

# Innovations

## Effect of strategic thinking on performance of small and medium enterprises in Nigeria: empirical approach

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#### Abstract

The study examined Strategic Thinking and Performance of Small and Medium Enterprises in South-South Nigeria. In our contemporary business environment, there is still a widespread agreement that strategic thinking is important for efficient management of firms (big or small, private or public), but it is absent or at best lacking. The wrong conception and bias mind of Small and Medium Enterprises (SMEs) owners over the years toward strategic thinking, arguing that the practice is for multinational organizations; was the motivating factor for this research. The objectives of this study were basically to investigate the effect of cognitive ability, forecasting and creativity ability on the performance of small and medium enterprises. The descriptive survey design was used for the study. The population of the study was 8,119 stationery stores that are registered with Corporate Affairs Commission and Ministry of Commerce and Industry of their respective states. Instruments used for data collection was a structured questionnaire. The questionnaire was checked for reliability using pilot survey method. 366 copies of questionnaire were administered to the respondents; selected SMEs (stationery dealers) with 92.20% (352) response rate were obtained. The hypotheses were tested using regression method, Pearson product moment correlation coefficient with the aid of Statistical Package for Social Sciences (SPSS) version 22. Statistical values of 0.026, 0.431 and 0.665 for cognitive ability, forecasting and creativity ability were obtained respectively at 5% (0.05) level of significant. The results of the analysis revealed that the performance of SMEs is dependent on strategic thinking (ST) variables; forecasting and creative ability, except cognitive ability which insignificantly influenced SMEs performance in the area under study. Based on the findings, the study concluded that forecasting and creative ability have positive and significant relationship with SMEs performance while insignificant relationship exists between cognitive ability and performance of SMEs. The study recommends among others; that there should be brainstorming among SMEs business owners because the free flowing energy generated by the team becomes the genesis of ideas that produce useful results. Furthermore, employers should ensure that there is inclusion of employees in the planning process as this greatly create positive impression in the mind of employees that encourages positive thinking that open doors for job satisfaction. In addition, SMEs business owners should strategically and continuously scan the business environment for effective utilization of business opportunity towards achieving set goals.

**Keywords:** 1.Strategic Thinking, 2.SMEs' Performance,3.Cognitive Ability, 4.Forecasting, 5.Creativity Ability, 6.Stationery Store.

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## Introduction

The effect of strategic thinking on business performance of organizations, especially small and medium scale enterprise (SMEs) in our nation today has become a global affair that must be given adequate attention if entrepreneurs are to succeed in their different areas of business interest. Thinking strategically therefore is key to the performance of an organization in an environment where competition is stiff, and new emerging competitive forces pose threats to the survival of the firm (Pisapia, 2009). Bonn(2001) asserts that organizations that successfully develop and integrate strategic thinking at individual and organizational level can create a core competition that becomes the basis of enduring competitive advantage. He maintained further that it is from this perspective that the role of strategic has become central for the future health of an organization (private and public). Lucas and Ibrahim (2016) also opined that strategic thinking is proactive and reflective. It is particularly essential to those individuals who wish to become successful entrepreneurs; however, it is also essential to all mankind. Greatz(2002) asserts that strategic thinking requires creativity as well as foresight and insight. This foresight is the ability to see what is likely to happen in the future, foreseeing its shape and qualities before it comes to pass.

Irrespective of the size of the organization (micro, small, medium and large scale), the principle and application of strategic thinking is non-negotiable to avoid pitfall and guarantee continuity of operation both at the local and international level. According to Lucas and Ibrahim (2016), some of the problems facing firms are lack of strategic skill(s) in connecting with other firms or individuals to achieve firms set goals and objective. Greatz(2002) states that strategic thinking is central to creating and sustaining competitive advantage. SMEs have been recognized as an important element of economic development and a vital component in the effort to move countries out of poverty (Hyndman & Koehlere, 2006). As a result, the article tends to examine the impact of strategic thinking on the performance of SMEs in south-south Nigeria to proffer necessary suggestions to enhance its effectiveness.

## Objectives

1. To investigate the effect of cognitive ability on the performance of small and medium enterprises.
2. To determine the effect of future forecasting on the performance of small and medium enterprises.
3. To examine the effect of creative ability on the performance of small and medium enterprises.

## Hypotheses

Ho<sub>1</sub>: Cognitive ability has no significant positive effect on the performance of small and medium enterprises.

Ho<sub>2</sub>: Forecasting has no significant positive effect on the performance of small and medium enterprises.

Ho<sub>3</sub>: Creative ability has no significant positive effect on the performance of small and medium enterprises.

## Conceptual Review

### Strategic Thinking

Strategic thinking requires the conceptualization and implementation of major organizational goals and initiatives taken by top management on behalf of owners based on consideration of resources and an assessment of the inside and outside environment that the organization competes (Hambrick and Chen, 2007). This provides overall direction to the enterprise and involves specializing the organizations objective, developing long-term policies and plans designed to achieve these objectives, and then allocating resources to implement the plans (Ossai, 2017). Strategic thinking builds of the linkages among different components that form a vision for the future, transforming the vision into reality is likely to be long-term process, where organizational are dedicated to making this transformation possible because definitions of the area, competition and competitive tools are new.

The strategic thinkers needs to integrate the knowledge of business environment into a vision of what organization could become and ultimately restore its competitiveness in the industry which it operates (David, Gerald and Joash, 2016). Strategic thinking makes provision to take action to avert certain dangers within the business environment than treating it. It enables entrepreneurs to pro-act than reacting when the situation is already out of hand. Thus is possible because of the attitude of strategic thinkers that is opportunity utilizers and future forecasters. This is one of the traits of good men and women that have made it in business world. Any

opportunity made available to them, must be utilized and if peradventure opportunity passes them, it is counted a big lost on their part.

#### **Cognitive Ability and Performance of SMEs**

Cognitive means the process of acquiring knowledge through thinking, studying and learning, while cognition is the mental action or process of acquiring knowledge and understanding through thoughts, experience and the senses. Knowledge acquisition is very important in strategic thinking. The knowledge acquired and the understanding that individual has that enables him/her to reason out or fathom out positively. An entrepreneur that is void of knowledge cannot positively influence any situation. According to Huse, et al (2011), knowledge acquisition is the process of acquiring knowledge whether existing or now. In the context of Small Medium Enterprises, knowledge can be learned in the inside or outside. In the inside, SMEs owners can acquire knowledge using explicit knowledge of its people (Ibrahim and Lucas, 2016). Externally, Small Medium Enterprises can acquire knowledge by employing individuals with the required knowledge and by acquiring knowledge assets such as patents and research documents (Ibrahim and Lucas, 2016).

Cognitive ability is the ability to know, learn and understand. Cognitive ability is one of the variables of strategic thinking. Thinking strategically is depended on what you know and what you learn. When there is acquisition (cognitive) of new knowledge within the organization, the power of employee increases and they become able to modify it and generate the new one (Camerer, 2003). Consequently, the stock of knowledge increases and the business take merit of new opportunities by applying and exploiting knowledge, hence, providing innovative results.(Camerer, 2003; Uhlaner et al., 2007).

#### **Forecasting and Performance of SMEs**

Forecasting has to do with the ability of individual to use past data with present happenings and tell what will likely to happen in the future. Accurate demand forecast lead to efficient operations and high level of customers' service (Adam & Ebert, 2001). According to Needorn (2019), forecasting is required in many situations because it is an important aid in effective and efficient planning. Organizations make move towards achieving goal based on their forecast conviction. Strategic thinkers are positive forecasters. Thinkers are always thinking how better future should be in terms of their transactions. Forecasting is dependent on past and present situation analysis before effective forecasting can be achieved.

Firms must anticipate and plan for future demand so that they can react immediately to customers' orders as they occur since most customers are not willing to wait the time it would take to process their order (Chindra, Wainana, Kibera & Pokhariyal, 2014). Furthermore, Needorn (2019) states that the ability to accurately forecast demand enables the firm to control cost through leveling its production qualities, rationalizing its transportation and planning for efficient logistics operations. The author made further remark that every organization should be able to predict into the future so that they can react immediately to customers' orders as they occur. Past experience is a reliable tool for good and profitable forecast. Before an entrepreneur can predict into future demand it is expected of the entrepreneur to access and value the records of past sales and demand to avoid failure. When it comes to profitable forecasting as they say experience is a good teacher. At this point, intelligence and level of education may not count much.

#### **Creative Ability and Performance of SMEs**

Creative ability is the use of one's imagination and skill to produce something new (Onwukwe, 2009). The author further states that; creative ability involves the ability to consider something in various ways and to come up with new ways of looking at the same or similar things. The continuity of every entrepreneur that is creative is guaranteed anywhere he found himself. Many small and medium scale business owners of today despite their strength and ability are no longer in market because they lack that creative ability. Dreams and vision of entrepreneurs has ended in futility simply because it was not backed up with those creative potentials. The entrepreneur is always flexible enough to effect changes in his products to suit what the customers need, and an entrepreneur with low or no creative or innovative ideas will definitely find it difficult to build a business of tomorrow (Nwafor, 2007). The change you make in your business environment as an entrepreneur is dependent on your ability to make difference based on your creative potentials.

The ability to create is the ability to make business friends in your business environment because creativity goes with new ideas. Every consumer likes to identify with new products and services. Furthermore, it gives room for innovation and renovation. According to Onwukwe (2009), innovation is the ability to apply creative solutions to issues of life, while renovation is to repair something in existence already or old thing so that it is in good condition again. In fact, it follows that any small and medium scale (SMEs) business owners that cannot create new things (products and services), may not also have the potentials to repair old product and bring it to good or better state.

### **Empirical Review**

Luca & Ibrahim (2016) also examined strategic thinking as it affects firm performance in the Nigeria context. The paper was investigated using Nigeria environment which has its own unique quality which differs from what is obtain from other parts of the world and as such there is need for managers of firm in Nigeria to think strategically in order to have large market share. Data was gathered and analyzed using Pearson Moment Correlation Coefficient. It was revealed that positive correlation was obtained between strategic thinking and firms' performance (private and public enterprises).

Empirically, Abdul-Azeez & Shaima (2018) assessed the role of knowledge and cognitive acquisition plays in creating product innovation flexibility (PIF) small and medium scale enterprise (SMEs). Survey designed method was adopted for the study and survey data were checked for common method variance, validity and reliability. Structural equation modeling was used to test the hypothesis frame-work and path was used to test the mediation effect. The variables are relationship quality (RQ), information capacity (IC), product innovation flexibility (PIF) etc. The findings indicated that significant relationship exists between SMEs and the variables adopted for the study. The finding also revealed that it is important for SMEs managers to understand the quality of information acquired, as it affects performance in organizations.

Wildanul & Andi, (2018) carried out a study to find the best forecasting methods of demand in 2015, using causal, time series, and combined causal-time series approaches that are better than the actual condition. This was done in ED aluminum, the biggest small and medium enterprises (SMEs) in Daerah Istimewa Yogyakarta (DIY) with 90 numbers of workers and 15 ton ingot capacity for production. The results show that significant relationship exist between forecasting and SMEs performance. Huse et al (2011) examined the impact of creativity and innovation on the performance of SMEs to be competitive in dynamic world. A thorough research of secondary data has been undertaken for the SMEs in Kosovo and found that a positive relationship exists between creativity, innovation and performance of SMEs.

### **Methods**

The population consist owners of selected small and medium enterprises that operate stationery store in South-South Nigeria. To make the selection reasonable, stratified random technique was employed to group the population into strata or subgroups- Akwa-ibom, Bayelsa, Cross River, Delta, Edo, and Rivers State. A population of 8119 was obtained based on certain criteria. Stationery store that have existed not less than five (5) years; stationery stores that registered with Corporate Affairs Commission (CAC) and the ones that also registered with Ministry of Commerce and Industry of their respective states. Well structured questionnaire was used for data collection. 366 copies of questionnaire were distributed among the states (Akwa-Ibom, Bayelsa, Cross-River, Delta Edo and Rivers) of the region by the researcher and research assistants. The essence of research assistants is to make the coverage of the area under study easier. The questionnaire was retrieved one week after necessary responses to the questionnaire and 352(96.20%) copies were returned and found valid for analysis. Correlation coefficient was used for the analysis using Pearson Product Moment Correlation Coefficient with the aid of Statistical Package for Social Science (SPSS). The Cronbach's alpha score for the dimension of specific result ranges from 0.776 to 0.923 which is considered satisfactory. Table 1 below provides a summary of result of test of reliability.

**Table 1: Internal reliability test**

Factor Group	Cronbach's Alpha
<b>General Reliability Statistics</b>	
Strategic thinking → SMEs Performance	.958
<b>Dimension Reliability Statistics</b>	
Cognitive ability	.892
Future forecasting	.776
Creativity ability	.923

Source: Analysis of field survey, 2022

Reliability and validity tests were conducted for each construct using the Cronbach's alpha. For this study, the Cronbach's alpha for each construct was 0.722, which indicates a strong reliability for this research instrument. Table 1 shows the reliability test results for the strategic thinking dimensions and the collective strategic thinking dimensions. The general reliability test has a Cronbach's alpha score of 0.958 which is considered to have high criterion validity. Similarly, the Cronbach's alpha score for the dimension-specific result ranges from 0.776 to 0.923, which is considered satisfactory. Upon passing the reliability test as shown in table 1, the data collected in the pilot test will also be included to compute the final result. All factor groups, including strategic thinking dimensions indicator, passed the test

### Results and Discussion

**Table 2: Descriptive statistics and correlations between strategic thinking dimensions and SMEs performance**

	Variables	Mean	SD	1	2	3	4	5	6
1	Cognitive ability	2.65	1.53	.880**	.826**	1.00			
2	Future forecasting	2.26	1.45	.742**	.731**	.769**	1.00		
3	Creativity ability	2.75	1.50	.866**	.899**	.838**	.712**	1.00	
4	SMEs Performance	1.96	1.80	.019**	.013**	.010**	.175**	.036**	1.00

NB: \*\* Significance at 5% level; SD = standard deviation

Source: Analysis of field survey, 2022

Table 2 presents a descriptive analysis for all variables used in the study. Based on the 5-point Likert scale, the mean value for SMEs performance was 1.96, indicating that the overall level of firm's performance was good. The mean values for strategic thinking dimension were in the range of 2.26 to 2.75, with creative ability having a higher mean value than the other two strategic thinking dimensions. Table 2 also shows that all of the independent variables had a positive correlation with strategic thinking dimensions and SMEs performance. The findings also show that the coefficient correlation values were below 0.9, which showed that there was no multi co linearity in the study variables.

**Table 3: Regression results**

Dependent Variable: SMEs Performance (SMEs Performance)						
Variables	R <sup>2</sup>	Adjusted R <sup>2</sup>	F-stat	Sig. F	Standardized $\beta$	Sig.
Strategic thinking → SME's Performance	.96	.94	74.97	0.000	-	-
Variables	Unstandardized Coefficients					
	B	Std. error	Standardized $\beta$		Sig.	
Constant	1.918	.062***				
Cognitive ability	.031	.045**	.026		.49	
Future forecasting	.537	.034**	.431**		.00	
Creativity ability	.798	.133	.665**		.00	
R-squared = .961						
Adjusted R-squared = .949						
Sum of Squares of residuals = 10415.703						
F-statistic (prob.) = 74.974 (.000)						
NB: ** (***) Significance at 5% (10%) levels						

Source: Analysis of field survey, 2022

Table 3 presents the regression results for the model. The second row represents the collective analysis which is aimed at determining how strategic thinking influence SMEs performance. The results showed that strategic thinking dimensions explained 96% of the variation in SMEs performance. The model was significant with an F-statistic = 74.97 and a significant  $p$ -value = 0.00. All standardized beta coefficients were significant; showing a positive contribution to SMEs performance, except for cognitive ability ( $\beta = 0.026$ ) which had insignificant effect of SMEs performance. The standardized beta coefficient also showed that creativity ability ( $\beta = 0.665$ ) contributes the most to SMEs performance, followed by forecasting ( $\beta = 0.431$ ). All of the afore-stated variables were significant with  $p$ -values < 0.05. Creativity ability remains the main contributor to SMEs performance, when compared with other strategic thinking dimensions. Through creativity ability, SMEs accumulate and generate information and knowledge which makes them more competitive, especially in the stationery business in south-south Nigeria. The generation of new knowledge and skill enables SMEs to update its collection of knowledge based on its environment to compete better in the market. SME businesses find that the updated and critical information directly improves their performance. As such, the alternate hypothesis was supported, which is consistent with earlier research findings (Becerra-Fernandez et al., 2004; Mc Keen et al., 2006; Salina & Wan Fadzilah, 2008).

The study sought to examine the link between strategic thinking and performance of SMEs. The results of the statistical analyses demonstrate creativity ability ( $r=0.798$ ,  $p<0.000$ ) regression of coefficients results shows that creativity ability and performance of small and medium enterprises were positively related. The analyses also show that forecasting ( $r=0.537$ ,  $p<0.000$ ); regression of coefficients results also showed that forecasting has a positive and significant influence on performance of SMEs in the area under covered in the study; except for cognitive ability with regression coefficients results( $r =0.031$ ,  $p>0.492$ ) showed that cognitive ability and performance of small and medium enterprises were positively and insignificantly related. This connotes that increase in strategic thinking dimensions (in terms of creativity ability, forecasting and cognitive ability) leads to increased performance of stationery stores in south-south Nigeria. This position was supported by the study carried out by Salina (2008) that cognitive knowledge insignificantly influences SMEs performance. The report also agree with report of Needorn (2019) that significant relationship exist between all measures of forecasting and dimension of organization performance including small and medium scale enterprises; and that of Salina et al (2008) that creativity ability has a significant positive influence on the performance of SMEs.

### Conclusion and Recommendations

Organization that has strategic thinkers cannot easily be out of business. Based on the results obtained from the statistical analyses, the study concludes that the performance of SMEs is sensitive and dependent on strategic thinking variables – forecasting and creative ability. In other word, significant positive relationships exist between the dependent variable (performance of SMEs) and the independent variables (forecasting and creative ability). It was further discovered that there was insignificant positive relationship between cognitive ability and performance of SMEs. In other words, there was a negative correlation. When SMEs business owners are not able to reason out strategically, creativity/innovation becomes a challenge in our business environment. Strategic thinking opens room for good creativity, proper forecasting, gained competitive advice which encourages continuity in business despite environmental issues.

Thus, the study recommends that cognitive learning is centered on the mental process; SMEs owners (especially stationery stores) are encouraged to create enabling environment that welcomes organizing, storing, retrieving and calm memory that tends toward efficient and effective performance. Also, SMEs business owners should learn to have proper records and documentation of the past events and experience in order to project into the future profitably without making avoidable mistakes. In addition, there should be brainstorming among SMEs owners because the free-flowing energy generated by the team becomes the genesis of a multitude of ideas that produces useful results.

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## References

1. Abdul-Azeez, B.A & Shaima A. Q. J (2018). *The impact of organizational creativity on organizational performance: The moderating role of knowledge Jordanian companies. Economic and management journal vol. xv pp. 144-156. (www.ijhssm.org)*
2. Adam, E. E & Ebert, R. J (2001). *An evaluation of forecast error. Journal of forecasting, 89-94. (www.wiley.com)*
3. Ahmed, S., Fiaz, M., & Shoaib, M. (2015). *Impact of Knowledge Management Practices on Organizational Performance: an Empirical study of Banking Sector in Pakistan. FWU Journal of Social Sciences, 9(2), 147. (www.ijhssm.org)*
4. Becerra-Fernandez, I., Gonzalez, A., & Sabherwal, R. (2004). *Knowledge management: Challenges, solutions and technologies. NJ:Published by Pearson Education Incorporation.*
5. Bonn, I (2001). *Developing strategic thinking as a core competency and management decision, 39(1), 63-76*
6. Camerer, C (2003). *Models of strategic thinking learning and teaching in games. treads in cognitive science, 7(5), 225-231*
7. Chindia, E. W, Wainaina, G, Kibera, F. N & Pokhariyal, G. P (2014). *Forecasting techniques, operating environment and accuracy of performance forecasting for large manufacturing firms in Kenya. International journal of managerial studies and research(IJMSR).Vol. 2 (7), 213-228. (www.arcjournals.org)*
8. Fildes, R & Makridakis, S (1995). *The impact of empirical accuracy studies on time series analysis and forecasting. International statistical review. Vol 63 pp 289-389. (www.wiley.com)*
9. Gerald, A. J; David, M & Joash, M (2016). *The Impact of strategic thinking on organizational performance: A case study of Uchumi supermarket limited. International journal of supply chain management; Vol 1. No 1 pp 75-94. (www.scimagojr.com)*
10. Graetz, F (2002). *Strategic thinking versus strategic planning: Towards understanding the complementariness and management decision. International journal of managerial studies and research 40 (5) 231-249. (www.arcjournals.org)*
11. Huse, M, Neubaum, D. O & Gabrielsson, J. O (2011). *Corporate innovation and competitive environment; International Entrepreneurship and Management Journal; 1(3) 3-333. (www.scimagojr.com)*
12. Hyndman, R. J Koehler, A. B (2006). *Another look at measure of forecast accuracy. International Journal of Forecasting, 22(4), 679-688. (www.journals.elsevier.com)*
13. Ibrahim, O. M. & Lucas, E. O (2016). *Strategic thinking and organizational performance: Study of Nigeria firms: Journal of Business Administration Research, Vol. 4, 201-216. (www.ijssm.org)*
14. Idemobi, E.I (2012). *Theory and practice of management: Published by Gostak Printing and Publishing co. ltd, Enugu.*
15. Jassi, K.S & Dionne, S. D (2003). *Leading for creativity: the role of unconventional leader behaviour. leadership quarterly, Journal of Business and Management vol 14; 475-498. (www.theijbm.com)*
16. Mba, O. A & Cletus I. E (2014). *Issues challenges and prospect of small and medium scale enterprises (SMEs) in Port-Harcourt City, Nigeria; European Journal of Sustainable Development (2014) vol 3 (1) 101- 114.(www.ejosdr.com)*
17. Momoh, I. Y Mohammed, I. E & Akeem, T. N (2016). *Market driven forecasting and performance of SMEs in business competition in Ogun State, Nigeria. IOSR Journal of Business and Management (IOSR-IJM) vol 7, pp 98-107. (www.theijbm.com)*
18. Nag, R ,Hambrids, D. C & Chen, M. J (2007). *What is strategic management really-inductive derivation of a consensus definition of the field. Strategic Management Journal , 28, pp, 935-955. (www.ijssm.org)*

19. Needor, R.(2019). *Forecasting and organizational performance. The Nigeria manufacturing sector experience. International Journal of Advance Academic Research/Social and Management Sciences*.Vol 5, 219-229, New Issue, January , 2019. ([www.ijaar.org](http://www.ijaar.org))
20. Nwafor, P.Z (2007). *Practical approach to entrepreneurship: Small and medium scale enterprises (SMEs) complete volume published by precision publisher limited.*
21. Ocass, A &Sok, P (2012). *Examining the role of within functional areas resource capability complementary in achieving customer and product –based performance outcome. Journal of Strategic Marketing*, vol 2 No. 4 pp. 345-363. ([www.tandfonline.com](http://www.tandfonline.com))
22. Onwukwa, A (2009). *New dimension of entrepreneurship. Published by Spectrum Book limited, Ibadan.*
23. Ossai A. (2017). *The problems and prospects of small and medium scale enterprises (SMEs) growth and development in Nigeria: A study of selected SMEs in Delta State. International Journal of Scientific Research in Education, Journal*, vol.10(3) 278-29.([www.globalimpactfactor.com](http://www.globalimpactfactor.com))
24. Pisapia, J (2009). *The strategic leader: New tactic for globalizing world. Charlotte, N C. IAP*
25. Salina, D., & Wan Fadzilah, W. Y. (2008). *An empirical study of knowledge management processes in Small and Medium Enterprises. Communications of the IBIMA*, 4(22), 169–177.
26. Uhlaner, L., van Stel, A., Meijaard, J., & Folkeringa, M. (2007). *The relationship between knowledge management, innovation and firm performance: evidence from Dutch SMEs. Scientific analysis of entrepreneurship and SMEs*, 1-26.
27. Wildanul, I &Andi, S (2018). *Demand forecasting in small and medium enterprises (SMEs) ED aluminum yogyakarta using causal time series and combined casual –time series approaches MATEC web of conference 204, 01004.*

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