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RESEARCH ARTICLE

BUSINESS INTELLIGENCE AND COMPETITIVE ADVANTAGE (A STUDY OF SELECTED TELECOMMUNICATION FIRMS IN NIGERIA)

*,[1]Egberi A. Kelvin and [2]Egbule A. C. Solomon

[1]Department of Business Administration/Management, Delta State Polytechnic, Ozoro
[2]Department of Business Administration, Delta State University Asaba Campus

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ABSTRACT

The purpose of the study is to examine the relationship between business intelligence and competitive advantage in telecommunication industry in Nigeria. The business environment today complexity and volatile, as a result firms needs to be proactive in relation to decision-making processes so as to stay competitive and remain relevance in the industry. This study adopted a survey research design andsimple random sampling was used as the sampling technique which requires that the sample be taken in such a way that each sample (management staffin the selected telecommunication industry) in the sample frame has an equal probability of being selected. Multiple regression was applied to test the hypotheses. It was discovered that there is significant positive relationship between market orientation and competitive advantage, also significant positive relationship exist between innovation orientation and competitive advantage. It was concluded that market orientation and innovation orientation enhance competitive advantage. Market orientation encourage high-level performances of employees and market orientation is a vital factor which affects competitive advantage. Management actively seek innovative ideas, provide big opportunities in our industry, and coordination mechanism among departments in the process of product innovation results to competitive advantage. The study has expanded the knowledge on business intelligence and competitive advantage pointing out that market orientation goals are oriented towards customer satisfaction and it is a strategy to achieve competitive advantage.

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INTRODUCTION

The business environment today complexity and volatile, as a result firms needs to be proactive in relation to decision-making processes so as to stay competitive and remain relevance. One of the keys of business strategy for creating competitive advantages is an understanding of the data that firms generate in its day to day business. Information processing has gradually become the basis for achieving competitive advantage. Organizations has to ensure that they have the right information at the right time and available to the right people. The probability of business failure associated with increased environmental disturbances and intense competition is a key ingredient for the emergence of Business Intelligence. Business intelligence is a management philosophy and a tool that is used to help companies to manage and refine business information and to make more effective business decisions. An intelligent company is one that ensures that managers utilize the information refined and then modify the way the company behaves. BI produces up-to-date information for both operative and strategic decision making. Through the utilization of BI, a company can learn to anticipate the actions of customers and competitors as well as different phenomena and trends in its market areas. The focus of intelligence activities is on gathering and analyzing external information. However, a company must also take advantage of existing information and knowledge within the company. Thus, information about a company and its environment is necessary for a company to gain a competitive advantage in its industry. The telecommunication industry is a competitive market and is becoming saturated. Prior to the liberalization of the telecommunication sector, the Nigerian telecom industry was grossly underdeveloped and fraught with inefficiencies. The Nigerian telecommunication limited (NITEL) a limited liability company, the only national carrier had a monopoly of the telecomm sector and was synonymous with epileptic services and bad management. With the complete deregulation of the telecomm sector, most especially the granting of licenses to GSM service providers and setting in motion the privatization of NITEL, the telecom industry has become efficient as a result of intense competition in the industry

Corresponding author:* **Egberi A. Kelvin,
Department of Business Administration/Management, Delta State Polytechnic, Ozoro

among the major players, that is MTN, GLOBACOM, AIRTEL, ETISALAT and M.TEL. Telecom organizations are becoming more and more conscious about the advantages of data and information kept in their organization, the need to integrate these large volumes of data and to utilize these information to support the quality of their decision-making, in order to stay at a competitive advantage and to increase their profitability (Wu, Barash and Bartolini, 2007). The profitability of the telecom industry is clearly linked to its subscriber base which again depends on number of active customers, duration of calls made by customers, quality of service, price as compare to others, and ability to satisfy customers (Pareek, 2006). To properly utilize the relationships between all the profitability attributes, there seem to be a clear demand for quality Business Intelligence (Wu et al, 2007).

The major problem of the telecommunication firms is the inadequate attention to acknowledge that the business environment has become very competitive and dynamic, therefore most of the organizations that failed to identify the scope, dimension and frequency of changes in the environment could not survive, this is because, they were not proactive to put in place adequate unit of business intelligence that is saddled with the activities of information generation, analysis and dissemination of business intelligence required for effective and efficient competition to achieving competitive advantage. Thus is a serious set-back in the telecommunication industry in Nigeria. Telecommunication firms require timely and strategic business intelligence to develop the needed ability and capabilities to have an edge and compete favorably in the business environment. On the contrary, this is not the case in Nigeria because most of the firms lack adequate generation of business intelligence that leads to competitive advantage. Most managers in the telecommunication firms do not have in-depth knowledge of the key business elements in the business environment and because of this they have no knowledge of the customers, stakeholders, product, rivals and other firms environmental factors that are critical to making adequate and quality business decisions which can only be achieved by organizations commitment to generating business intelligence. Research in business intelligences and competitive advantage in telecommunication industry is scanty and mostly relates to developed countries. A few of the studies conducted on the area research were done on key aspects of business intelligence such as competitive intelligence, technological intelligence, product intelligence and customer intelligence with focus on selected firms in the Nigerian manufacturing sector, therefore, this study is significant because it will address the obvious gap in the literature created by previous studies. The aim of the study is to examine the relationship between business intelligence and competitive advantage in telecommunication industry in Nigeria.

Review of Literature

Concept of Business Intelligence (BI)

The term BI was coined by Gartner analystsin the 1990s, to describe these early versions of BI systems and eventually became popular. In the late 2000s, BI was a top-priority agenda according to Gartner (2009) and was the top application and technology under development in 2009 (Luftman and Ben-Zvi 2010). BI skills are at the top of the list of highly pursued skills. Since the late 2000s, BI has become a new information systems (IS) fashion, which is defined as "a transitory collective belief that an information technology is new, efficient, and at the forefront of practice" (Wang 2014).
Various definitions of BI have emerged in the academic and practitioner literature. While some broadly define BI as a holistic and sophisticated approach to cross-organizational decision support (Alter, 2004). BI, however, is comprised of both technical and organizational elements (Watson, Wixom, Hoffer, Anderson-Lehman, and Reynolds, 2006). In the most general sense, BI presents historical information to its users for analysis to enable effective decision making and for management support (Eckerson, 2003). This study adopts the broad definition of BI that integrates the organizational and technical views. At the conceptual level, BI is an umbrella term for systems and procedures that transform raw data into useful information for managers to make better decisions (Wixom and Watson 2010), affirming thatat the operational level, BI is an information system that has three elements (1) a technological element that collects, stores, and delivers information and includes the general technology of BI that performs basic functions to support generic actions in BI: gather, store, access, and analyze data; (2) a human competencies element on the abilities of human beings to retrieve data and deliver it as information, to generate knowledge, and to make decisions based on the new knowledge which metamorphous into competitive advantage.

Dimensions of Business Intelligence

Market Orientation

Narver and Slaterin their study postulated that a market orientation is a culture that propel employees'commitment to the continuous creation of superior value for customers, and a market orientation contains three major behavioral components: "customer orientation"- the continuous understanding of the needs of both the current and potential target customers and the use of that knowledge for creating customer value; "competitor orientation"-the continuous understanding of the capabilities and strategies of the principal current and potential alternative satisfiers of the target customers and the use of such knowledge in creating superior customer value; and "inter-functional coordination"-the coordination of all functions in the business in utilizing customer and other market information to create superior value for customers (Narver and Slater, 1990). Historically, market orientation is defined as the organization's stage of development, or as reflecting the level of organizational maturity. These steps of development include a production-oriented, product-centric, sales-oriented marketing concept (Kotler and Armstrong, 1988). According to Narver and Slater (1990), a market-oriented culture is a business culture that all employees are continually committed to creating superior value for customers. One way to create a market orientation is by using educational programs and organizational change efforts to create the best benefit for clients and the second is an empirical approach that enables business learn continuously by trying to create superior value for customers.

Customer orientation

The customer is the ultimate consumer. Customer orientation means that the focus of organization is customer and to satisfy their needs and desires based on the demands. In the traditional approach, a business is considered a process of buying and selling goods or services in exchange for money, but the new concept emphasizes that the main process of business is the production of "value". Exchange of goods and services with money is considered only a symbolic vehicle for this process. Customer oriented companies have three features:

Competitor orientation

Narver and Slater (1990) in their study opines that competitor orientation is the continuing understanding of the capabilities, potential and current strategies of major competitors that gives the knowledge in order to create superior customer value. Competitor orientation is the knowledge about the strengths and weaknesses, abilities and strategies of competitors, so that they can react against activities. Sometimes companies' base their strengths and weaknesses relative to competitors and an analysis of competing strategies are planned (Heiens and Richard, 2000). When a business tend to competitor orientation, it constantly re-evaluates the strengths and weaknesses of their competitors. This evaluation could include manufacturing productivity, pricing, delivery time, customer satisfaction, innovation, and employee retention and market share. In a competitive economic system, each firm tries to maximize the benefits for themselves at the expense of their competitors.

Innovation Orientation

A firm needs to find 'technology-push' so as to efficiently and effectively provide superior customer value and 'market-pull' with new and better products and services to reduce costs and maximize profits (Slater, 1997). In the marketplace, the competitive firm seeks to transform technological and market conditions through the input of resources to generate useful (high quality), affordable (low cost) and innovative products and services. In this context, innovation is related to the ability of the firm to seek new and better ways of generating, acquiring, and implementing tasks (processes, products, services, management and administrative systems, organizational structures and marketing methods) in the organization (Hult, Hurley and Knight, 2004). The advantages of the firm are in 'responding quickly with innovations that meet specific market needs, while simultaneously exploring basic research areas for potentially major innovations that more significantly alter the market landscape' (Chidamber and Kon, 1994). This is why the firm's innovation efforts should be focused on nurturing and enhancing these capabilities and competences in order to achieve better business performance. The rate and direction of innovation within the firm can be driven by 'technology-push' based on scientific and technological changes and/or by 'market-pull' based on unmet market needs (Hjalager, 2010). It can be asserted that "innovation orientation hinges on two dimension - productinnovation and technologyinnovation".

Empirical Review

A more recent study by Fatuimu, Ronke and Worlu (2014), in an exploratory study to examine customer satisfaction as the basis for competitive advantage enjoyed by information network service providers and those responsible for decision making in related organizations. The finding of the study revealed that competitive intelligence related inferences bring about a better customer service relationship between the network providers and their customers and therefore improve the profits of the organization involved.

The study conducted by Rashad (2013), aimed to analyze the extent of relationship between business intelligence and business success. Using four dimensions of business intelligence as environmental intelligence, consumer intelligence, market intelligence and organizational intelligence. Data was collected from 49 managers of different firms in UAE and Sharjah Emirate. The result shows a positive relationship between BI and business success. Managers are generally satisfied with the business intelligence system in their organization. A study conducted by (Kordesfani, Kafche and Khaksar, 2009) to investigate the relationship between organizational intelligence and competitive strategies using Iranian banks found a positive significant relationship between organizational intelligence and competitive advantage. Pirttimaki (2007), examined BI as a tool for managing business information in large Finnish companies, he found that large finish companies viewed BI as not only a defensive tool to ward off perceived threats and changes but also as a proactive management tool for uncovering new business opportunities, trends and weak signals in the business environment. Kumar (2012) analyzed the impact of BI systems on the Indian telecom industry. The study found that business intelligence systems have a significant impact on the performance of telecomm firms in India.

Methods

This study adopted a survey research design which allows samples to be selected and ensures a complete representation of the population.The population comprises all the management staff of the four major telecommunication firms in Asaba. MTN Asaba zone, 250 management staff; Globacom Nigeria limited, Asaba zone 100 management staff; Airtel Nigeria Limited Asaba zone 150 management staff and Etisalat Nigeria limited Asabazone 100 management staff with the total of 600 management staff. The sample size was determined using the Yaro Yamani formula to revive at 240 management staff to be sampled.Simple random was used as the technique requires that the sample be taken in such a way that each sample in the sample frame has an equal probability of being selected. The questionnaire consist four constructs of market orientation, organizational intelligence, innovation orientation and competitive advantage. In measuring market orientation, the researcher adopted Narver and Slater (1990) scale of customer orientation, competitor orientation and inter-functional coordination on 4 items. Competitive advantage construct was measured on the scale of market share (customer base), product/service differentiation and cost advantage, all in a 5 point Likert scale of 1= Strongly disagree (SD), 2 = Disagree (D), 3 = Undecided (U), 4 = Agree (A) and 5 = Strongly Agree (SA). Multiple regression was applied to test the hypotheses. This was appropriate because it is a test of relationship between the explained and the explanatory variables. The Cronbach's alpha based test was used to further test the reliability of the adopted research instrument.

Table 1. Test of Reliability

Measured variable	Mean	Cronbach Alpha	No of Items
Market orientation	3.430	.881	4
innovation orientation	3.365	.872	4
competitive advantage	3.202	.875	4

Source: SPSS Version 17 output (as computed from Researcher's survey data)

Table 1 shows that all the measured variables showed good reliability, their Cronbach's alpha value ranging from .789 to .881indicating an acceptable measure (Sekaran, 2003).

RESULTS

Out of the 240 sets of questionnaire administered, two hundred and fifteen (215) were returned, five (5) were not properly filled and two hundred and ten (210) were useable, which is 87.5%. Therefore, the analysis in this chapter is based on the sample size of two hundred and ten (210) copies. The demographic information of the respondents revealed that 54.29% of the respondents were males and 45.71% were females. In terms of age, 12.86% of the respondents were in the age group of 18-27 years, 32.86% were in the age group of 28-37 years, 40% were in the age a group of 38-47 years. While 14.26% were above 48 years. The respondents were also classified in terms of marital status. The analysis shows that 66.67% of the respondents were married while 33.33% were single. In terms of educational qualification, 6.67% of the respondents reported that they possess 0' level certificate, 18.71% of the respondents indicate that they have either NCE or OND certificate. Those that have either HND or B.Sc as their highest qualification were 54.29% of the total respondents. 13.33% reported to be either MBA or M.Sc certificate holders. Finally, 7.14% of the respondents indicated to have qualifications higher than M.Sc. or its equivalent.

Research Question 1: What is the relationship between market orientation and competitive advantage?

The respond indicated the effect of market orientation and competitive advantage. Statement 1 shows that 137 (65.2%) of the respondents agreed that All their business functions are integrated in serving the needs of our target market. 26 (12.4%) were undecided and 47 (22.4%) disagreed. In statement 2, 142 (67.6%) were the agreement rates to the statement 'Our strategy to achieve competitive advantage is based on understanding the needs of customers'. 32 (15.3%) were the undecided rates and 35 (17.1%) were the disagreement rates. Statement 3 shows that 169 (80.5%) of the respondents were in agreement that Availability of funds is an integral factor that facilitates improved productivity. 25 (11.9%) were undecided while 16 (7.6%) were the disagreement rates. In statement 4, 106 (50.4%) of the respondents were in agreement that they respond rapidly to competitors actions. 32 (15.3%) were undecided and 72 (34.3%) disagreed.

Research question 2: What is the relationship between innovation orientation and competitive advantage ?

With regard to the relationship between innovation orientation and competitive advantage. Statement 5 from the table shows that 184 (87.6%) of the respondents were in agreement that management actively seek innovative ideas. 11 (5.2%) were undecided while 15 (7.1%) totally disagreed. In statement 6, 184 (87.6%) of the respondents agreed that technological changes provide big opportunities in our industry. 5 (2.5%) of the respondents were undecided and 21 (10%) totally disagreed. From statement 7, 140 (66.7%) of the respondents agreed that their company has well established communication channels with customers in the process of product innovation. 35 (16.7%) were the undecided and disagreement rates respectively. The mean of means is 4.0.

Competitive Advantage

On the construct"competitive advantage", it was revealed in statement 9 that 147 (70%) of the respondents agreed that their organization has the highest customer base in the industry. 26 (12.4%) were undecided while 37 (17.6%) disagreed. In statement 10, 152 (72.4%) of the respondents were in agreement that their organization constantly provides differentiated services than our competitors. 32 (15.3%) were undecided and 26 (12.3%) were the disagreement rate. Statement 11 recorded that 179 (85.2%) of the respondents agreed that their organization is the low cost leader in the industry. 26 (12.4%) were undecided and 5 (2.5%) disagreed.

Test of Hypotheses

The multiple regression analysis was employed as an analytical tool for testing the hypotheses (Table 2).

Table 2. Multiple Regressions of dimensions of business intelligence on competitive advantage coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	75.965	1.825		.539	.591
	market orientation	.331	.040	.288	2.16	.002
	innovation orientation	.396	.039	.341	2.22	.003

a.**Dependent Variable:Competitive advantage**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin Watson
	.822[a]	.676	.621	1.516	1.98

a.Predictors: (Constant), Market orientation,

Innovation orientation

ANOVA[a]

Model	Sum of Square	Df	Mean Square	F	Sig.
Regression	868.986	4			.000[a]
Residual	362.209	205	182.829	86.574	
Total	1231.195	209			

a.Predictors: (Constant), market orientation, innovation orientation
b.Dependent Variable: Competitive advantage

Table 2 shows that F-ratio in the ANOVA Table tests whether the overall regression model is a good fit for the data. The table shows that the independent variables (market orientation, innovation orientation) significantly predict the dependent variable (competitive advantage), F (4, 205) = 86.574, p< .005 (i.e., the regression model is a good fit of the data). The Durbin Watson score of (1.98) indicates the absence of multicolinearity, since 1.95 can be approximated to 2.

Hypothesis One

Ho_1:There is no significant relationship between Market orientation and competitive advantage

Since the p-value established is at 0.05 (5%) i.e. the level of significance which is the tolerable error in estimation is greater than the critical level of significance (0.002< 0.05), the null hypothesis is rejected while the alternate is accepted implying that there is significant relationship between market orientation and competitive advantage. This is in support of Narver and Slater (1990) which affirms that a market orientation (market-oriented culture) is a business culture that all employees are continually committed to creating superior value for customers bringing about competitive advantage.

Hypothesis Two

Ho_2: There is no relationship between innovation orientation and competitive advantage

The level of significance that was calculated in table 2 is lesser than the established p-value (.003 < 0.05), therefore the null hypothesis is rejected to accept the alternate which states that there is significant relationship between innovation orientation and competitive advantage. This is in alignment with (Nemet, 2009) that successful innovation requires the firm to connect technical and market opportunities for better business performance, and that Innovation orientation pave way for competitive advantage.

Conclusion

It was concluded that market orientation and innovation orientation enhance competitive advantage. Market orientation encourage high-level performances of employees and market orientation is a vital factor which affects competitive advantage. In market orientation, goals are oriented towards customer satisfaction, strategy to achieve competitive advantage is based on understanding the needs of customers, all business functions are integrated in serving the needs of the target market and all our managers understand how everyone in our business can contribute to creating value for our customers. Again, it is concluded that innovation orientation influences competitive advantage in that Management actively seek innovative ideas, provide big opportunities in our industry, and coordination mechanism among departments in the process of product innovation results to competitive advantage. The study has expanded the knowledge on business intelligence and competitive advantage pointing out that market orientation goals are oriented towards customer satisfaction and it is a strategy to achieve competitive advantage.

The study recommended that:

1. Market orientation is a vital factor which affects competitive advantage. It is therefore recommended that communication industries should ensure their goals are oriented towards customer satisfaction and monitor the level of commitment and guidance to serve the needs of customers.
2. Organizations should ensure they presents new services with distinctive features and all organizational effort are directed towards increasing profitability and sustainability.

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