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Assessment of the much-needed capacities for farming small, micro and medium enterprise (SMMEs) in South Africa

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The capacity of small, micro, and medium enterprises (SMMEs) plays a pivotal role in ensuring the viability and sustainability of the enterprise. Various types of capacities need to be identified and used to guide farming SMMEs' planning, implementation and support in the after-care phase. The main objective of the study was to identify and evaluate essential capacities that are instrumental in ensuring the financial success of farming SMMEs in South Africa. Both qualitative and quantitative methods were used to determine the performance of farming SMMEs under consideration. The results revealed that market capacity is essential for financial returns of farming SMMEs in South Africa. Farming SMMEs should be linked to sustainable markets and they must actively participate in both supply and value chains in order to be profitable. Thus, farming SMMEs and their support service stakeholders should consider market access as crucial during pre-and post settlement support. It is essential therefore, that both public and private sectors prioritise market access in their supportive programmes.

Key words: Profitability, capacities, planning, sustainable, performance.

INTRODUCTION

The capacity of small, micro, and medium enterprises (SMMEs) plays a pivotal role in ensuring the viability and sustainability of these enterprises in general (Fabricius, 2010). Since mid 2008, SMMEs in South Africa have not been able to contribute towards job creation and economic growth as before. This was partly caused by the global recession. The impact of the global recession on these SMMEs might have been mitigated if essential capacities were adequate. The SMME sector already provides some 57% of the jobs in the South Africa economy. Hope is being pinned on the SMME sector to create further jobs, as these are not forthcoming from the big business sector (Bulletinonline, 2009).

Farming SMMEs in South Africa, particularly those formed through land reform, have been heavily constrained by lack of capacity (Williams, 2008; CDE roundtable, 2008). Morgan (1993) defined capacity as the ability of individuals, groups, institutions and organizations to identify and solve problems over time. This includes the management of resources, knowledge and processes employed by individuals, organizations, institutions and groups to achieve their goals. Capacity comprises staffing, physical infrastructure, technology, financial resources, strategic leadership, process management, networks, linkages with other organizations, monitoring and evaluation abilities (IDRC, 2002). Kirsten et al. (2005) classified the absence of support, after-care, conflict management amongst the beneficiaries, lack of farming skills and knowledge as common symptoms of lack of capacity (Festus, 2005). These authors found that in South Africa's Northwest

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province, 51% of farming SMMEs did not know the content of their business plans, 70% did not establish any relationship with their peers, 72% of SMME members had not received any marketing training and the SMMEs received 47% of their technical advice from the provincial Department of Agriculture (CSD, 2007). Given the above, how does one define capacity that affects SMMEs? Various types of capacities need to be identified and used to guide farming SMME planning, implementation and support in the after-care phase. These are categorized as internal and external capacities. The internal capacity refers to the capacity that should be dependent on the SMME itself, whilst the external capacity is the one that should depend on the external structures, institutions, service providers and government departments. Human, infrastructure, financial and market capacity were identified as important for the determination of internal capacity. Besides these capacities, the SMMEs rely on capacity from other organizations, institutions and Government Departments to enhance their internal functions. This capacity plays a role in supporting the enterprise. In the farming SMME sector, extension capacity (the capacity of other secondary institutions) is of significant importance. Various institutions such as Colleges of Agriculture, Universities, Development banks, Non-Government Organizations and international institutions are required to provide these support services as community engagement and outreach programmes. Their capacities have a direct influence on the profitability and sustainability of these farming businesses as is the case with commercial counterparts. In view of the linkages between training institutions and commercial farming sectors which appear to HAVE significant impact on their profitability, it may also be assumed that similar linkages may have a positive influence on the farming SMMEs' capacity and profitability. According to Mmbengwa (2009), there is sufficient evidence which suggest that farming SMMEs lack appropriate linkages with relevant stakeholders including amongst others, training and research institutions. This author further suggested that experts in a specific commodity should be linked to farming SMMEs dealing with that particular commodity in order to obtain first-hand information.

THEORETICAL FRAME WORK

Performance and sustainability are essential elements of any business operation (Nell and Napier, 2005). However without clear and consistent performance measurement instruments, coupled with monitoring and evaluation systems, it would be difficult to evaluate the strengths and the weaknesses of the business (Drennan and Pennington, 1999). While performance is critical for all components of business enterprises, SMMEs depend on the performance levels of their managers or owners

rather than on the performance of the entire business entity (Pett and Wolff, 2007). This reliance on managers or owners renders SMMEs susceptible to business and financial risks. Therefore, in order to ensure the improved performance of SMMEs, managers or owners need to design an objective method for assessing their business operations, or adopt an existing one (Mampholo and Botha, 2004). The balanced scorecard (BSC) is one of the performance management tools that can be used with success by SMMEs (Fletcher et al., 2004). However this tool is fairly unpopular in the farming SMMEs sector in South Africa, as its value has been masked by a lack of information. Very few managers or owners of farming SMMEs know that they can use the BSC to evaluate the business in terms of customer, internal business process, innovation, learning and financial perspectives. Gumbus and Lussier (2006) have identified a number of advantages of the BSC for businesses. The following could be of particular importance for farming SMMEs:

- (a) Tracking of business performance.
- (b) Provision of business focus.
- (c) Alignment of goals to business activities.
- (d) Accountability by managers.

The existence and application of the BSC could help an entrepreneur to diagnose various business problems and subsequently attend to them without delay. In this way, the sustainability of the business can be monitored. The purpose of this study was to investigate the essential capacities that can enhance the performance of farming SMMEs (given that more than 80% of these farming SMMEs have been collapsing due to poor performance) formed as results of the implementation of land reform in South Africa.

METHODOLOGY

The objective of the study was achieved by evaluating these capacities across provinces of South Africa and by further analysing their impacts in the performance of farming SMMEs. Prior the commencement of the study a questionnaire comprising of biographical information and 11 key performance indicators was developed. In order to ensure precision, reliability and validity, three experts' panel meetings were convened. A pilot study was conducted to pre-test the questionnaires. Thirty six focus sessions and workshops were organised with individual farming SMMEs in six provinces, namely, Limpopo (LP), Mpumalanga (MP), the Free State (FS), North West (NW), Gauteng (GP) and the Eastern Cape (EC). These focus sessions were organised in order to discuss the key success factors, their weighted influence or lack thereof in these farming enterprises, reasons for either their adequacy or inadequacy, and corrective measures taken by role-players. These were the requirements for the evaluation processes. The development and availability of key success factors in the farming SMMEs is under-researched and poorly documented, and the literature offers very little information. As a result of these shortcomings, the current study focused on various sector role players in order to identify the eleven most important key success indicators in the farming SMME sector. Wikipedia (2009) defines

key success indicators as financial and non-financial measures or metrics used to help an organisation define and evaluate how successful it is, typically in terms of making progress towards its long-term organisational goals. Key success indicators are a key part of measurable objectives, which are made up of benchmarks, targets and time frames. It is important that each business identifies its success indicators. In identifying these indicators, the enterprise should take the requirements of the business processes and qualitative/quantitative measurements of the results and goals into account. Due to the fact that fewer farming SMMEs use key success indicators in their business, the study identified key success indicators through focus sessions and participatory approaches with farming stakeholders.

The following key success factors were identified:

- (a) Asset build-up or portfolio (ABU/P)
- (b) Sustainable markets (SM)
- (c) Sustainable production (SP)
- (d) Input sources (IS)
- (e) Increased income (II)
- (f) Sustainable employment (SE)
- (g) Ability to service debt (ASD)
- (h) Adequate infrastructure (AI)
- (i) Potential to grow/expand (PTG/E).
- (j) Policy on human capital development (POHCD) and business operation (BO).

Measurement is a fundamental activity in science (De Vellis, 2003). The measurement instruments used in this study were derived from the information and knowledge of both participants and role-players. To evaluate performance in terms of the key success factors, the above mentioned focus sessions were conducted with the aid of the tool for evaluating farming SMMEs. Because indicators were measured by simple yes or no, present or do not know and uncertain, the Guttman scale measurement was accepted to be an appropriate measurement of scale (Neuman, 2003). In the evaluation processes, the following scores were assigned:

0 = very poor performance, 1 = poor performance, 2 = better performance, 3 = good performance, 4 = excellent and 5 = outstanding.

The evaluation processes were followed by the determination of essential types of capacities associated with the key success factors. To determine these types of capacities, the following formulas were used:

$$\text{Financial capacity (FC)} = \text{ABU/P} + \text{ASD} + \text{II}/3$$

$$\text{Human capacity (HC)} = \text{POHCP} + \text{PTG/E}/2$$

$$\text{Infrastructural capacity (IC)} = \text{IA} + \text{BO}/2$$

$$\text{Marketing capacity (MC)} = \text{SM Production}$$

$$\text{capacity (PC)} = \text{SP} + \text{IC}/2$$

Model specification

Data considered in the current study comprised one dependent variable, namely, financial capacity, and four independent variables, namely, human, market, infrastructure and production capacities, all of which were continuously expressed. Preliminary analysis of the data indicated that province and business type were not important predictors of financial capacity. Thus, the multiple linear regression method was used for analysis, since the objective of the study was

to determine the relationship between the financial capacity and the four independent variables. The following model was fitted to the data:

$$\mathbf{y} = \mathbf{X} + \mathbf{e} \quad (1)$$

where \mathbf{y} is a vector of observations on financial capacity, \mathbf{X} is a vector of unknown parameters due to human, market, infrastructure and production capacities, \mathbf{e} is a vector of residuals and \mathbf{X} is an incidence matrix relating independent variables to the dependent variable.

The model assumes that residuals have zero expectation and are independently and identically normally distributed ($\mathbf{e} \sim N(\mathbf{0}, \mathbf{I}\sigma_e^2)$). Furthermore, the model assumes that the independent variables are not correlated. When the assumptions of the model are satisfied, the multiple linear model provides the best linear unbiased estimates (BLUE) of \mathbf{X} . The BLUE of \mathbf{X} is given by:

$$\mathbf{b} = (\mathbf{X}'\mathbf{X})^{-1} \mathbf{X}'\mathbf{y} \quad (2)$$

When the assumptions of the model are not met, estimates of the parameters cannot be accurately estimated and inference may be affected. For example, when the independent variables are correlated, the regression coefficients from the multiple linear regression models are associated with high standard errors and the individual t- test and overall F-test may give different results. To ensure that the assumptions of the model were not violated in the current analysis, diagnostics, specifically collinearity diagnostics, were conducted on the data. Collinearity means that the independent variables are correlated. Thus, the correlations among dependent and independent variables were computed. The variance inflation factor and its inverse or tolerance was calculated. In addition, the condition index and eigenvalues were also computed. The results from the collinearity diagnostic checks indicated that the independent variables were collinear.

The ridge regression model was used to analyse the data. Ridge regression is known to perform better than the ordinary least square (OLS) method when independent variables are collinear. The ridge regression model is similar to (2), except that a constant is added to the diagonal of the coefficient matrix:

$$\mathbf{b}^r = (\mathbf{X}'\mathbf{X} + \mathbf{I}k)^{-1} \mathbf{X}'\mathbf{y}$$

where k is the ridge constant and is obtained from visual inspection of the regression trace. The estimates of regression parameters from the ridge regression are biased but more precise than those from the ordinary least squares.

RESULTS AND DISCUSSION

In an effort to evaluate the performance of the farming SMMEs, two different evaluations were made, that of key performance indicators and essential capacities.

Performance evaluation of key performance indicators of farming SMMEs

For any farming enterprise to be successful, the key

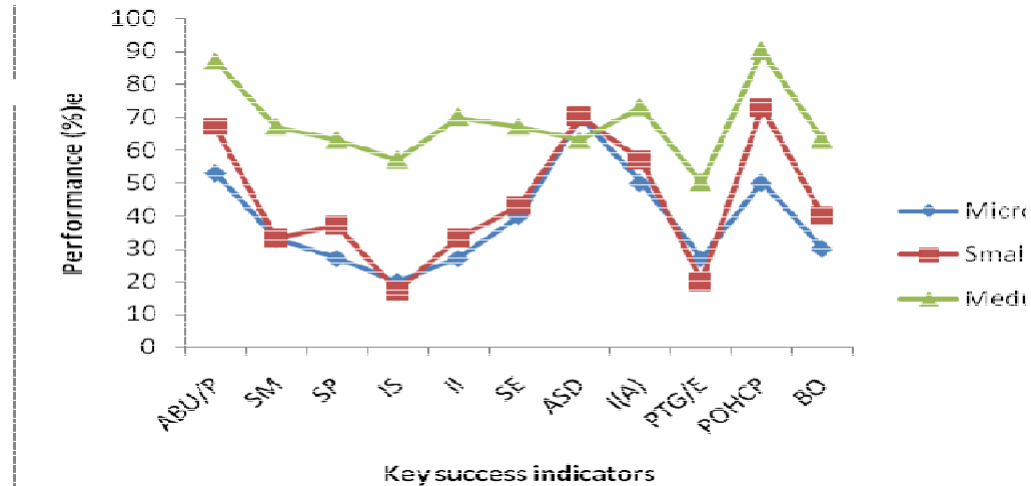


Figure 1. Performance (%) of key success indicators for farming SMMEs.

Table 1. Summary statistics of different types of capacities.

Variable label	N	Mean	STD dev	Sum	Minimum	Maximum	
FC_CD	18	3.00000	0.98352	54.00000	1.00000	5.00000	FC
HC_CD	18	2.58333	1.26317	46.50000	0	4.50000	HC
MC_CD	18	2.27778	1.84089	41.00000	0	5.00000	MC
IC_CD	18	2.61111	1.37793	47.00000	0	5.00000	IC
PC_CD	18	1.83333	1.27187	33.00000	0	4.50000	PC

FC, Financial capacity; HC, human capacity; MC, marketing capacity; IC, infrastructural capacity; PC, production capacity.

success factors have to be in place and integrated into the business. In many cases, the success or failure of a farming enterprise can be attributed to the presence or absence of one or more of these key success factors (Nell and Napier, 2005). Previous studies indicate that ownership of the whole value chain is minimal in most farming SMMEs that are not successful or are on the brink of collapse (Nell and Napier, 2005, CDS, 2007). The results revealed that key success factors of both small and micro enterprises are lower as compared to medium farming enterprises. These results tend to suggest that small and micro enterprises require considerable interventions in order to have adequate key success factors. In addition, it appears that for medium farming enterprises to be more competitive, it may require them to improve their input sources, access to sustainable markets and better their management practices (Figure 1).

It can also be deduced that these findings have some reflections on major challenges to all role players in the agricultural sector especially stakeholders in both Provincial and Municipal level. Furthermore, these results may also suggest that different interventions for different types of farming SMMEs may be required in order to increase their performance. This may call for the establishment of reliable databases for farming SMMEs

across all spheres of governance in terms of size and profits. Although the Department of Agriculture and Fisheries is currently establishing such a database, the same cannot be said about the municipalities (Matsei, 2010). Given the trends identified in these findings, it may seem that there is a need to provide adequate linkages of these enterprises with value and supply chains in order to improve their production and marketing capacities regardless of their size and turnover.

Evaluation of essential capacities that may influences the performance of farming SMMEs

The results of the performance (%) of key success indicators do not indicate which of these factors has more influence in determining the profitability of farming SMMEs, On this basis, the key success factors were used to derive the different types of capacities such as financial capacity (FC), human capacity (HC), marketing capacity (MC), infrastructural capacity (IC) and production capacity (PC). The correlation coefficients of types of capacities were established. The summary of the statistics of the variables analysed are presented in Table 1, and the correlation coefficients are shown in Table 2. The results revealed that there were high

Table 2. Pearson correlation coefficients between financial capacity and other types of capacities.

	FC_CD	HC_CD	MC_CD	IC_CD	PC_CD
FC_CD	1.00000	0.70233	0.84472	0.62937	0.75239
FC		0.0012	<0.0001	0.0051	0.0003
HC_CD	0.70233	1.00000	0.63452	0.67873	0.68652
HC	0.0012		0.0047	0.0020	0.0017
MC_CD	0.84472	0.63452	1.00000	0.47410	0.76208
MC	<.0001	0.0047		0.0468	0.0002
IC_CD	0.62937	0.67873	0.47410	1.00000	0.68248
IC	0.0051	0.0020	0.0468		0.0018
PC_CD	0.75239	0.68652	0.76208	0.68248	1.00000
PC	0.0003	0.0017	0.0002	0.0018	

Pearson correlation coefficients, N = 18, Prob > |r| under H0: Rho = 0.

Table 3. ANOVA for province and business type.

Source	DF	Type III SS	Mean Square	F Value	Pr>F
Province	5	6.74074074	1.3481481	2.51	0.1010
BT	2	4.33333333	2.1666666	4.03	0.0519

**Significant at 5%, NS = not significant and $R^2 = 0.673423$.

Table 4. Analysis of variance for types of capacities.

Source	DF	Sum of square	Mean square	F- value	Pr >F
Model	4	12.96800	3.24200	12.12	0.0003
Error	13	3.47644	0.26742		
Corrected total	17	16.44444			

Table 5. Tolerance and variance inflation for different types of capacities.

Variable	Tolerance	Variance inflation
HC	0.40564	2.46524
MC	0.37770	2.64759
IC	0.43006	2.32526
PC	0.28096	3.55922

correlations between these variables, which may point to the problem of multicollinearity.

The analysis of province and business type is presented in Table 3. The Province and business type were found not to be significant. Therefore, it is accepted that both province and business type do not affect financial capacity. However, it should be noted that the information available may not have been adequate. Table 4 shows the results of the analysis of variance for types of capacities. These variables were found to be significant. The results of the diagnostics conducted to check multicollinearity were examined to determine

whether the model was valid.

The results of the multicollinearity diagnostic are presented in Tables 5 and 6. From Table 5, in which tolerance and variance inflation (VIF) are reflected, it is clear that VIF values are higher than the tolerance values. This shows that multicollinearity has increased the instability of the coefficient estimates. For example, the tolerance of HC is 0.40564 and its VIF is 2.46524. According to the multicollinearity diagnostic, tolerance of less than 0.1 and VIF of less than 10 indicate that multicollinearity is not severe. Thus, the high correlation coefficient detected earlier did not lead to severe

Table 6. Collinearity diagnostics.

Number	Eigenvalue	Condition index	Proportion of variation				
			Intercept	HC_CD	MC_CD	IC_CD	PC_CD
1	4.52102	1.00000	0.00701	0.00347	0.00607	0.00406	0.00397
2	0.24963	4.25565	0.26366	0.00447	0.24024	0.02006	0.04154
3	0.11628	6.23555	0.42904	0.00230	0.28537	0.27448	0.08343
4	0.06426	8.38798	0.30027	0.060369	0.04178	0.00379	0.046970
5	0.04881	9.62417	0.000020	0.038607	0.04265	0.06976	0.040135

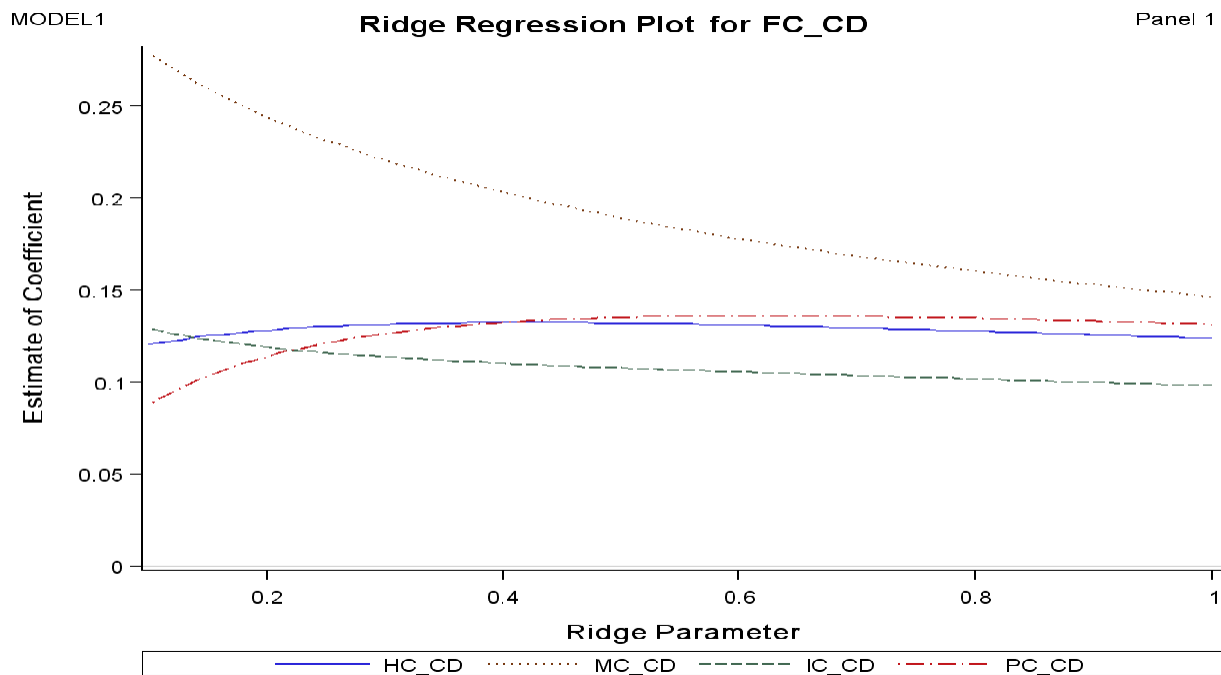


Figure 2. Ridge regression plot for FC.

multicollinearity.

Table 6 shows eigenvalue, condition index and corresponding proportion of variance. The variance proportion provides the parameter estimates (coefficient) associated with each eigenvalues. A high proportion of variance of an independent variable coefficient reveals a strong association with eigenvalues. According to Table 6, all types of capacity have smaller proportions corresponding to the eigenvalue. Therefore, it can be deduced that the independent variables do not have significant linear dependency (correlation).

Figure 2 shows the ridge trace. The ridge trace regression was used to find a better point of estimate. Through visual inspection, 0.18 was found to be an estimate where all estimate of coefficients stabilised.

A suitable ridge regression constant was obtained using Figures 2 and 3. Based on the visual inspection of the graph, it was found that the regression coefficient stabilised when the ridge constant was 0.18.

Table 7 was computed in order to find out whether other capacities affect financial capacity. The ridge regression and OLS were computed based on the measuring scale used in the data. Thereafter, they were standardized. The estimate of OLS and ridge regression estimate are not the same as the standardized estimates. It can be seen that the standardized ridge regression estimate is less than the OLS, implying that the ridge regression error estimate is low. According to the results, marketing capacity is significant. This means that a score increase in marketing capacity of 1 is associated with a score increase in financial capacity of 0.25006, given that human capacity, infrastructural capacity and production capacity are held constant. This means that if marketing capacity increases, there is a good chance that farming SMMEs will increase their financial returns. It may also imply that human, infrastructural and production capacity do not affect financial capacity. This may have resulted from the high correlation reported earlier.

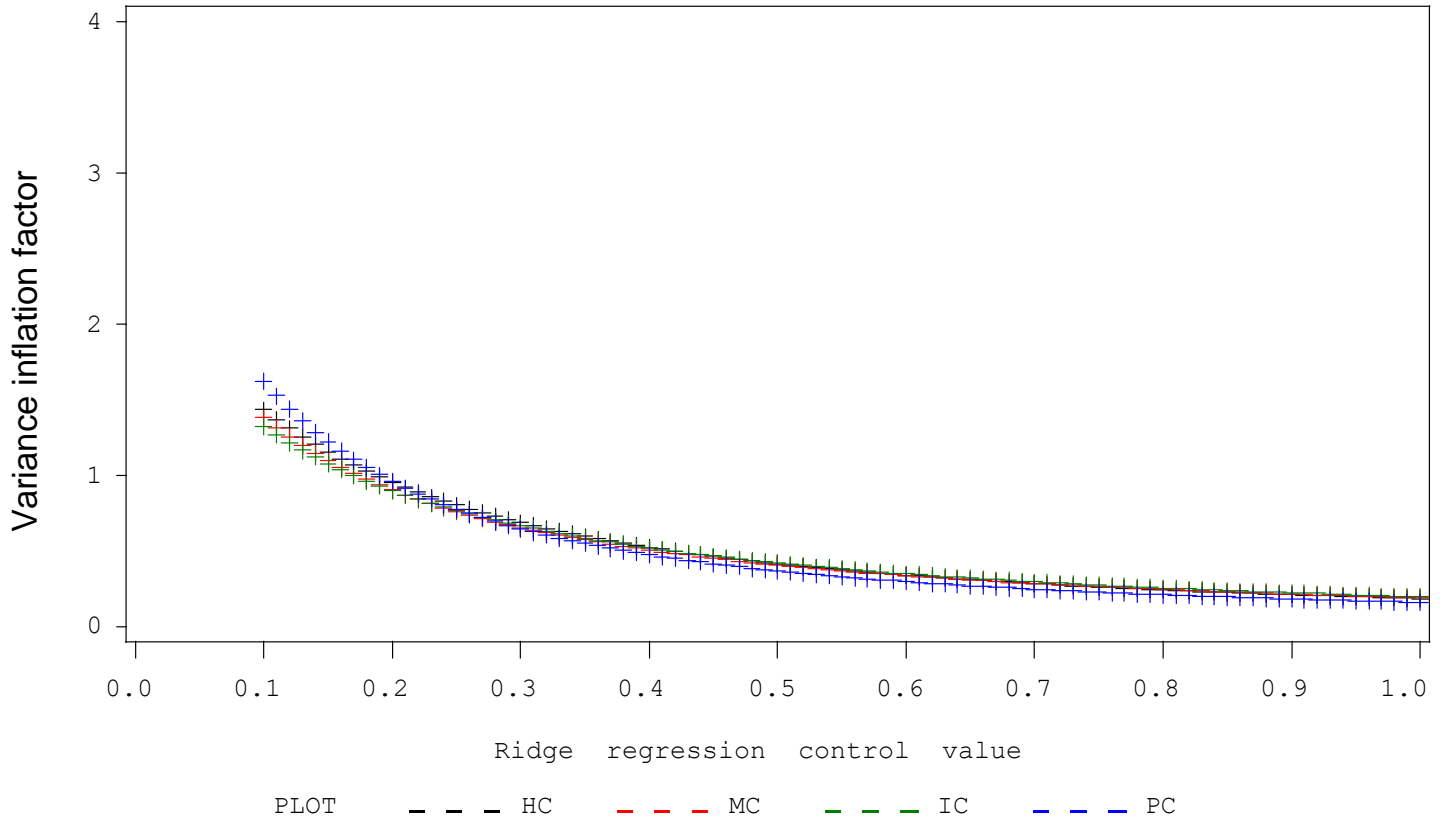


Figure 3. Squared length of the coefficient vector.

CONCLUSION AND RECOMENDATION

The study revealed that the key success factors are influenced by size of the enterprises, with medium enterprises having acceptable adequate key success factors. This may suggest that well developed enterprises have a better chance of possessing adequate key success factors. It appears that the more developed the enterprise, the more adequate are its key success factors as their capacities. Essential types of capacities have been derived and correlations amongst them have been established. The results strongly reveal that there is high correlation amongst the four types of capacities under consideration. This may result from the association of types of capacities with management activities. Furthermore, the results indicated that marketing capacity significantly increases the profitability of farming SMMEs regardless of size, given that all capacities such as human, infrastructure and production are held constant. It also appears that this may suggest that farming SMMEs without market access have a high probability of failure. In South Africa, farming SMMEs have had a very high failure rate – over 80% -and it has been established that 90% of these failed SMMEs were formed in the process of land reform (CDS, 2007). Numerous reports to date do not reflect the evaluation of essential capacities of

farming SMMEs in relations to their business proficiencies and survival. On the basis of these findings, it becomes rather clear that if these SMMEs are to be profitable, it is essential to enhance their linkages with sustainable markets. Therefore, their establishment should be premised on the availability of supply contracts, linkages with marketing agencies, identification of niche markets and scanning of competitors. Given that the present market forces lack flexibility to relax their trading requirements to suit these SMMEs, it is recommended that parallel markets models be investigated and where these are potential successes, they should be initiated specifically for farming SMMEs. This innovation could only be attained with the financial support of both public and private institutions, with government providing initial capital to set up the institutional systems, research and development. Human resources development programs need to be developed specifically in order to sustain this proposed parallel market innovation. Linkages with retired professionals, academic institutions, experts in the industry, youth organisations and research institutions may have the potential to improve human capital of farming SMMEs. It is however crucial that further studies are done in the development of formal sustainable market access for farming SMMEs.

Table 7. Ridge regression FC vs. other types of capacities.

Variable	OLS estimate (standard error)	RR estimate (standard error)	OLS standardized estimate (standard error)	RR standardized estimate (standard error)
Intercept	1.51403(0.29855)	1.58485(0.28046)	0	0
HC_CD	0.10082(0.15590)	0.12726(0.10334)	0.12948	0.16344
MC_CD	0.34036 (0.11086)	0.25006 (0.00902)	0.63705*	0.46804*
IC_CD	0.15762(0.13880)	0.12050(0.09181)	0.22082	0.16882
PC_CD	0.02112(0.18604)	0.11028(0.10389)	0.02731	0.14262

REFERENCES

- Bulletinonline (2009). SMME sector in SA stuck in a quandary. <http://www.bulletinonline.co.za/archives/smme/junsmme01.php>, accessed 16 March 2009.
- CDE Roundtable (2008). Practical perspectives in land reform and agricultural development. Farmers' voice, Number 9.
- CDS (2007). Settlement Implement Support Strategy (SIS) for Land and Agrarian reform in South Africa.
- De Vellis RF (2003). Scale development: Theory and applications. 2nd Edition edn, SAGE publications, London.
- Drennan D, Pennington S (1999). 12 ladders to world class performance. How your organisation can compete with the best in the world. Saxon graphics Ltd, London.
- Fabricius C (2010). Personal Communication. Agricultural SMME's. Saasveld, George.
- Festus H (2005). Learning the lessons of land reform. *Appr. Technol.*, 33(1): 1-33.
- Fletcher HD, Smith DB, Maryland LC, Timonium MD (2004). Managing for value: Developing a performance measurement system integrating economic value added and the balanced scorecard in strategic planning. *J. Bus. Strategy*, 21(1): 1-17.
- Gumbus A, Lussier RN (2006). Entrepreneurs use a balance scorecard to translate strategy into performance measure. *J. Small Bus. Man*, 44(3): 407-425.
- IDRC (International Development Research Center) (2002). Evaluating capacity development. www.idrc.ca/openebooks/111-6/, accessed 22 May 2007.
- Kirsten J, Machethe C, Fischer A (2005). Appraisal of land reform projects in Northwest Province. Report for the National Department of Agriculture, March 2005.
- Mampholo RK, Botha JJ (2004). Impact of previously disadvantaged land users on sustainable agricultural practices, *S. Afr. J. Agric Ext.*, 33: 108-127.
- Matsei ME (2010). Personal communication, Pretoria, South Africa.
- Mmbengwa VM (2009). Capacity building strategies for farming SMME's. PhD Thesis, University of Free State, Bloemfontein, Republic of South Africa.
- Morgan P (1993). Capacity building: An overview. Ottawa: CIDA
- Nell WT, Napier RJ (2005). Strategic approach to farming success, W.T. Nell Management Consultant, Bloemfontein
- Neuman WL (2003). Social research methods: Qualitative and quantitative approaches. 5th Edition Boston New York: Pearson Education, Inc.
- Pett TL, Wolf F (2007). SME performance: A case for internal consistency. *J. Small Bus. Strategy*, 18(1): 1-16.
- Wikipedia (2009). <http://en.wikipedia.org/> (accessed on March 2009).
- Williams C (2008). Capital- and Market-access constraints in post-settlement land reform Projects. Trac Mpumalanga. The paper presented to the rural action committee on the 13th of October 2008.