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Impact Factors of Strategic Technology Alliances in the Nigerian Telecommunications Industry

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Abstract

The study examined the factors influencing the implementation of strategic technology alliances among telecommunications service providers in Nigeria. The study covered all the Global System for Mobile Communication firms, the Code Division Multiple Access firms and the telecommunications service vendors in Nigeria. The results revealed that socio-cultural, geographical, economic and political factors influenced the firms" engagement in strategic technology alliances, while technological factors that drove firms into strategic technology alliances were investment in machinery, on-job trainings and educational background of the staffs in the firms. The regression analysis showed that none of the socio-cultural, political, economic, technological and geographical factors considered in the study totally explained the reasons for why telecommunications firms" engage in strategic technology alliances. The study concludes that the competitiveness and the prevalence of product differentiation in the industry contribute to the reason why they go or do not alliance with one another.

Keywords

Strategic Alliance, GSM, CDMA, Technology, Telecommunications, Service

1. Introduction

The telecommunications industry in Nigeria is one of the major drivers of her economy as per GDP growth rate since 2010 [1]. Since liberalization of the sector in 2001, the industry has enjoyed continuous expansion (upgrade of technology, increase accessibility, intense diffusion and increased foreign direct investment). The advancement in access to telephone has had positive impact on commerce, networks, business, and other aspect of life [2].

Due to the rapid expansion of the industry, telecommunications companies have had to adjust to the situation where the whole competitive environment is changing from the rather monopolistic state of affairs, to the state of taut competition, where suddenly several separate phenomena influence the line of the business as a whole [3]. Some general driving forces behind this current development amongst others include liberalization, globalization, deregulation and privatization of the markets and fast technological development [4].

Information plays a major role in the development of a nation. Nigeria with its cultural rich history cannot be discussed without mentioning the milestone achievement its telecommunications players have made with time. The Nigeria telecommunications historical trend that would be discussed in this section will be categorized under the following context: the colonial era, post-colonial era and the

innovative age. The Colonial-era in Nigeria can be dated back to the year 1886. The major achievement of this era was the establishment of twelve (12) telecommunications bases station between Nigeria and London [5].

In the post-colonial era, Nigeria formed the Nigerian Telecommunications Limited [6] and the National Communication Commission (NCC) as its regulatory body. This made the country to progress to the innovative age of mobile telecommunications. The mobile market is a large one. At inception, it has about seven network providers, four of these network providers are Global System for Mobile Communication (GSM) operators while the remaining three are Code Division Multiple Access (CDMA) operators. It has been established that telecommunications penetration grew exponentially, although the growth was not totally translated into quality service because, the services that were offered still had so much room for improvement. Nigeria is still faced with traffic problems whereby calls are not connected due to congestion on the network as a result of limited resources available to the network operators to meet the ever increasing demand of the market. We can infer from this scenario that the challenge in the telecommunications sector is not what an individual or a company can achieve alone. Collective effort in terms of alliances has to be put in place by both the firms and the government.

Specifically, the contribution of the telecommunications industry to the Nigeria's gross domestic product (GDP) since 2011 has improved tremendously amounting to over 5% [7]. The sector is also the third largest contributor to GDP in the non-oil sector after agriculture and trade since 2005 just under four years after its deregulation in Nigeria. Infrastructural investments in telecommunications could be the major driver for all these contributions [8].

The dynamic character of the telecommunications market has some uniqueness which can be classified as either demand or supply side pattern. The demand patterns of telecommunications networks and services have traditionally been linked together; for example, the demand for telephone services has more or less determined the development of telecommunications infrastructure [9]. Until the mid-1970´s, telephone networks were almost exclusively used for the transmission of voice services; today, customer demands require the transmission of many other services, called value-added network services [10].

Globalization of the world economy and the evolution of the internet have also produced a demand for global and seamless telecommunications services [11]. Strategic technology alliances (STA) within the telecommunications sector have become the convention due to the rapidly expanding industry [12].

International strategic technology alliances are growing rapidly in the telecommunications sector, both in manufacturing (equipment) and services. This is as a result of the expansion of the world information and communications technologies (ICTs) market. This reason has propelled regional telecommunications and Internet service providers to seek geographically wider and improved communication services through alliances with firms covering different regions and services [9].

Domestic alliances in the telecommunications sector were also dominated by US firms, who participated in 95 alliances out of a total of 137 alliances worldwide. According to [13], there are some prominent successful alliances in the telecommunication industry. One of them is the Symbian alliance. Symbian is a joint venture formed in June 1998 by Psion (UK), Ericsson (Sweden), Nokia (Finland) and Motorola (US); Matsushita (Japan) joined in May 1999. It aim was to develop and upgrade the Electronic Piece of Cheese (EPOC) system, an operating system for wireless information exchange devices including a smart phone. The joint venture promoted the EPOC-based operating system which later turned to the de facto global standard for smart phones as well as other portable wireless communications products [14].

Another successful alliance in the telecommunication industry which should be a model for Nigeria firms is the Atlas alliance. Atlas is a strategic alliance in the telecommunications industry. It is a joint venture owned by France Telecom (FT) and Deutsche Telekom (DT). France and Germany both had 50% to 50% ownership in the public telecommunications organization. The purpose of Atlas was to provide value added services to corporate users both in Europe-wide or national, i.e. to large multinational companies as well as to smaller national firms [15]. Other obvious successful alliances are the Ericsson-Microsoft alliance and the BT-MCI alliances which were basically joint venture relationships.

The Nigerian Communications Commission has made concerted efforts to promote alliances among telecommunications operators with the view to reducing tariffs chargeable to customers due to high operational cost, operating in isolation leading to proliferation of telecommunications masts and increase redundancy of infrastructure [16]. Literature has shown that telecommunications firms operating in Nigeria are actively involved in alliances [17, 18]. These previous studies showed that they form alliances with their competitors in the aspect of infrastructural collocation and also with their vendors, customers and stakeholders. However, in depth the literature in this regards may be, there is still dearth of information on the factors that drive the implementation of these alliances. Hence, this study will bridge this knowledge gap by revealing the factors affecting strategic technology alliances among telecommunication firms in Nigeria.

2. The Market Structure of Nigeria's Mobile Telecommunications

The Nigeria's mobile telecommunications market is a large one and has about seven network providers. Four of these network providers are GSM operators while the remaining three are CDMA operators. GSM is the branded term referring to a particular use of Time Division Multiple Access

(TDMA) technology been dominantly used around the globe in more than hundred countries. It is the standard for communication for most of Asian and European countries.

However, GSM operates on four frequencies which include 900MHz, 1800MHz, 850MHz and 1900MHz bands. GSM operates on the wedge spectrum called a carrier. This carrier is divided into a number of time slots and each user is assigned a different time slot so that until the on-going call is finished, no other subscriber can have access to the slot. It allows for eight simultaneous calls on the same radio frequency and used narrow-band TDMA technology that enables digital transmission between a mobile phone and a base station.

With TDMA, the frequency band is divided into multiple channels which are then stacked together into a single stream; hence the term narrowband. This technology allows several callers to share the same channel at the same time. GSM uses the Subscriber Identity Module (SIM) cards. The removable SIM card allows phone to be instantly activated, interchanged, swapped out and upgraded, all without carrier intervention. The SIM itself is tied to the network, rather than the actual phone. Phones that are card- enabled can be used with any GSM carrier.

CDMA takes an entirely different approach from GSM. A CDMA network operates in the frequency spectrum of 850MHz and 1900MHz. It is based on spreads spectrum technology which makes optimal use of available bandwidth and allows data to be spread out over the channel after the channel is digitized. Multiple calls can then be overlaid on top of one another across the entire channel, with each assigned its own ‘‘sequence code’’ to keep the signal distinct. CDMA offers more efficient use of an analog transmission because it allows greater frequency reuse.

Furthermore, CDMA carriers require proprietary handset that are linked to one carrier only and are not card-enabled. It does not use a SIM card, to upgrade a CDMA phone; the carrier must deactivate the old phone then activate the new one. The old phone becomes useless. A unique code is provided to every user and all the conversation between two users are encoded ensuring a greater level of security for CDMA users. Therefore, the CDMA phone calls are more secured than the GSM calls.

Although, statistics shows that the GSM network operators accounts for about 90% of the country’s total mobile subscribers as at the end of 2012 [7], the percentage penetration rate of the mobile network operators in Nigeria also grew with time. In 2001, when GSM was newly integrated into the Nigerian telecommunications sector, the telephone-density ratio was well below one per cent (about 0.73%). However, ten years after it was incorporated, telephone penetration rose to 68.49% representing about 59% of the country’s overall population in 2011 [7].

It was also established that telecommunications penetration grew exponentially, although the growth was not totally translated into quality service because, the services that were offered still had so much room for improvement [19]. This was one of the reasons that led Globalcom to taking a step towards improving the quality of services; Glo-1 submarine cable was installed in 2010, this however was first of its kind in the country [20].

Despite all these efforts, the global ICT Development Index (IDI) of Nigeria was still very low as Nigeria was being rated 125 and 122 for the year 2008 and 2010 respectively; there was no African country that was rated among the top sixty (60) in term of IDI in 2010 [21]. Nigeria is still faced with traffic problems whereby calls are not connected due to congestion on the network as a result of limited resources available to the network operators to meet the ever increasing demand of the market. We can infer from this scenario that the challenge in the telecommunications sector is not what an individual or a company can achieve alone. Collective effort in terms of alliances has to be put in place by the government.

3. Research Methodology

The study focused on telecommunications service providers in Nigeria. The study covered all the four (4) GSM firms, the two (2) CDMA firms and fifty (50) telecommunications service vendors in Nigeria. These firms were purposefully selected because they have been prominent in the Nigeria’s mobile market and all their operational headquarters were domiciled in Lagos State. Data were collected from the firms through the use of a structured questionnaire administered on the five Departments (Network Operations, Transmission and Planning, Network Administration, Project Management and Operations) identified to be relevant to the study. Also, purposive selection of one senior staff from each of these five Departments across the selected firms was used in the study. Thus two-hundred and eighty (280) questionnaires were administered and retrieved.

The information gathered was coded and entered into the Statistical Package for Social Sciences (SPSS) version 20. This package was found to be appropriate for the analyses of the kind of data. Quantitative methods of analyses both descriptive and inferential statistics were used. Inferential statistical technique used was multiple regression analysis.

3.1. Study Variables and Measurement

The key variables that were used in this study were divided into independent and dependent variables. The independent variables of this study are the proposed factors that influence strategic technology alliance while the dependent variable is the deployment of strategic technology alliance among telecommunications service providers firms.

The socio-economic characteristics of respondent and firm were determined using the following parameters; years of operation, educational qualification of the employee, years of experience of employee, Company’s location etc. The various factors influencing the implementation of strategic technology alliances were measured under the following five sub variables; technological, socio-cultural, political/regulatory, geographical and economic factors.

3.1.1. Technological Factor

The factor was measured using the assessment of technical know-how of the staff in terms of educational background, on-the-job training programmes as well as status of investment in machinery and procurement of licenses particularly in the last three to six years. The variables were measured using frequency distribution.

3.1.2. Socio-cultural Factor

Cultural and social traditions play a vital role in determining reasons why firms engage in alliance. This also includes the sources of information that motivates them into engaging in alliance and the importance of these sources. This variable was measured by method of ranking using the Likert rating scale of 1-5 max, where the mean of 1 represents Not important, 2-Moderately important, 3-Undecided, 4-Important and 5-Very important.

3.1.3. Political Factor

For the establishment and development of strategic alliance amongst firms, it is vital that laws that promotes, protects and facilitates alliance activities must be in place. Infrastructure support, tax rebates, subsidies, research funding and many more are some of the government programmes that are important for performance improvement in terms alliance. This variable was measured by method of ranking using the 5-point Likert scale, where the mean of 1 signifies Not important, 2-Moderately important, 3-Undecided, 4-Important and 5-Very important.

3.1.4. Economic Factor

Economic situation of the firms play a large role in determining reasons why firms engage in alliance. This also indicates the economic importance of engaging in alliance. This variable was measured by method of ranking using the 5-point scale. The mean of 1 indicates Not important, 2-Moderately important, 3-Undecided, 4-Important and 5-Very important.

3.1.5. Geographical Factor

Respondents were asked to indicate how topography of the area, availability of space (GSM service area), extent of existing and proposed screening by buildings and landscaping influenced their engagement in alliance. It was measured also on 5-point scale, where the mean of 1denotes Not important, 2-Moderately important, 3-Undecided, 4-Important and 5-Very important.

3.2. Model Specifications

This section provides the equation for the factors that are been investigated in the study. The equation can be written as:

$$STA = f(SF, TF, PF, EF, GF) \quad (1)$$

Where
STA = Strategic Technology Alliance,
SF = Socio-Cultural Factor,
TF = Technological Factor,
PF = Political Factor,
EF = Economic Factor, and
GF = Geographical Factor.

The equation 1 can be logged, so as to reduce the stochastic error term and expressed as:

$$LSTA = \alpha_0 + \alpha_1 SF + \alpha_2 TF + \alpha_3 PF + \alpha_4 EF + \alpha_5 GF + Ut \quad (2)$$

Where LSTA = Log of Strategic Technology Alliance
α_0 = Constant factor
α_1, α_2, α_3 α_4 and α_5 = Coefficient of socio-cultural, technological, political, economic and geographical factors respectively
Ut = Error term.

4. Results and Discussion

The empirical and qualitative findings of this study are discussed in this section. They are categorized into technological, socio-cultural, economic, political and geographical factors influencing strategic alliances.

4.1. Technological Factors

Among the technological factors assessed as influencing the implementation of STA were technical know-how of the staff in terms of educational qualifications, on-the-job training programmes as well as status of investment in machinery and procurement of licenses particularly in the past three to six years. Table 1 revealed that 90% of the staff had their background in Science, Engineering and Technology. This implies that the crops of staff in the firms were knowledgeable with potential creativity. This corroborates the study of [22, 14, 23, 24] which showed that Science and Technology workforce was important for high-tech firms especially within the context of developing economy. The presence of this high level of Science and Technology personnel workforce could encourage personnel swap, outsourcing, and maintenance ability within the firms. This has proven to work in China, India, South Korea, Brazil, Singapore and Nigeria [22].

Literature have shown that constant exposure of human resource to training enriches human capital of the firm which in turn improves the knowledge capital (resource base view),consequently developing the firms‟ social capital and thereby attracting allies to such firms [25, 26]. Table 1 showed that all the firms had a well-structured training programme across the selected departments. Presence of sophisticated and modern technology in firms is a major technological factor that has the potential to influence strategic alliance. This study found out that majority of the firms (55%) made a purchase of machinery annually while 45% does the purchase at least in every 3 years. Furthermore, majority of the firms (67.5%) said they procure licenses in the last 3 years. Also, 97.5% outsourced their engineering maintenance department. From the analysis it can be observed that virtually all the firms had outsourcing contract across the departments. It can be implied as one of the major

reason for the alliance relationship either among the selected firms or other possible allies that were revealed in Table 1.

Table 1. *Technological Factors Influencing Strategic Technology Alliances.*

Total Sample	**280**	
Variable		**Percentage (%)**
Educational Background:		
Science, Engineering and Technology	90.0	
Art and Humanities	10.0	
Training:		
Transmission and Planning	27.05	
Network Admin	26.56	
Projects		13.57
Network operation		11.43
Operations		29.31
Machinery and Licensing:		
Frequency of purchase of machinery annually	55.0	
Frequency of purchase of machinery every 3 year	40.0	
Procurement of license in the last three years	67.5	
Outsourcing/Maintenance Activities	95.7	

Source: Authors' Analysis (2015) using SPSS 20.0

4.2. Socio-cultural Factors

The major socio-cultural factor influencing strategic technology alliance in the telecommunications firms as shown in Table 2 are 'satisfy customers' demands' (mean = 3.44, SD = 0.75) and 'extend product range' (mean = 3.39, SD = 0.61). [13] in their study also stated that customers probably matter more than any stakeholder in alliance activities. However, other reasons leading to alliances discovered in this study were: 'deal with new competitors at home' (mean = 3.28, SD = 0.58), 'improve product quality' (mean = 3.27, SD = 0.73), 'deal with new competitors in export market' (mean = 3.26, SD = 0.69), 'develop more environmental-friendly products/processes' (mean = 3.16, SD = 0.72), 'comply with Nigerian laws and standards' (mean = 3.16, SD = 0.72), 'availability of government support' (mean = 3.16, SD = 0.72), 'taking advantage of new technology' (mean = 3.11, SD = 0.81), 'dealing with the challenge of new technology' (mean = 3.00, SD = 0.64) were also highly rated as one of the socio-cultural reasons.

Previous studies from [27, 28] have highlighted a number of stakeholders within which strategic technology alliance can take place in the telecommunications system. Evidences exist in favour of customers, suppliers, trade associations, higher education and research institutions, among others as helpful sources of information for the firms' alliance activities. Sources of information that motivates these firms to entering to alliances were copious. However, this study shows that the most predominant source of information that propelled these firms to entering into alliance was government regulatory agencies such as NCC (mean = 3.19, SD = 0.99) and business and industry associations (mean = 3.19, SD = 0.75) among others. Similarly, parent firms (mean = 3.16, SD = 0.95), professional journals (mean = 3.14, SD = 0.95) and customers (mean = 3.00, SD = 0.85) also had a high influence in this regard, while fairs and exhibition (mean = 2.21, SD = 0.11), education /research institute (mean = 2.48, SD = 0.12), accounted for the least.

Table 2. *Socio-cultural reasons for engaging in alliance among the selected firms.*

Total Sample	**280**	
Variable	**Mean Rank**	**Standard Deviation**
Socio-cultural Reasons:		
Satisfy customers' demands	3.44	0.75
Extend product range	3.39	0.61
Deal with new competitors at home	3.28	0.58
Improve product quality	3.27	0.73
Deal with new competitors in export markets	3.26	0.69
Develop more environmental-friendly products/processes	3.16	0.72
Comply with Nigerian laws and standards	3.16	0.72
Availability of government support	3.16	0.72
Take advantage of new technology	3.11	0.81
Deal with the challenge of new technology	3.00	0.64
Information Sources on Strategic Alliance:		
Government regulatory agencies	3.19	0.99
Business and industry associations	3.19	0.75
Parent firm	3.16	0.95
Professional journals and trade publications	3.14	0.95
Suppliers of equipment, material and components or software	3.09	0.78
Customers	3.00	0.85
Client firm for which your firm is a contractor	2.87	0.76
Within your firm	2.85	0.67
Education and research institutes	2.48	0.12
Fairs, exhibitions	2.21	0.11

Source: Authors' Analysis (2015) using SPSS 20.0

4.3. Economic, Political and Geographical Factors Influencing Strategic Alliances

Table 3 presents the various economic, political and geographical reasons for engaging in strategic technology alliances among the firms. Previous studies have shown that the role of government as an institution is critical for firm-level alliance activities. Such roles typically include the design and implementation of alliance-friendly policies, effective monitoring of these policies, promoting products from domestic firms and creating a stable political and economic ambience, among others [29]. The firms are of the opinion that government support in terms of: R&D funding (mean = 3.17, SD = 0.86), training (mean = 3.06, SD = 0.73), subsidies (mean = 3.03, SD = 0.78), tax rebates (mean = 3.28, SD = 0.84), amongst others would improve alliance.

In GSM networks, a mobile network consists of a number of base stations which maintains contact with mobile telephones. Each base station is in turn linked to other nodes in the network which makes it possible to make calls to people at entirely different locations. Each base station covers a certain geographical area. The more base stations an operator sets up, the better the coverage [30]. However, literature have shown that some geographical factors such as the characteristics and predominant land uses of the area, topography of the area and the extent of existing and proposed screening by buildings and landscaping might not actually permit all telecom operators to have base stations or

fibre optic cable laid everywhere [31].

Table 3 revealed that amongst the geographical factors identified to be influencing firm's engagement in alliances, topography of the area (mean = 3.65, SD = 0.66) had greater impact amongst the geographical factors of the firms. According to [10], strategic technology alliances in telecommunications firms can reduce operational cost by 4 to 6%. This was found to be consistent with this study. The topmost economic reasons for engaging in strategic alliance among the firms include low operational cost (mean = 3.68, SD = 0.76), efficient use of fixed and scarce resource (mean = 3.54, SD = 0.56), low set up cost (mean = 3.53, SD = 0.55) among others.

Table 3. *Economic, Political and Geographical factors influencing alliances.*

Total Sample	**280**	
Variable	**Mean Rank**	**Standard Deviation**
Economic Reasons:		
Low operational cost (OPEX)	3.68	0.76
Efficient use of fixed and scare resource (land)	3.54	0.56
Low set up cost (CAPEX)	3.53	0.55
Wider coverage	3.47	0.72
Fast deployment	3.43	0.60
Shared maintenance between parties in terms of fault resolution	3.43	0.55
Eliminates costs of technical sites surveys	3.28	0.72
Better return on assets is achieved	3.20	0.56
Political (Government Support Programmes):		
Infrastructure support	3.29	0.79
Tax Rebates	3.28	0.84
Technical Support/advice	3.27	0.69
R&D Funding	3.17	0.86
Loans and Grants	3.13	0.72
Training	3.06	0.73
Subsidies	3.03	0.78
Geographical Factors:		
Topography of the Area	3.65	0.66
Soil type of the Environment	3.13	0.72
Vegetation type	3.10	0.79

Source: Authors' Analysis (2015) using SPSS 20.0

4.4. Regression Analysis of the Factor Influencing of Technology Strategic Alliances

Table 4 shows a representation of the multiple regressions between all the independent variables (predictors) and the dependent variable (outcome variable). According to the model, the collection of the predictors R accounted for 0.307 (adj. R^2 = -0.039) of the variance in the outcome variable at 95% confidence level. R square value is usually between 0 and 100% and is often referred to as the coefficient of determination. The value of R square (R^2 = 0.094) tells that R^2 account for 9.4% of the variance explained by the independent variables. The regression displays a pattern of relationships between each predictor and the outcome when compared to the correlations and beta coefficient.

Also, the table displayed in the standard multiple regressions imply that all these factors; technological (t = -0.559; p>0.05), socio-cultural (t = 0.305; p>0.05); Geographical factor (t = -1.706; p>0.05); economic factor (t = -0.267; p>0.05); political factor (t = 0.570; p> 0.05) do not totally explain their engagement in strategic technology alliance. Furthermore, the socio-cultural and political factors had significant influence on strategic alliance practices in the firms while the economic, geographical and technological factors do not. This further shows that there are other factors that influence alliance in Nigeria; this is in contrast with the trend in literature in which most alliances were either technologically driven or financially driven. From the results, none of the factors has significant influence on the dependent variable.

Table 4. *Regression results of the factors influencing Strategic Alliance.*

Total Sample	**280**			
Variable	**Coefficient**	**Standard error**	**t-statistic**	**Prob. (p-value)**
Socio-cultural	0.005	0.015	0.305	0.762
Economic	-0.009	0.032	-0.267	0.791
Political	0.011	0.019	0.570	0.572
Geographical	-0.082	0.048	-1.706	0.097
Technological	-0.092	0.165	-0.559	0.580
C	1.942	0.609	3.187	0.003
R^2	0.094			
Adjusted R^2	-0.039			
F-statistic	0.707			
Prob. (F-statistic)	0.623			

Source: Authors' Analysis (2015) using SPSS 20.0

5. Conclusions

The technological factors influencing strategic alliance in the firms that the study identified were; the knowledge base view of the firms, firms' exposure to trainings, possession of advanced technology and licenses. The socio-cultural factors influencing firm's engagement in alliance were the need to satisfy customer's demand, extend product range and improve product quality, amongst others. It was also discovered that firms engaged in strategic technology alliance for economic reasons, some of which were to reduce capital and operational cost in order to effectively manage scarce resources such as Land, and to have wider network coverage. The findings of the study showed that some government policies encourage strategic alliances among telecommunications firms. Some of these policies are: R&D funding, infrastructural support, tax policies, loans, grants. While the geographical factors fostering firm's collaboration and alliance are topography and availability of space in GSM service area. The finding of the study revealed that the factors examined are only a small fraction of the determinants of strategic alliances among telecommunications firms. The study proposed that there are other underlying factors that may be influencing firms engagement in alliance aside the ones the study examined because this study only account for 9.4% of the numerous factors.

6. Suggestion for Further Studies

This study determined only a few of the factors

influencing the implementation of alliance among the mobile telephony firms and some of their vendors. Although the findings are useful, they can only serve as possible indications for broader directions because of the limitations in the sample size. Studies that will use more numbers of telecommunications firms would therefore be beneficial. The study concludes that because telecommunications industry is a very competitive one with little product differentiation, the reason why they go or do not into alliance with each other is far beyond the conventional factors.

References

[1] National Bureau of Statistics (2010): "Review of the Nigeria Economy: Communications" [online] http://www.nigerianstat.gov.ng (accessed 22 February 2013).

[2] Adebayo, G. (2006): Telecom in Nigeria: A role in the call, Lagos: Alton Press.

[3] Pennings, J., Kranenburg, H. V. and Hagedoorn, J. (2005): Past, Present and Future of the Telecommunications Industry, [online] http://edocs.ub.unimaas.nl/loader/file.asp?id=1055 (accessed 28 May 2014).

[4] Kefela, G. T. (2011): Driving Forces of Globalization in Emerging Market Economies Developing Countries, *Asian Economic and Financial Review*, 1(2), 83-94.

[5] Ajayi, G. O., Salawu R. I. and Raji, T. I. (2008): A Century of Telecommunications Development in Nigeria: What Next? [online] http://www.vii.org/papers/nigeria.html (accessed 12 April 2013).

[6] Tella, A. S., Amaghionyeodiwe, A. L. and Adesoye, B. A. (2007): Telecommunications Infrastructure and Economic Growth: Evidence from Nigeria, Paper presented at the UN-IDEP and AFEA Joint Conference, Nigeria [online] *http://www.studymode.com/mobile/essays/lnternet-Growth-ln-Nigeria-1708848.html* (accessed 28 June 2013).

[7] Nigerian Communications Commission (2013): Percentage Contribution of Telecoms Industry to GDP [online] *http://www.ncc.gov.ng/index.php?option=com_content&view=article&id=68&Itemid=70* (accessed 28 November 2013).

[8] Musa, N. A., Oyebisi, T. O. and Babalola, M. O. (2010): A study of the impact of Information and Communications Technology (ICT) on the quality of quantity surveying services in Nigeria. *The Electronic Journal on information Systems in Developing Countries,* 42(7), 1-9.

[9] Eva, M. (2001): Strategic Alliances - A Competitive Law Assessment with special emphasis on the Telecommunications Sector, Unpublished Masters‟ dissertation, University of Lund [online] http://www.lunduniversity.lu.se/o.o.i.s?id=24965&postid=1560183 (accessed 28 March 2013).

[10] Pahlavan, K. and Levesque, A. H. (1995): Wireless Information Networks, Vol. 95, New York: Wiley.

[11] Keohane, R. O. and Nye, J. S. (2000): Globalization: What's new? What's not? (And so what?), *Foreign Policy*, 104-119.

[12] Chanab, L. A., El-Darwiche, B., Hasbani, G. and Mourad, M. (2007): "Telecom Infrastructure Sharing: Regulatory Enablers and Economic Benefits", *White Paper, Von Booz Allen Hamilton Consulting*, 1-12.

[13] Ericsson, K. A. and Charness, N. (1997): Cognitive and developmental factors in expert performance, in Feltovich, P. J., Ford, K. M., Hoffman, R. R. (Eds.), Expertise in Context: Human and Machine, The MIT Press, Menlo Park, CA.

[14] Kang, N. and Sakai, K. (2000): "International Strategic Alliances: Their Role in Industrial Globalization", *OECD Science, Technology and Industry Working Papers*, 20-34.

[15] Stehman, O. (1995): Network Competition for European Telecommunications, Oxford University Press, New York.

[16] Nigerian Communications Commission (2003): "Guidelines on Collocation and Infrastructure Sharing" [online] http://www.ncc.gov.ng/files/Legal-Guidelines_Collocation_and_Infrastructure_Sharing.pdf (accessed 01 September 2014).

[17] Onuzuruike, E. (2008): Telecom Infrastructure Sharing As A Strategy For Cost Optimization And Revenue Generation: A Case Study Of Mtn Nigeria/Zain Nigeria Collocation, (Master's Thesis, Blekinge Institute of Technology, Sweden [online] http://www.casestudy.co.in/telecom-infrastructure-sharing-as-a-strategy-for-cost-optimization-and-revenue-generation-a-case-study-of-mtn-nigeriazain-nigeria-collocation/2010/01/31/ (accessed 13 August 2013).

[18] Ajao, B. F., Oyebisi, T. O., Aderemi, H. O. and Jegede, O. (2015): Status and Impact of Strategic Technology Alliances among Telecommunications firms in Nigeria, *International Journal of Business Performance Management, Vol. 16, No. 2/3.*

[19] Oyetayo, E. O. and Okafor, A. A. (2011): An evaluation of the service delivery of Telecommunication Companies: A case study of the Nigerian Telecommunication Industry, *International Journal of Academic Research,* 3(2), 23-26.

[20] Bakare, A. S. and Gold, K. L. (2011): Estimating the impacts of Global System for Mobile Telecommunication (GSM) on Income, Employment and Transaction Cost in Nigeria, *Journal of Economics and International Finance,* 3(1), 37-45.

[21] International Telecommunication Union (2011): Country Case Studies from ITU [online] http://www.itu.int/osg/spu/casestudies/index.html (accessed on 03 March 2013).

[22] Aderemi, H. O., Oyebisi, T. O. and Adegbite, S. A. (2011): Hi-Tech Competence Building in Firms: Priority of Technological Efforts, *IRCAB Journal of Social and Management Science,* 1(1), 54-63

[23] Collins, C. J. and Clark, K. D. (2003): Strategic Human Practices, Top Management Team Social Networks and Firm Performance: The Role Of Human Resources in Creating Organizational Competitive Advantage. *Academy of Management Journal*, 46(6), 740-751.

[24] Wright, P. M., Dunford, B. B. and Snell, S. A. (2001): Human resource and the resource-based view of the firms, *Journal of Management*, 27(6), 701-721.

[25] Lado, A. A. and Wilson, M. C. (1994): Human resource systems and sustained competitive advantage: a competency-based perspective, *Academy of Management Journal* 19(4), 699-727.

[26] Youndt, M. A., Snell, S. A., Dean, J. W. and Lepak, D. P. (1996): Human resource management, manufacturing strategy and firm performance, *Academy of Management Journal,* 39(4), 836-866.

[27] Meeus, M., Mauritus, T. H., Oerlemans, Leon, A. G. and Jerald Hage (1999): Sectorial Patterns of Interactive Learning: An Empirical exploration using an extended resource based model, Eindhoven Centre for Innovation Studies (ECIS) Working Paper.

[28] Romijin, H. and Albaladejo, M. (2002): Determination of innovation capability in small electronics and software firms in Southeast England*, Research Policy,* 31, 1053-1067.

[29] Organisational for Economic Cooperation and Development (2005): Proposed guidelines for collecting and interpreting technological innovation data: Oslo Manual, 3rd edition, Paris.

[30] Ericsson (2004): The Beauty of Network Sharing, [online] http://www.ericsson.com/solutions/news/2004/q1/20040202-network.shtml (accessed on 26 January 2013).

[31] Derban, S. (2011): Telecom infrastructure sharing as a strategy for cost optimization*,* A Thesis submitted to the Institute of Distance Learning, Kwame Nkrumah University of Science and Technology, Ghana.