantly impacted by each of these financial and business support components. The findings also give policymakers vital information about the need for more research into how money and business assistance interact throughout the business ecosystem. It is advised that the South African government intensify its current policies and programs on SMEs' access to financing, particularly in the areas of grants, equity financing, and loan financing. Additionally, it is necessary to build an adequate information system that ensures unrestricted information flow to rural areas.

Keywords: SME; ecosystem; finance; business

1. Introduction

Despite the challenges confronting their take-off, SMEs have been identified as playing a significant role in the creation of employment, the reduction in poverty, the equitable distribution of income, the improvement of lifestyles, and the sustainability of growth and development across sectors [1–3]. Business operations and stability are affected by a variety of factors, including finance, the environment, the government, legal issues, competitors, clients, and trade associations, as well as business support and stakeholders [4–9]. The importance of financing and business support for the growth and survival of SMEs cannot be overstated according to [1,10], who placed a higher value on these two indices of the business ecosystem.

In a contemporary business environment, the components of finance as an ecosystem perception index include loans, equity finance, debt finance, and grants [2,11,12]. All of these have been proven in the literature as having an impact on the success or otherwise of the whole ecosystem [1,10,13,14]. Different opinions pervade the influence of finance as an ecosystem perception index. On the other hand, business support to the ecosystem of SMEs comes in the form of advice (financial, legal, and business), contacts, managerial

or skill acquisition or development, marketing assistance, financial and operational support, business information, training, networking opportunities, support for technological commercialization, business incubators and accelerators, and motivation [15–17]. Additionally, opinions on how business support affects the ecosystem of SMEs vary [18–20]. Reference [19] discovered that the information gap prevents most of the business support from having an impact on the performance of SMEs in South Africa. However, [21], as well as [6] have provided evidence that business support has a positive impact on the ecosystem in their various studies. All these studies imply that views on the effect of business support on the ecosystem vary; thus, they call for additional research before a conclusion can be made regarding the connection between business support and the SME ecosystem. Herein, we use South Africa as a case study.

Studies in South Africa have revealed that, despite SMEs' contributions to economic growth, financing is still a problem. This is also true for business support services such as management and business development training and the creation of business plans [13,17,22] By 2030, it is estimated that 11 million (11 million) new jobs will be required, 90% of which are predicted to come from the expansion of new and existing SMEs, according to [23]. Reference [24] estimated that SMEs contributed about 21% to the GDP, whereas the Global Entrepreneurship Monitor report placed the figure at 37% [25]. The noticeable contributions of SMEs, as enumerated above, notwithstanding, according to [24], only about 70% to 80% of SMEs in South Africa survived past their first five years of operation, and half of those that did go out of business within those five years. However, the exit rate of SMEs decreased from 6% to 4.9% between 2017 and 2019, which, according to [25], was still higher than the established rate of 3.5%. This points to the fact that businesses are still closing due to their inability to stand the test of time. As reported by [26], a lack of financial and business support has been prominently identified among the major factors influencing the success of the SME ecosystem in the country.

South Africa suffers from high unemployment and poverty. This study was, therefore, motivated by the dire need for economic growth for South Africa through entrepreneurship. The important role that SMEs play as engines of growth necessitates a study on the ecosystems of SMEs that can contribute to the success of these SMEs. Two of the most important determinants that can contribute to the successful functioning of SME ecosystems were identified in literature as financial and business support factors. The gap in the literature which was identified was the treatment of the determinants of the SME ecosystem's performance from the perspective of an ecosystem perception index. The need for a study on South Africa was recognized specifically because it was found that, although there are common determinants, determinants of SMEs' performance are unique for each individual country [27] Another study on SMEs by [13] confirmed the difficulties that SMEs in South Africa face, such as access to capital and inadequate infrastructure, but also identified the following barriers: poor financial management, poor marketing, limited information access, inadequate government support, legal and regulatory restrictions, technological limitations, and crime.

Thus, it was necessary to conduct this study specifically for South Africa because general studies and the averages of results from studies conducted in other nations and regions may not necessarily apply to the context of South Africa, or to a particular region within the nation. This study provides a useful response to the question of how much the components of financial and business support influence the ecosystem perception index. The following specific questions are pertinent to the study: (1) What impact do financial components have on the ecosystem index? (2) How does the ecosystem index fare in relation to the components of business support? (3) How do financing and business support affect SMEs in South Africa as a whole? Thus, by linking financing and business support within the framework of business ecosystem perception in South Africa, this study adds to the body of previous research.

2. Literature

2.1. Theoretical Framework

Entrepreneurs play an essential role in the growth of the economy and in reducing poverty. In many economies, small- and medium-sized enterprises are especially important in their contributions to employment provision. Reference [28] is seen as the father of innovation theory due to his original publication in 1911, and he regarded the firms as the instruments used by entrepreneurs in carrying out innovations. Although innovation takes place within firms, they do not normally innovate in isolation. Firms act in collaboration and interdependence with other organizations, such as the government, education, research groups, financial institutions, suppliers, competitors, etc. [29,30]. The Organization for Economic Co-operation and Development [31] defined and used the innovation system concept in the 1990s. See Box 1 below for details.

Box 1. Innovative System.

> "Innovation is thus the result of a complex interaction between various actors and institutions. Technical change does not occur in a perfectly linear sequence but through feedback loops within this system. At the center of this system are the firms, the way they organize (sic) production and innovation, and the channels by which they gain access to external sources of knowledge. These sources might be other firms, public and private research institutes, universities, or transfer institutions—either regional, national or international. Here, the innovative firm is seen as operating a complex network of co-operating and competing firms and other institutions, building on a range of joint ventures and close linkages with suppliers and customers" [31].

Schumpeter's theory forms the basis of the neo-Schumpeterian theory or evolutionary economic growth theory. The neo-Schumpeterian view, therefore, regards innovation as taking place in an innovation system, not dependent on the entrepreneur alone. The term "innovation system" is mostly used in the macroeconomic context, having economic growth as the goal, while the term "innovation ecosystem" is used in the business management context, with the firm's behavior and functioning as the main focus point [8,9,32] . Irrespective of the focal point of the study, the optimum functioning of the firms contributes to the macro-goals of economic growth and poverty reduction. The role of the other participants, such as the government, universities, and research institutions, in the innovation ecosystem should, therefore, be to create an environment within which these firms can achieve their goals.

2.2. Effect of Elements of Finance on SMEs Ecosystem

The availability of financial resources is one of the most significant and frequent factors impeding SME performance and innovation [27–37]. For instance, [38] based on their study on manufacturing SMEs in India, supported the significance of access to finance for SMEs by concluding that internal and institutional finance has a favorable impact on firm performance. However, this does not necessarily mean that it is the constraint that affects all nations the most. According to [39], most SMEs in South Africa face more significant obstacles than access to financing, such as crime lack of electricity and transportation. The conclusions drawn by [40] and [39] (a study also conducted in South Africa) were different. After the "competition" factor, ref. [40] discovered that the "limited access to finance" factor was the most frequent factor influencing SMEs' performance. Performance was also mentioned as being impacted by a lack of skills. The samples used may be the reason for the discrepancy between [40] findings and those of [39]. The data obtained from the study by [39] pertain to SMEs from urban locations in Cape Town, Durban, Johannesburg, and Port Elizabeth. Ref. [40] sample consisted of SMEs in a rural area of Kwa-Zulu-Natal. The SMEs may require support programs, such as management and business development training or training in the creation of business plans, as they may not always know how or where to apply for funding, which causes some issues with access to finance [10]. Considering the seriousness of the lack of access to finance, it is necessary to

distinguish between the different elements of finance, such as debt finance, equity finance, and grants that are available or preferable for SMEs.

2.3. Debt Finance

There is a viewpoint that access to credit has different advantages for SMEs. These may include advantages such as higher turnover growth, better investment opportunities, and better innovation performance. The advantages of access to credit seem to be important in developed and developing countries, as well as countries in economic transition. A study in Ireland by [41] found that credit promotes turnover growth in manufacturing SMEs. In the study on access to finance in Africa [1], it is recommended that firms be made aware of the benefits of credit for productivity and that the constraints on credit access be alleviated. Reference [34] are of the opinion that the expansion of microfinance and the banking sector in Africa may lead to the enhancement of entrepreneurship and innovation, as they discovered when they studied the financial constraints and borrowing behavior of SMEs in Tanzania.

Access to credit has many different determinants. It is interesting to note that size plays a role in access to credit, especially in developing countries and countries in economic transition [36,42]. Other determinants of access to finance include collateral and experience [10]. Many SMEs in developing countries are informal firms due to the high cost of registration and avoidance of paying high taxes. These mostly small and informal firms also experience constraints in access to credit. Reference [43] compared formal and informal businesses across 13 countries and found that the formal sector was 54% more likely to have a bank account and 32% more likely to have acquired a loan than the informal sector. By studying rural SMEs in South Africa, Reference [40] indicated that self-funding and bank credit are these rural SMEs' main sources of funding.

Although debt finance is important due to the SMEs' need for resources, that does not imply that it is the only or best form of funding. Many studies indicating debt finance as a contributor to SME performance did not base their studies on comparisons between different kinds of finance. On the other hand, [44] found a negative relationship between debt and the success of SMEs. Their study was based on panel data from 200 Portuguese SMEs. This may be due to not considering the difference between short- and long-term debt. The study by [45] in Argentina further indicated that the use of a company's own capital contributes to the performance of microenterprises. They reason that using their own savings may cause them to be more diligent than when using external funding. Although self-funding has advantages, the problem lies in the company's lack of its own finances, especially when the SME reaches the expanding phase, either locally or into the international market. Debt finance is then an important alternative if SMEs experience a lack of self-funding.

2.4. Equity Finance

Even though many studies, as indicated in the previous section, have confirmed the importance of access to credit for firm performance, and that it is the most common instrument used to finance SMEs [10], the need for and use of equity finance should be investigated. The study by [46], based on a sample of 187 German managers, found that the SMEs that used equity finance were more successful than SMEs that relied on debt funding. The disadvantages of debt funding, such as higher risks and constraints on liquidity, cause equity funding to be the preferred form of funding for the purpose of achieving greater success in SME performance [10]. Sources of capital for SMEs vary significantly across countries. This may be due to differences in definitions of SMEs and by the levels of development of the different countries.

A study conducted in Kenya on a sample of 760 SMEs [47] indicated that the different sources of capital for SMEs consist of 46.1% personal savings, 19.1% microfinance institutions, 18.2% friends and relatives, 14.8% loans from banks, and 1.8% Chamas (informal investment or savings cooperatives). The differences in funding between countries be-

come clear if these percentages in Kenya are compared to the study of [33] on a sample of 1081 SMEs in 5 small post-Soviet countries. Karymshakov et al. indicated that 0.37% of the SMEs were shareholding companies with shares traded in the stock market, 91.58% were shareholding companies with non-traded shares or shares traded privately, and 5.74% were sole proprietors. The companies selling shares on the stock markets, were found by [33] to be more innovative, as they introduced new goods and services, implemented new production processes, and had new market strategies.

2.5. Grants

It may be expected that SMEs that receive grants should perform better due to their ability to acquire assets and have investment funds for starting the business. The study by [6] in the UK on incubators and accelerators found that start-ups regarded funding as the most important form of support, as part of the assistance that they received in the incubators and accelerators, that contributed to their success. Yet, [45] found, in their study of microenterprises in Argentina, that institutional support had a negative relationship with firm performance. They discovered that the grants were pro-poor biased (funding based on unemployment) and that these firms were less innovative. [45] opined that public funds could be better spent to create more sustainable growth, for example, through investment in education or innovation, than on grants which do not necessarily lead to successful innovative performance. In addition, an empirical study on SMEs in Kenya by [47] confirmed that government support does not contribute much to SMEs' success. Reference [20] study of a sample of 465 SMEs across 3 Latin American countries found that private funding (as compared to government grants) leads to the international expansion of businesses, which they ascribed to the transfer of knowledge and skills (that accompanies this type of funding) that is needed to expand the business and enter the export market.

2.6. Effect of Elements of Business Support on SMEs Ecosystem

Business support can be provided through different forms of institutions, including trade associations, economic development agencies, chambers of commerce, science, technology, and business parks, business incubators, research institutes, technology transfer companies, industrial liaison offices, and innovation centers [29]. Studies confirming a positive relationship between business support and the innovative performance of SMEs include those of [16,48,49].

Business support can be rendered by private and government institutions or by non-government institutions [16]. Reference [20] found, in their study of Brazil, Colombia, and Peru, that the type of support and the level of need for it differ between countries due to the different business environments, and that business support by governments does contribute to the productivity and growth of SMEs by means of reducing demand uncertainty and marketing costs. They also warned that the type of support provided in these countries by the government may result in corruption. It is, therefore, important to ensure that SMEs not only receive support but that it is the type of support that contributes to sustainable growth performance.

2.7. Access to Incubators

Business incubators and accelerators are highly used forms of business support. According to [15], an incubator, in the general sense, is "a physical location that provides a defined set of services to individuals or small companies". They explained the main goal of incubators as the fostering of growth of new businesses in a local community. [15] distinguish the accelerator from the incubator by describing accelerators as "similar to incubators but they are involved in pushing the growth of already developed enterprises". To ensure that the funds invested by the government of the United Kingdom went into incubators and accelerators, a study was conducted by [6] to determine the impact of incubators and accelerators. The survey of 428 start-ups revealed that most of them regard these incubators and accelerators as significant or vital to their businesses. Although the type of

support varies depending on the specific needs of the start-ups, [6] found the following types of support as contributing positively to start-up survival and growth: direct funding, access to office and laboratory space, access to technical equipment, access to investors and peers, mentoring from experts and venture capitalists, and media access. Some of these benefits have a direct influence on the firm, and others indirectly affect the conduct of the start-ups. References [9,15] added the following support functions of the incubator to those of Bone et al.: basic training for entrepreneurs, administrative infrastructure, marketing assistance, managerial advice, networking opportunities, skill development, assistance in the commercialization of technology, legal assistance, financial advice, and HR assistance. Investments by the government in accelerators and incubators have a spill-over effect on the wider ecosystem [6,9,15] (Unfortunately, it seems that the incubators' services do not always reach the intended target. The study by [50] on incubators in South Africa found that most incubators are situated in cities and larger towns. These incubators, therefore, do not service or address the needs of the SMEs in rural areas—the areas most in need of development.

2.8. Access to Legal Assistance

Some of the issues that SMEs experience and need legal assistance with, as indicated by [51], who summarized surveys conducted between 1938 and 2012 in Connecticut, Hong Kong, and the Netherlands, include: the type of ownership for start-ups, trading, tax, regulations, employment issues, business premises, finances (including insurance), intellectual property registrations, environmental regulations, and crime. In a study by [20] on business incubators in three provinces of South Africa, the need for this type of service support was confirmed. These services, identified as services provided by incubators, include legal services, with reference to contacts and legal compliance with registration and labor laws. A study in the UK by [52] indicated that SMEs find private legal services expensive and that most of the surveyed firms indicated that they only made use of private legal services as a last resort. This indicates a need for more affordable or sponsored legal services to enhance the successful functioning of SMEs.

2.9. Access to Tax and Accounting Assistance

The complexity of tax legislation can influence the success of SMEs. Reference [53] found, in their study in Slovenia, that SMEs who perceived the tax administrative barriers to be more restricting were less successful in their businesses. Tax and accounting assistance may, perhaps, reduce these barriers, and, therefore, may contribute to improved entrepreneurial performance. A study on 658 Iranian SMEs conducted by [54] showed a positive relationship between the use of accounting advisory services and SME performance. The importance of affordable or sponsored support with tax and accounting services may contribute to SME performance. Reference [52] indicated, in a survey of SMEs in the UK, that cost of private legal and accounting services restricted SMEs' use of these services. They indicated a decline in the use of private external legal and accounting services, although SMEs would rather resort to accounting services than legal services. Awareness of support may be a further constraint for SMEs. According to [17] study on tax relief for SMEs in South Africa, most SMEs are not aware of these tax relief initiatives.

2.10. Access to Consultants

Access to business information is specifically highlighted by [55] as a factor contributing positively to firm success. Making use of consultants may break this gap in business knowledge. To make the service of consultants useful, there is often a need for this service to be sponsored or provided by the government or other institutions. [18] determined, in their study on SMEs in Sweden, that there is a need for consultants for SMEs to make the businesses more sustainable and competitive with larger businesses, but that SMEs often cannot afford these services. The study by [19] on SMEs in South Africa found that, despite government support services such as the Centre for Small Business Promotion (CSBP) of the

Department of Trade and Industry (DTI), the National Small Business Council (NSBC), and the Small Enterprise Development Agency (SEDA), the assistance is not effective, mostly due to these programs not being "rolled out" correctly or effectively. Awareness of support programs is a further constraint. Reference [56] main conclusion in their 2008 study on SME support in South Africa stated that SMEs were not aware of the support programs available to them. Reference [20] confirmed this concern 10 years later by stating that 37% of the surveyed enterprises were not aware of the services of SEDA.

3. Data and Methods

3.1. Study Sample

The sample used for the analysis (stratified approach) was taken from a general survey of active SMEs in the Mpumalanga Province in South Africa. This article was premised on the EU's 2003 classification of SMEs, as businesses with fewer than 250 persons were defined as middle-sized establishments and those with fewer than 50 as small-sized. The stratified approach was used to derive our sample (2000 SMEs). The estimated target population was about 10,000. Thus, using a sample size calculator, a margin of error of 2%, a confidence level of 95%, and a response rate of 20%, the sample of 1937 was established. Thus, we distributed 2200 questionnaires. We divided the target population into three groups (strata) and then selected samples from each stratum for the survey. For this study, we applied a two-fold structured questionnaire. The first part of the questionnaire focused on the demographics, while the second segment focused on entrepreneurial perceptions of the business ecosystem and key firm- and entrepreneur-related indicators relevant to the scope of the study. All research protocols of the university were followed. Furthermore, ethical procedures were followed by seeking informed consent from the participants and notifying them of their rights, the data storage process, and other safeguards. The test–re-test reliability method (trustworthiness assessment of the questionnaire) and Cronbach Alpha test (internal constancy) resulted in values of 0.70 and 0.875, respectively, which were regarded as satisfactory. The SPSS version 25.0 was employed in analyzing the data. The analyses were conducted in three parts, namely, descriptive, correlation, and the outcome of the regression (coefficients/model summary/ANOVA). The level of significance was determined at the 5% level.

3.2. Multiple Regression

Multiple regression is a statistical technique used to analyze the relationships between a single dependent variable and several independent variables. The objective of multiple regression analysis is to use the independent variables with known values to predict the value of the single dependent variable. Each predictor value was weighed, and the weights denoted their relative contributions to the overall prediction.

Data analysis: The model was conceptualized using a simple linear regression equation, as follows:

$$y = b_1 X_1 + b_2 X_2 + \ldots \ldots \ldots \ b_n X_n + c \tag{1}$$

where y is the dependent variable and $X_1, \ldots, X_n$ are the n independent variables. In calculating the weights, a, $b_1, \ldots, b_n$, regression analysis ensured maximal prediction of the dependent variable from the set of independent variables. This is usually performed by least squares estimation.

where y is the output (Ecosystem);

$b_1, b_2 + \ldots \ b_n$ are the coefficients of the variables to be estimated;

$x_1, x_2 + \ldots \ldots \ldots \ x_n$ are the determinants of the Ecosystem and c is the constant value.

This can further be expressed as follows, and taking our variables of interest into consideration results in:

$$Y = f(DF, EF, G, LS, TS, INC, CA) \tag{2}$$

where

Y = ecosystem;
DF = debt finance;
EF = equity finance;
G = grants;
LS = legal services;
TS = tax services;
INC = incubators/accelerators;
CA = consultants/advisors; *f* is the functional notation.

Equation (2) can be expressed in econometric form as:

$$Y_i = b_0 + b_1 DF_i + b_2 EF_i + b_3 G_i + b_4 LS_i + b_5 TS_i + b_6 INC_i + b_7 TS_i + b_8 INC_i + b_9 CA_i \quad (3)$$

4. Results

Descriptive Statistics

Standardized beta values indicate the number of standard deviations at which the scores of the dependent variable would change if there were one change in the standard deviation unit in the predictor. Details are shown in Table 1 below.

Table 1. Mean and standard deviation (variables).

	Mean	Std. Deviation	N
Ecosystem Index	347.43	181.967	1486
Index of Access to Debt Finance	13.45	11.608	1953
Index of Access to Equity Finance	13.00	11.084	1951
Index of Access to Grant	14.40	12.100	1965
Index of Access to Legal Services	10.72	10.536	1910
Index of Access to Tax Services	9.59	9.808	1924
Index of Access to Incubators/Accelerators	13.52	12.457	1880
Index of Access to Consultants/Advisors	10.87	10.961	1924

Preliminary and post-test results verified that our analysis confirmed the assumptions of the linear regression.

a.   Sample size

Different authors tend to provide different guidelines concerning the number of cases required for multiple regression. Reference [57] recommends that "for social science research, about 15 subjects per predictor are needed for a reliable equation". Reference [58] gave a formula for calculating sample size requirements, considering the number of independent variables in the model: N > 50 + 8m (where m = the number of independent variables). In this instance, we had 6 independent variables implying a benchmark of 98 cases. However, we had more responses, and the issue of sample size problems did not arise.

b.   Multicollinearity

This refers to the relationships among the independent variables. Multicollinearity exists when the independent variables are highly correlated (r = 0.9 and above). This was not the case with our results. Details are shown in Table 2 below.

c.   Outliers

Outliers on the dependent variable were identified from the standardized residual plot and deleted. [58] defined outliers as those with standardized residual values above about 3.3 (or below –3.3).

Table 2. Correlation matrix.

					Correlations				
		Ecosystem Index	Index of Access to Debt Finance	Index of Access to Equity Finance	Index of Access to Grant	Index of Access to Legal Services	Index of Access to Tax Services	Index of Access to Incubators/Accelerators	Index of Access to Consultants/Advisors
Pearson Correlation	Ecosystem Index	1.000	0.691	0.634	0.650	0.621	0.658	0.630	0.683
	Index of Access to Debt Finance	0.691	1.000	0.925	0.616	0.511	0.524	0.569	0.612
	Index of Access to Equity Finance	0.634	0.925	1.000	0.565	0.557	0.516	0.542	0.544
	Index of Access to Grant	0.650	0.616	0.565	1.000	0.482	0.457	0.585	0.554
	Index of Access to Legal Services	0.621	0.511	0.557	0.482	1.000	0.652	0.690	0.523
	Index of Access to Tax Services	0.658	0.524	0.516	0.457	0.652	1.000	0.603	0.549
	Index of Access to Incubators/Accelerators	0.630	0.569	0.542	0.585	0.690	0.603	1.000	0.608
	Index of Access to Consultants/Advisors	0.683	0.612	0.544	0.554	0.523	0.549	0.608	1.000
Sig. (1-tailed)	Ecosystem Index		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	Index of Access to Debt Finance	0.000		0.000	0.000	0.000	0.000	0.000	0.000
	Index of Access to Equity Finance	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	Index of Access to Grant	0.000	0.000	0.000		0.000	0.000	0.000	0.000
	Index of Access to Legal Services	0.000	0.000	0.000	0.000		0.000	0.000	0.000
	Index of Access to Tax Services	0.000	0.000	0.000	0.000	0.000		0.000	0.000
	Index of Access to Incubators/Accelerators	0.000	0.000	0.000	0.000	0.000	0.000		0.000
	Index of Access to Consultants/Advisors	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

d. Normality/Linearity/Homoscedasticity/Independence of Residuals

normality: the residuals were normally distributed about the predicted DV scores;
linearity: the residuals had a straight-line relationship with predicted DV scores;
homoscedasticity: the variance of the residuals in the predicted DV scores was the same for all predicted scores.

The table titled "Correlations" contains the correlations between the variables in our model. The dependent variable and independent variables were at least somewhat correlated (above 0.3, preferably). In this instance, there was a strong correlation between the independent and dependent variables. Additionally, there was no significant correlation between our independent variables. According to [58], two variables should not be included in the same analysis if their bivariate correlation is 0.7 or higher. All variables were kept in the analysis because the correlation values were lower than 0.7. "Collinearity diagnostics" were also carried out by SPSS on the variables as part of the multiple regression process. This picked up on problems with multicollinearity that may not have been evident in the correlation matrix. The results are presented in the table labeled Coefficients. Two values are given: tolerance and VIF. Tolerance is an indicator of how much of the variability of the specified independent is not explained by the other independent variables in the model and was calculated using the formula $1 - R^2$ for each variable. If this value was very small (less than 0.10), it indicated that the multiple correlations with other variables were high, suggesting the possibility of multicollinearity. The other value given was the VIF (variance inflation factor), which was the inverse of the Tolerance value (1 divided by tolerance). VIF values above 10 were a concern in this case, indicating multicollinearity.

These values, however, still allowed for quite high correlations between independent variables (above 0.9), so we took them only as warning signs and checked the correlation matrix. In this instance, the tolerance value for each independent variable was no less than 0.10; therefore, we did not violate the multicollinearity assumption. This was also supported by the VIF values, which were well below the cut-off of 10. These results were not surprising given Pearson's correlation coefficient between the independent variables.

Multiple regression assumptions were checked by inspecting the residual scatterplot and the normal probability plot of the regression standardized residuals that were requested as part of the analysis. In the normal probability plot, the points are laid in a reasonably straight diagonal line from bottom left to top right. This suggests no major deviations from normality. In the scatterplot of the standardized residuals (the second plot displayed) the residuals were roughly rectangularly distributed, with most of the scores concentrated in the center (along the 0 points). There was no clear or systematic pattern to our residuals (e.g., curvilinear or higher on one side than on the other). Deviations from a centralized rectangle suggest some violation of the assumptions, which was not the case. The presence of outliers could also be detected from the scatterplot. Ref. [58] defined outliers as cases with a standardized residual (as displayed in the scatterplot) of more than 3.3 or less than -3.3. With large samples, it is not uncommon to find several outlying residuals; thus, it is not necessary to take any action. Figure 1 below shows the standardized residual plot. The colored dots in the figure represent the values of the residuals and how it lies on the diagonal line representing normality.

In linear regression, a common misconception is that the outcome must be normally distributed, but the assumption is that the *residuals* are normally distributed. It is important to meet this assumption regarding the *p*-values for the *t*-tests to be valid. A normal probability plot is also commonly known as a P-P plot, which is a plot of the cumulative frequency of the distribution of standardized residuals yielded from the model against the residuals associated with a normal probability graph scale. This standardized residual is found by dividing the difference between the observed and expected values by the square root of the expected value.
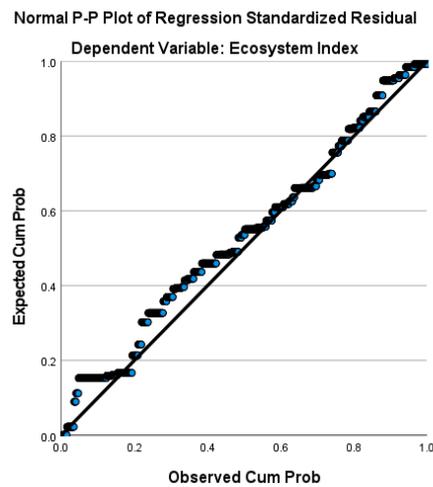
Figure 1. Normal P-P plot of regression standardized residual.

The standardized residual can be interpreted as any standard score. The mean of the standardized residual is 0, and the standard deviation is 1. If the points follow the diagonal line, it can be concluded that the residual value is normally distributed. On the other hand, if the points do not follow the diagonal line, it can be concluded that the residual value is abnormally distributed. In this instance, there was a normal distribution, which is necessary for the b-coefficient tests to be valid. This conforms to the diagonal normality line indicated in the plot and confirms that our *p*-values and *t*-tests were valid. Table 3 below shows the variables used in the model.

Table 3. Regression Variables [Variables Entered/Removed [a]].

Model	Variables Entered	Variables Removed	Method
1	Index of Access to Consultants/Advisors, Index of Access to Equity Finance, Index of Access to Incubators/Accelerators, Index of Access to Legal Services, Index of Access to Tax Services, Index of Access to Grant, Index of Access to Debt Finance [b]	.	Enter

[a] Dependent variable: ecosystem index. [b] All requested variables entered.

The table titled Casewise Diagnostics contains the remaining data from the output pertaining to unusual cases. It lists cases with standardized residual values that were either above 3.0 or below −3.0. We would anticipate that 1% of cases in a sample with a normal distribution would fall outside of this range. In this sample, 23 cases with residual values of −3.252 were found. The Casewise Diagnostics table shows that, although the ecosystem index score for this case was 385, our model predicted a value of 667.03 instead. The scores were lower than we predicted, so our model did not predict these scores very well. However, we cross-checked the value for Cook's distance, given towards the bottom of the Residuals Statistics table, to determine whether these peculiar cases had any undue influence on the outcomes of our model. Cases with values greater than 1 may present issues, according to [58]. The maximum Cook's distance value in our case is 0.009, which suggests that there were no significant issues. Tables 4 and 5 below show the derived Casewise diagnostics and residual statistics.

The model summary in Table 6, below, shows how much of the variance in the dependent variable (ecosystem index) was explained by the model. In this case, the value was 0.774. Expressed as a percentage (multiply by 100 by shifting the decimal point two places to the right), this means that our model explained 77.4 percent of the variance in the ecosystem variable. This is quite a respectable result, particularly when compared to some of the other results.

Table 4. Casewise diagnostics [a].

Case Number	Std. Residual	Ecosystem Index	Predicted Value	Residual
47	−3.252	385	667.03	−282.025
195	−3.252	385	667.03	−282.025
240	−3.252	385	667.03	−282.025
293	−3.252	385	667.03	−282.025
437	−3.252	385	667.03	−282.025
490	−3.252	385	667.03	−282.025
537	−3.252	385	667.03	−282.025
628	−3.252	385	667.03	−282.025
719	−3.252	385	667.03	−282.025
902	−3.252	385	667.03	−282.025
955	−3.252	385	667.03	−282.025
1002	−3.252	385	667.03	−282.025
1025	−3.252	385	667.03	−282.025
1085	−3.252	385	667.03	−282.025
1233	−3.252	385	667.03	−282.025
1278	−3.252	385	667.03	−282.025
1435	−3.252	385	667.03	−282.025
1583	−3.252	385	667.03	−282.025
1679	−3.252	385	667.03	−282.025
1724	−3.252	385	667.03	−282.025
1754	−3.252	385	667.03	−282.025
1807	−3.252	385	667.03	−282.025
1952	−3.252	385	667.03	−282.025

[a] Dependent variable: ecosystem index.

Table 5. Residuals statistics [a].

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	153.36	753.66	342.34	158.720	1840
Std. Predicted Value	−1.212	2.538	−0.032	0.991	1840
Standard Error of Predicted Value	2.780	13.101	5.402	3.115	1840
Adjusted Predicted Value	149.94	752.81	336.84	151.519	1486
Residual	−282.025	211.338	10.484	90.539	1486
Std. Residual	−3.252	2.437	0.121	1.044	1486
Stud. Residual	−3.259	2.444	0.122	1.047	1486
Deleted Residual	−283.177	212.610	10.595	91.072	1486
Std. Deleted Residual	−3.270	2.449	0.122	1.048	1486
Mahal. Distance	0.527	32.894	6.680	8.468	1840
Cook's Distance	0.000	0.009	0.001	0.002	1486
Centered Leverage Value	0.000	0.022	0.004	0.006	1840

[a] Dependent variable: ecosystem index.

Table 6. Coefficients/model summary/ANOVA results.

		Coefficients [a]												
		Unstandardized Coefficients					95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Standardized Coefficients Beta	T	Sig.	Lower Bound	Upper Bound	Zero-Order	Partial	Part	Tolerance	VIF
1	(Constant)	147.204	3.767		39.078	<0.001	139.815	154.594					
	Index of Access to Debt Finance	7.010	0.695	0.447	10.092	<0.001	5.648	8.373	0.691	0.254	0.125	0.178	9.839
	Index of Access to Equity Finance	−4.621	0.600	0.281	−7.703	<0.001	−5.798	−3.444	0.634	−0.196	−0.095	0.115	8.732
	Index of Access to Grant	1.405	0.484	0.093	2.904	0.004	0.456	2.354	0.650	0.075	0.036	0.148	6.765
	Index of Access to Legal Services	4.144	0.358	0.240	11.563	<0.001	3.441	4.847	0.721	0.288	0.143	0.355	2.815
	Index of Access to Tax Services	6.546	0.451	0.353	14.501	<0.001	5.661	7.432	0.758	0.353	0.179	0.258	3.871
	Index of Access to Incubators/Accelerators	2.873	0.290	0.197	9.902	<0.001	2.304	3.442	0.730	0.249	0.122	0.388	2.580
	Index of Access to Consultants/Advisors	−0.030	0.497	0.002	−0.060	0.952	−1.004	0.945	0.783	−0.002	−0.001	0.171	5.860
Model Summary													
Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson							
1		0.880 [a]	0.774	0.773	86.716	2.163							
ANOVA [a]													
Model		Sum of Squares	df	Mean Square	F	Sig.							
1	Regression	38,057,222.195	7	5,436,746.028	723.011	0.000 [b]							
	Residual	11,113,958.575	1478	7519.593									
	Total	49,171,180.771	1485										

[a] Dependent Variable: Ecosystem Index. [b] Predictors: (Constant), Index of Access to Consultants/Advisors, Index of Access to Equity Finance, Index of Access to Incubators/Accelerators, Index of Access to Legal Services, Index of Access to Tax Services, Index of Access to Grant, Index of Access to Debt Finance.

To assess the statistical significance of our result, we checked the ANOVA table. This tested the null hypothesis that multiple R in the population would equal 0. The model in this example reached statistical significance (Sig = 0.000, i.e., $p < 0.0005$).

To evaluate the contributions of each variable included in the model to the prediction of the dependent variable, we checked the output box labeled Coefficients. We compared the standardized coefficients of different variables. "Standardized" indicates that the values for each of the different variables were converted to the same scale so that they could be compared. In this case, we were interested in comparing the contributions of each independent variable; therefore, we used the beta values. In this case, the largest beta coefficient was 0.447, for Access to Debt Finance. This means that this variable made the strongest unique contribution to explaining the dependent variable when controlling for the variance explained by all other variables in the model. The Beta values for Access to Equity Finance, Access to Grants, Access to Legal Services, Access to Tax Services, Access to Accelerators, and Access to Consultants were slightly lower (0.281, 0.093, 0.240, 0.353, 0.197, and 0.002, respectively).

All the variables showed high statistically significant values (lower than 0.05), except for Access to Consultants. This may be due to an overlap with other independent variables in the model. The other potentially useful piece of information in the coefficients table was the part correlation coefficients [58]. Squaring the values gives an indication of the contribution of each variable to the total R squared. In other words, it indicates how much of the total variance in the dependent variable can be uniquely explained by that variable and how much the R squared would drop if it were not included in the model. In this instance, the variables' part correlation coefficients were 0.125, −0.095, 0.036, 0.143, 0.179, 0.122, and −0.001. When squared, they were 0.0156, 0.009, 0.001, 0.02, 0.032, 0.0148, and 0.000001, demonstrating their unique contribution to the explanation of variance in the ecosystem variable. It is also important to note that the total R squared value for the model (in this case, 0.774) does not equal all the squared part correlation values. This is because the part correlation values represent only the unique contribution of each variable, with any overlap or shared variance either wholly or partially removed. The total R squared value, however, includes the unique variance explained by each variable and by all of them together. In this case, the independent variables were reasonably strongly correlated; therefore, there were a significant number of shared variances that were statistically removed when they were included in the model.

5. Discussion

The first step in our empirical analysis was the descriptive analysis, as shown in Table 1. The outcome of the descriptive statistics presented in the table showed that Access to Grants had the greatest influence (mean = 14.40, SD = 12.10) on the SME ecosystem, followed by Access to Incubator/Accelerator (mean = 13.52, SD = 12.46). The variable with the smallest influence on the ecosystem was Access to Tax Services (mean = 9.59, SD = 9.81). According to [6], SMEs with grants are expected to perform better since they can acquire assets and have investment funds to start their operations. In addition, business incubators were admitted by [15] to be a highly used form of business support. However, the outcomes of the descriptive statistics demonstrate that all the factors in the model were statistically correlated.

As a way of extending the preliminary analysis in the descriptive statistics, the correlation matrix was computed as shown in Table 2. The correlation coefficients in the matrix show the correlation coefficient, which indicates the degree of the linear relationship between the variables. The findings indicate that all the variables showed high and statistically significant correlations with the SMEs ecosystem in South Africa, therefore conforming with relevant studies regarding the positive interactions between financial and business support and the ecosystem [17,20,40,59]. Access to debt finance had the highest correlation with the ecosystem, with a value of 0.691, closely followed by consultant/adviser, with 0.683. The lowest correlations between variables and the ecosystem were found for incuba-

tor/accelerator and legal services, with 0.630 and 0.621, respectively. Remarkably, a high level of correlation between finance, SMEs, and business support was expected to explain the SME ecosystem considering recent efforts by the government through the activities of SEDA, SEDA Technology Program, National Empowerment Fund, Black Industrialists Scheme, etc. [60].

Herein, we present the relationships between regressed explanatory variables and the dependent variable, which is the ecosystem. In line with the extant literature, the two major components of finance and business support were divided into Debt Finance, Equity Finance, Grants, Legal Services, Incubators/Accelerators, and Consultants/Advisors. According to the study, all the variables were statistically significant in explaining the ecosystem in South Africa. The variable with the strongest unique influence on the ecosystem was Access to Debt Finance. The result shows that a one percent increase in this index would improve the ecosystem by 44.7%. This is consistent with existing empirical studies such as [1,41], but contrary to the study by [44], where the relationship between debt finance and the ecosystem was found to be negative. In South Africa, the activities of lending institutions have been more pronounced in the last two decades, such that qualified SMEs can access credit facilities [61]. Further, [34] opined that the recent expansion in microfinance-related activities and the banking sector in Africa would be able to boost the operations of SMEs on the continent. However, one caveat observed by [36] was that large SMEs can obtain access to debt finance more easily than smaller and growing SMEs because of their bargaining power and market advantage.

Other pertinent variables include incubators and accelerators due to their favorable and statistically significant connections to the South African ecosystem. This viewpoint predicts a 19.7% impact on the ecosystem for every 1% increase in incubators or accelerators. Even though they are primarily found in cities and large towns, this is not surprising given the recent increase in the number of incubators in the nation [50]. This implies that the nation's SME ecosystem benefits from business support in this area. Several studies, including those of [6,9,15], support this assertion. Further, tax and legal services have a positive influence on the ecosystem, with coefficients of 0.35 and 0.24, respectively. This suggests that a one percent increase in each of these indices would have impact the ecosystem of 35% and 24%, respectively. This conforms with the studies of [54,55], where positive and statistical relationships between tax and the ecosystem were established, but contrary to the negative association found in [53]. Also in agreement with this relationship was the study by [59], where the use of professional support contributed to the future success of SMEs and the ecosystem. However, it is interesting to note that most SMEs in South Africa are not aware of tax relief initiatives despite their accompanying advantages [17]. It was further suggested that older and well-established SMEs in South Africa enjoy a better treatment from the government than upcoming entrepreneurs who cannot access the services of tax administrators or legal counseling due to information gaps or distance [59]. This might be the reason for the high impact of tax and legal services on the ecosystem in South Africa.

Our results generally support [62] , whose results showed that government support influences the business landscape. This implies that government assistance (e.g., grants, small loans, legal and tax services) are prime influencer on the ecosystem in South Africa. Furthermore, [63], in their report to OECD, agreed with the findings regarding the dynamics that influence an ecosystem. Our regression shows that debt finance has a major impact on the ecosystem. Nonetheless, the current literature on entrepreneurial finance is fragmented and rooted in various traditions. Furthermore, our results aligned with those of [64] on the impact of finance on the ecosystem. According to Tore et al., financial access is considered a crucial element of entrepreneurship. Much of the literature focuses on how individual actors demand or supply finance, but rarely within the context of systemic entrepreneurship.

The relationship between equity finance and the ecosystem was positive, indicating that a one percent increase in equity finance would cause a 28% improvement in the ecosystem in South Africa. The theory of equity financing relates to the management of funds such that equity holders obtain benefits commensurate with the level of the enterprise's suc-

cess [65] Studies such as that of [40] have demonstrated that in South Africa, self-funding constitutes a major source of financing for SMEs. It was further argued that this enhances productivity and impacts the ecosystem in general. However, studies have shown that there is a limit to the degree to which equity finance can sustain SMEs, especially after five years of establishment, when expansion becomes a major challenge [10,45]. Furthermore, the relationship between consultants/advisors and the ecosystem was positive, indicating that a one percent increase in consultancy and advisory services would marginally increase the ecosystem by 0.002%. The degree of this coefficient was too small to confirm a major influence on the ecosystem of South Africa. This result might indicate that government policy on consultancy/advisory services to SMEs has not been very effective in achieving the desired objectives in South Africa. In Ayandibu and [20,65] it was revealed that government support services through the Small Enterprise Development Agency and Center for Small Business Promotion have not been effective because the programs are not "rolled out" appropriately and effectively.

6. Conclusions

This study examined the relevance of finance and business support as two major components of the ecosystem perception indices of small and medium enterprises (SMEs) in South Africa. The business ecosystem of small and medium enterprises has become one key factor in the economic growth and development of countries in recent times, and the contributions of financial and business support occupy the center stage. In this study, a comprehensive examination of the impact of finance and business support on the SME business ecosystems in South Africa was undertaken. The study decomposed finance into indices of Access to Debt Finance, Access to Equity Finance, and Access to Grants, while business support comprised indices of Access to Legal Services, Access to Tax Services, Access to Incubator/Accelerator, and Access to Incubators/Advisors. Enough evidence was provided in this study to show that all these components of financial and business support had positive and significant impacts on the SME ecosystem in South Africa. It turns out that in developing countries, the processes for obtaining credit are not always related to the productive capacity of companies, but rather other mechanisms that, in principle, may seem inclusive; however, in the medium term, do not bring about important results. Other factors, such as the team's ability to innovate and develop strategies aligned with the entity that is granting the credit, workforce training, hiring, etc., should be considered in the process of solving the problem of financing for SMEs. This article demonstrates the importance of entrepreneurs in innovation and their ability to challenge existing structures and forge new paths based on their unique characteristics and circumstances. Thus, by creating fertile environments for new and growing businesses, positive ecosystem management will drive local economic vibrancy and national economic growth.

The findings provide useful inputs for policymakers on the need for continued investigation into the relationship between finance and business support within the ecosystem. It has been suggested that the government of South Africa intensify its focus on the existing policies and programs concerning access to finance for SMEs, especially in the areas of equity, debt financing, and grants. Although this study also demonstrated the relevance of government support in legal and tax services and incubators/accelerators, only entrepreneurial awareness and visualization can transform these opportunities in this regard. Therefore, an adequate information apparatus that guarantees the free flow of information to rural areas must be implemented. In addition, the government should increase the number of incubators/accelerators across the country to realize the fullest benefits.

Further studies should widen the scope of the study by incorporating climate, culture, and environmental elements of the business ecosystem, and should make further comparisons with larger provinces within South Africa where the activities of SMEs are more pronounced. Not only that, the impacts of financial and business support on the ecosystem in South Africa may differ not only from sector to sector but also in terms of gender dispar-

ities. This concept should be investigated with an examination of the gender implications of the impacts of financial and business support on the ecosystem in the country.

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