

FACTORS INFLUENCING OUTSOURCING OF FUNCTIONS AS EFFECTIVE MANAGEMENT STRATEGY BY TELECOMMUNICATIONS FIRMS IN NIGERIA

*Adeyinka A. Oladokun¹, Michael G. Oladokun² and Timothy O.
Adewuyi²*

¹Department of Construction Management and Quantity Surveying, Faculty of
Engineering and the Built Environment, University of Johannesburg, Johannesburg,
South Africa

²Department of Building, Faculty of Environmental Studies, University of Uyo, Uyo,
Nigeria

ABSTRACT

Purpose: With the fierce competition in the global market, outsourcing is seen as one of the management strategies and major avenues for many firms to improve their competitiveness. Telecommunications firms have therefore used this model to achieve some critical telecommunications infrastructures. As such, this study identified, assessed and categorised into a smaller number of groups the factors influencing outsourcing of functions as effective management strategy by telecommunications firms in Nigeria.

Design/methodology/approach: The study used the survey research design. A two-stage sampling procedure was used for the study. Firstly, the telecommunications firms that took part in the study was selected using a stratified random sampling and secondly, the employees of these selected firms who are directly involved with outsourcing of functions were selected using the random sampling approach. In all, a total of one hundred and eighty (180) copies of questionnaire were administered and of this number, fifty-three (53) respondents returned complete copies of questionnaire. This study identified 18 factors influencing outsourcing of functions.

Findings: The results show that all the factors identified have means greater than 3 which shows that majority of the respondents agree that those factors are the ones actually influencing outsourcing of functions by telecommunications firms in Nigeria. 'Lower costs', and 'allow resources to focus on core business function' are rated very high as the factors influencing outsourcing of functions. Through the use of factor analysis technique, these factors were reduced and grouped into a smaller number with the dictates of what is obtainable in telecommunications firms in Nigeria. These groups are 'cost and flexibility related factors', 'quality and time related factors', 'allow resources to focus on core competency factors', and 'innovation related factors'.

¹ adeyinka_oladokun@yahoo.com

Originality/value: The study concluded that the research is illuminating in the sense that it reveals more regarding the identification, categorisation/grouping of the factors influencing outsourcing of functions by telecommunications firms in Nigeria.

Keywords: Factor analysis; facilities management; infrastructure; Nigeria; outsourcing; telecommunications firms.

1. INTRODUCTION

Outsourcing is contracting with another company or person to carry out a particular function (Rodriguez & Diaz, 2008). That is, the act of delegating responsibility for performing a task to some other entity (Krell, 2006). Outsourcing has no doubt taken the world by storm, becoming one of the major avenues for many firms to improve their competitiveness. It has been a pervasive trend over the past 20 years in the world. For example, outsourcing has been successfully implemented within the manufacturing industry (Gilley & Rasheed, 2009). It has also emerged as a major trend in many service industries, such as, telecom operator Zain (now Airtel in Nigeria) signed a deal with Ericsson to outsource the management of its network and field operations in Nigeria for a five-year term, in a bid to improve its operations in the country (Field, 2009). Outsourcing arose as a management tool of a compelling need for organisations to be more productive, more competitive and profitable (Olowa, 2009). To buttress this, Udoudoh (2015) is of the view that poor management may inhibit infrastructures from performing even to optimum level with telecommunications infrastructures not an exception.

Telecommunications market in Nigeria is a vital engine of the economy and an essential infrastructure that promotes the development of other sectors such as agriculture, education, industry, health, defense, banking, transportation and tourism (Arzika, 2000). Nigerian Telecommunications industry has witnessed significant growth over the last fourteen years, following the successful take-off of digital mobile telephone services in the country, using the Global System for Mobile communications (GSM) technology (Hassan, Oluwaranti, and Isola, 2009). From less than 500,000 fixed telephone lines as at mid-2001, the total number of fixed and mobile telephone lines increased to about 67.8 million lines as at June, 2009 (NCC, 2012). Up till the year 2001, Nigeria was classified as one of the Africa's most under-served telecommunications market, but today, Nigeria is one of the world's fastest growing telecommunications market (Ndukwe, 2006). Most of the activities, especially infrastructural development aspect, of this industry are being outsourced.

Outsourcing, on the other hand, has received increasingly attention in scientific research circle, but so far it has mainly been theoretical in nature and relied mostly on anecdotal evidence to support assertions (Shy & Stenbacker, 2003; Benjaafar, Elahi & Donohue, 2007). Moreover, most of them focus on very specific industries, for example, call centre (Ren & Zhou, 2008), information technology (Jae-Nam, Miranda & Yong-Mi; 2004), manufacturing (Dekkers, 2000), logistics (Alp, Erkip and Güllü, 2003; Ellram & Billington, 2001), facilities management (Ikediashi *et al.*, 2012; Ikediashi, Ogunlana, & Odesola, 2015). However, few empirical investigations of outsourcing (Gilley, 2009), especially in specific regions or countries have been conducted (Bush, Tiwana, and Tsuji 2008; Baily, Masson, and Raeside, 2002). For example, Bush *et al.* (2008) has attempted to empirically study the drivers of software outsourcing decisions

and Baily et al. (2002) makes a survey into the outsourcing activities. They focused on the outsourcing in Japan and in Edinburgh and Lothians, United Kingdom.

However, documented scientific research evidence in the area of outsourcing of functions by telecommunications firms in Nigeria suggests that it has received little or no attention within this research enclave. And as such, it is imperative to know the factors influencing outsourcing of functions by these firms. This is with a view to drawing lessons that will aid in developing a body of outsourcing of functions knowledge in the Telecommunications industry in Nigeria in order to unravel and uncover local realities. Specifically, the objectives of this study are to:

- i. develop a list of factors influencing outsourcing of functions by telecommunications firms in Nigeria.
- ii. assess those factors and categorise them into a smaller number of groups using factor analysis approach.

The paper is therefore structured with introduction as the first section. This is followed by the theoretical concepts underpinning the study. The third section reviews the related literature. The fourth section gives the research methods used for the study. Following on, the fifth section analyses and discusses the result of the findings. Finally, the sixth section concludes the paper and offers some recommendations for further study.

2. THEORETICAL UNDERPINNING OF THE STUDY

Outsourcing may briefly be defined as ‘the strategic and ongoing operational use of outside resources to perform activities traditionally handled by internal staff and resources’ (Syska Hennessy Group, 2005). Outsourcing decisions require a firm to determine which activities they should vertically integrate and perform using internal resources (“in-source”) and which activities they should procure from a third party supplier (“outsource”) (Syska Hennessy Group, 2005). Outsourcing has become more important in today’s increasingly competitive telecommunications environment (Chase, Jacobs, & Aquilano, 2004; Kakabadse & Kakabadse, 2003; Lankford & Parsa, 1999; Talluri & Narasimhan, 2004). Existing theory identifies the role that outsourcing can play in developing a competitive advantage for a firm. Three views of competitive advantage explain the role that outsourcing can play in increasing firm competitiveness; they are transaction cost economics (TCE), the resource-based view, and the knowledge-based view (Williamson, 1975, 1985). TCE posits that firms adopt governance structures which minimize the transaction costs (Williamson, 1975, 1985). In an outsourcing context, TCE predicts that firms will make an outsourcing decision when outsourcing results in a reduction in firm size that leads to an overall reduction in the required transaction costs (Aubert, Rivard, & Patry, 2004; Holcomb & Hitt, 2007; Kern & Willcocks, 2002; Murray & Kotabe, 1999; Schniederjans, Schniederjans, & Schniederjans, 2005). The *resource-based* view states that unique firm resources such as capital assets, capabilities, and processes enable a firm to execute strategies which can lead to efficiency and effectiveness improvements (Barney, 1991). The *knowledge-based* view opines that a core capability is a knowledge set that distinguishes one group from another and provides a competitive advantage (Leonard-Barton, 1992a). The knowledge set may take the form of employee knowledge or skills, technical systems, managerial systems, or norms and values.

3. REVIEW OF RELATED LITERATURE

Consistent with the existing literature, the motivation, objectives, and goals of a firm's outsourcing effort related to its activities as the factors influencing firm's supply chain (Fisher, Ramdas, and Ulrich, 1999; Heikkila and Cordon, 2002; Kakabadse and Kakabadse, 2000). Factors influencing outsourcing are the direct outcome of the operationalisation of a firm's competitive priorities into action plans. A thorough literature review of existing research was conducted to identify the most important factors influencing outsourcing functions by firms (Benjaafar, Elahi, & Donohue, 2007; Choi & Hartley, 1996; Frohlich & Dixon, 2001; Gottfredson *et al.*, 2005; Insinga & Werle, 2000; Kakabadse & Kakabadse, 2000; Koh & Venkatraman, 1991; Lee, 2004; Leonard-Barton, 1992b; Loh & Venkatraman, 1992; McFarlan & Nolan, 1995; Min & Galle, 1991; Narasimhan and Das, 1999; Smith, Mitra, & Narasimhan, 1998; Weber, Current, & Benton, 1991).

For example, industry experts identified cost savings as the leading factor influencing outsourcing decisions (Gottfredson *et al.*, 2005; Schniederjans *et al.*, 2005). Outsourcing often improves cost competitiveness because a firm can eliminate unproductive assets, reduce capital spending, and partner with a firm that can perform an activity at a lower cost. Cost related outsourcing factors include the selection of a partner that offers lower total, logistics, regulatory, and/or legal costs to perform an activity. Firms may also be driven to select a partner that allows access to a new market, thus increasing sales volume which leads to economies of scale. Firms that focus on flexibility when making outsourcing decisions are influenced to effectively respond to changing customer requirements (Frohlich & Dixon, 2001). Changing requirements may take the form of demand fluctuations or changes in the required product characteristics (Schniederjans *et al.*, 2005). Outsourcing factors that support flexibility include a desire to increase process responsiveness and the ability to change production volumes and supply chain activities in response to changing market demands (Choi & Hartley, 1996; Lee, 2004; Loh & Venkatraman, 1992; Narasimhan and Das, 1999; Weber *et al.*, 1991). Outsourcing an activity to multiple vendors can improve a firm's preparedness to react flexibly to the uncertainty of the service provider environment.

Hoecht and Trott (2006) opine that firms that emphasise innovativeness when making outsourcing decisions focus on rapidly delivering products featuring new technologies and novel features. Outsourcing can improve innovativeness by allowing a firm to access skills and expertise not available in-house (Hoecht & Trott, 2006; Schniederjans *et al.*, 2005). Similarly, firms may consider in-sourcing activities if it allows them to leverage unique skills and expertise not available to competitors. To accomplish this goal, factors influencing outsourcing related to innovativeness focus on the selection of sources that provide access to new technologies and expertise related to new technologies (Gottfredson *et al.*, 2005; Leonard-Barton, 1992a; Loh & Venkatraman, 1992; McFarlan & Nolan, 1995; Weber *et al.*, 1991).

Focusing on quality when making outsourcing decisions requires a firm to consider both the conformance and performance quality of products (Bozarth *et al.*, 1998; Frohlich & Dixon, 2001; Gottfredson *et al.*, 2005; Leonard-Barton, 1992a; Loh & Venkatraman, 1992; McFarlan and Nolan, 1995). The outsourcing of activities may be influenced by the availability of a vendor with superior expertise that can improve the conformance and/or performance of an activity for a firm (Schniederjans *et al.*, 2005). A firm with superior in-house skill sets may be driven to in-source an activity if its ability to perform an activity in a higher quality manner leads to an advantage over competitors. A focus on time when making outsourcing decisions implies that a firm is competing on the ability to perform

activities more quickly or speedily with better on-time performance (Frohlich & Dixon, 2001). To improve product delivery speed and the ability to develop and deliver products on-time, a firm is influenced to choose sources that can conduct activities with less lead time compared to other potential sources (Narasimhan and Das, 1999; Weber *et al.*, 1991). A firm may choose a source that offers comparatively faster process capability and reduced cycle times (Weber *et al.*, 1991).

Based on the review above, this study identified 18 distinct, common factors influencing outsourcing. These 18 factors represent the most commonly cited factors influencing outsourcing decisions; however, they do not represent a comprehensive inventory of every possible outsourcing factor. The list of these factors is shown in Table 1.

Table 1: Factors influencing outsourcing of functions

Factors influencing outsourcing of functions	Authors
1. Allow resources to focus on core competency – low cost	Gottfredson <i>et al.</i> (2005)
2. Increase volume through new market penetration	Gottfredson <i>et al.</i> (2005)
3. Lower total costs	Schniederjans <i>et al.</i> (2005)
4. Reduce logistics costs	Gottfredson <i>et al.</i> (2005)
5. Reduce regulatory and legal	Schniederjans <i>et al.</i> (2005)
6. Improve process responsiveness	Choi and Hartley (1996)
7. Increase supply chain flexibility	Lee (2004)
8. Increase volume capability	Loh and Venkatraman (1992)
9. Multiple sourcing for uncertainty preparedness	Frohlich and Dixon (2001)
10. Allow resources to focus on core competency – flexibility	Schniederjans <i>et al.</i> (2005)
11. Access to specific labour and/or technology expertise	Safizadeh <i>et al.</i> (1996)
12. Gain access to new technology	Gottfredson <i>et al.</i> (2005)
13. Allow resources to focus on core competency – quality	
14. Improve conformance quality	Frohlich and Dixon (2001)
15. Improve product performance design quality	Frohlich and Dixon (2001)
16. Allow resources to focus on core competency – time	Frohlich and Dixon (2001)
17. Improve process capability and cycle times	Weber <i>et al.</i> (1991)
18. Improve process lead times	Weber <i>et al.</i> (1991)

4. RESEARCH METHODS

After due consideration of the research problem, the scientific method of inquiry which seems most appropriate to the research has been decided in accordance with the opinion expressed by Dixon (1994). The study made use of the survey research design and this is adjudged to be appropriate because the research is exploratory and descriptive in nature. It is descriptive because it involves collection of data and analysis to test hypothesis. The target population for the study includes all the telecommunications firms in Nigeria. These consist of GSM/Fixed wireless/CDMA operators and major telecommunications vendors with their head offices in Lagos. The names and addresses of these firms were extracted from the list of accredited telecommunications firms being maintained by the NCC. A two-stage sampling procedure was used for the study. Firstly, the telecommunications firms that took part in the study was selected using a stratified random sampling and secondly, the

employees of these selected firms who are directly involved with outsourcing of functions were selected using the random sampling approach. In choosing the sample size for the study, the recommendation of Boll and Gall as given in Adetoro (1997) was used that sample size should be determined by percentage based on the population size. They suggested that 20% should be used for up to 1,000 population, 10% for up to 5,000 population, and 5% for up to 10,000 population. For the purpose of this research the sample size for the study was determined using Boll and Gall method mainly because it is very easy to use. This method was applied to fixed wireless/CDMA operator firms. All the GSM operator firms and major vendors were sampled since they are not many (Table 2).

Table 2: Sample size for telecommunications firms in Nigeria

	Population	Sample size
GSM operator	5	5
Fixed wireless/CDMA	33	7
Major vendors	6	6
Total	44	18

The sample size that was used for the study is 18 (Table 2). The number of questionnaire that were administered to each of these 18 firms were determined by the number of employees in the firms that are directly associated with outsourcing of functions. A well-structured questionnaire was designed and administered on the employees of each of the firms sampled randomly. The number of employees in each of the firms who answered the questionnaire was determined by Boll and Gall method using percentage of total number of staff in the firms that are directly involved with outsourcing of functions. This arrangement implies that questionnaire was administered in two stages. The first stage was to find out number of employees that are directly involved with outsourcing of functions for the determination of representative sample that answered the questions. Tables 3 and 4 show the questionnaire distributed and summary of response rate respectively. The response rate for this study is 29.4%. Though, it is small, one cannot totally say that it is too small for this kind of study.

Table 3: Questionnaire distribution

Telecommunications firms	Questionnaire distributed	Questionnaire returned
GSM operator 1	10	4
GSM operator 2	10	3
GSM operator 3	10	5
GSM operator 4	10	8
GSM operator 5	10	5
Fixed wireless/CDMA operator 1	10	3
Fixed wireless/CDMA operator 2	10	5
Fixed wireless/CDMA operator 3	10	2
Fixed wireless/CDMA operator 4	10	1
Fixed wireless/CDMA operator 5	10	2
Fixed wireless/CDMA operator 6	10	1
Fixed wireless/CDMA operator 7	10	3
Vendor 1	10	3
Vendor 2	10	1
Vendor 3	10	1
Vendor 4	10	4
Vendor 5	10	1
Vendor 6	10	1
Total	180	53

Table 4: Summary of response rate

Telecommunications firms	Questionnaire distributed	Number of responses	Percentage response
GSM operators	50	25	50.0
Fixed wireless/CDMA operators	70	17	24.3
Vendors	60	11	18.3
Total	180	53	29.4

5. RESULTS AND DISCUSSION OF FINDINGS

5.1. Respondents characteristics

Table 5 illustrates the results obtained. Question was asked if the respondents have been involved with some outsourcing projects before and the result shows that all the respondents (100%) have been involved with one or more outsourcing projects before. This shows that all the respondents are qualified to participate in the survey. Respondents were also asked to indicate whether or not they have managed some outsourcing projects before, the results (Table 5) show that 42 respondents out of 53 representing 79% indicated that they have managed outsourcing projects before. The implication of this is that majority of the respondents that took part in the survey are well knowledgeable about the subject matter. Respondents were also asked whether or not they have been involved in decision making in some outsourcing projects.

The result as shown in Table 5 indicates that about 60% of the respondents are decision makers regarding outsourcing projects. The remaining 40% are not involved with any decision making regarding outsourcing projects. The implication of this is that above average of the respondents are decision makers when it comes to outsourcing projects in Nigeria.

Table 5 further shows the highest academic qualifications of the respondents. 51% of the respondents indicated that master's degree is the highest level of education they possess. 34% of the respondents indicated that they hold bachelor's degree as their highest qualification, 9% indicated that Postgraduate Diploma (PGD) is their highest academic qualification, while the remaining 6% holds Higher National Diploma (HND). This shows that over 90% of the respondents hold bachelor's degree and above. The implication of this is that majority of the respondents have required academic qualification to be knowledgeable about the subject of the survey. Also, Table 5 shows the position of the respondents in their different organisations. The results indicate that 53% of the respondents are middle level managers, 28% are lower level managers, and 15% holds technical position, while the remaining 4% are top level managers. The implication of this result is that all the respondents participated in the study are holding managerial and/or technical positions. Additionally, Table 5 reveals the classification of the respondents' organisations. The results show that 47% of the respondents are working for GSM operators, 32% are working for fixed wireless/CDMA operators, while the remaining 21% are working in vendor organisation.

Table 5: Respondents' background information/general questions

	No of Responses	Percentage
Involved with some outsourcing projects		
Yes	53.0	100.0
No	0.0	0.0
Total	53.0	100.0
Involved with managing some outsourcing projects		
Yes	42.0	79.2
No	11.0	20.8
Total	53.0	100.0
Involved with decision making in some outsourcing projects		
Yes	32.0	60.4
No	21.0	39.6
Total	53.0	100.0
Highest qualifications		
HND	3.0	5.7
BSc	18.0	34.0
PGD	5.0	9.4
MSc	27.0	50.9
PhD	0.0	0.0
Total	53.0	100.0
My organisation can be classified as		
GSM operator	25.0	47.2
Fixed wireless/CDMA operator	17.0	32.1
Vendor	11.0	20.8
Total	53.0	100.0
My position in the organisation		
Top level manager	2.0	3.8
Middle level manager	28.0	52.8
Lower level manager	15.0	28.3
Technical position	8.0	15.1
Total	53.0	100.0

5.2. Analysis of factors influencing outsourcing of functions by telecommunications firms in Nigeria

A preliminary examination of the distribution indicating the mean and standard deviation is shown in Table 6. The results obtained indicate that all the identified factors have means greater than 3 which shows that majority of the respondents agree that those factors are the ones actually influencing outsourcing of functions by telecommunications firms in Nigeria. It is worthy of note to say that 'lower costs', and 'allow resources to focus on core business function' are rated very high as the factors influencing outsourcing of functions.

In a bid to fulfil objective two of this study, factor analysis approach was used in order to have a closer look at those factors influencing outsourcing of functions by telecommunications firms in Nigeria. Factor analysis enables a researcher to replace a larger data matrix which may have very little theoretical meaning with much smaller and

manageable one which tends to make sound theoretical sense. Thus, factor analysis also helps to achieve parsimony in data description.

5.2.1 Factor extraction

Table 7 shows the total variance analysis for each of the 18 identified factors influencing outsourcing of functions by telecommunications firms in Nigeria. In order to determine the number of factors that will be needed to represent the data, the percentage of total variance explained by each of the factors is examined. The total variance is given by the sum of the variance of each factor which totalled 18. Two approaches have been successfully used. Chan and Tam (2000), and Rustom and Amer (2006) made use of Eigenvalue and Screeplot approaches. Eigenvalue approach is used in this study.

Table 6: Preliminary examination of factors influencing outsourcing of functions

Factors influencing outsourcing of functions	N	Mean	Standard deviation
1. Allow resources to focus on core competency – low cost	53	4.60	0.566
2. Increase volume through new market penetration	53	3.68	0.850
3. Lower total costs	53	4.47	0.668
4. Reduce logistics costs	53	4.47	0.696
5. Reduce regulatory and legal costs	53	4.30	0.696
6. Improve process responsiveness	53	4.09	0.658
7. Increase supply chain flexibility	53	4.02	0.720
8. Increase volume capability	53	4.06	0.691
9. Multiple sourcing for uncertainty preparedness	53	3.91	0.766
10. Allow resources to focus on core competency - flexibility	53	4.49	0.639
11. Access to specific labour and/or technology expertise	53	4.15	0.632
12. Gain access to new technology	53	3.45	0.607
13. Allow resources to focus on core competency - quality	53	4.58	0.570
14. Improve conformance to quality	53	3.45	0.607
15. Improve product performance design quality	53	3.38	0.686
16. Allow resources to focus on core competency - time	53	4.58	0.497
17. Improve process capability and cycle times	53	3.38	0.686
18. Improve process lead times	53	3.42	0.663

In Eigenvalue approach (Table 7), only the factors that account for a variance greater than 1 (Eigenvalue greater than 1) are extracted out. Seventy-three percent (73%) of the total variance is attributed to the first 4 factors where these factors have an Eigenvalue greater than 1. Other 14 factors account for only about 26.7% of the total variance. In the literature reviewed, these 18 factors are mapped into five groups namely: Cost related

factors, flexibility related factors, innovativeness related factors, quality related factors, and time related factors. This research has identified that these five groups cannot work for telecommunications firms in Nigeria and that the 18 factors can be grouped into four.

5.2.2 Factor Rotation

The question of how the set of individual factors identified relate with each other has to be answered. It should be emphasised that one cannot interpret the un-orthogonal factors extracted at this stage as doing so may not yield accurate results. And so, having estimated the communalities (Table 8), inserted them in the main diagonal of the correlation matrix and extracted the un-orthogonal factors, one will have to proceed to rotate these factors so as to obtain factors which are more easily interpretable. This means that in factor analysis, the rotation of the factor matrix is highly essential.

Table 7: Total variance analysis

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.505	30.585	30.585	5.505	30.585	30.585	4.757	26.426	26.426
2	3.615	20.083	50.668	3.615	20.083	50.668	3.719	20.661	47.088
3	2.795	15.526	66.194	2.795	15.526	66.194	3.088	17.155	64.243
4	1.280	7.110	73.304	1.280	7.110	73.304	1.631	9.062	73.304
5	.976	5.420	78.725						
6	.777	4.316	83.040						
7	.684	3.802	86.842						
8	.505	2.804	89.646						
9	.444	2.466	92.112						
10	.332	1.842	93.954						
11	.288	1.598	95.552						
12	.200	1.113	96.666						
13	.159	.882	97.548						
14	.123	.683	98.231						
15	.114	.636	98.867						
16	.097	.538	99.405						
17	.068	.379	99.784						
18	.039	.216	100.000						

Rotation helps to eliminate medium loadings by maximizing the number of high and low loadings. These make interpretation more accurate. Several rotation techniques are available e.g. Oblimin and Varimax rotation methods. This study made use of Varimax technique because it is an orthogonal rotation, resulting in uncorrelated factors which are usually preferred most researchers because it assures that the factor loadings obtained are uncorrelated and independent of each other.

From Table 9, one can see that the factor analysis procedure with Varimax rotation applied to the data yielded a four-dimensional solution. The communalities (Table 8), which can be regarded as indications of the importance of the variables in the analysis are generally high (all above 48.2%). This shows that the variables selected for this study are appropriate and relevant.

Table 8: Communalities

Variable	Initial	Extraction	Variable	Initial	Extraction
1. Allow resources to focus on core competency – low cost	1.000	.904	10. Allow resources to focus on core competency - flexibility	1.000	.605
2. Increase volume through new market penetration	1.000	.870	11. Access to specific labour and/or technology expertise	1.000	.491
3. Lower total costs	1.000	.701	12. Gain access to new technology	1.000	.814
4. Reduce logistics costs	1.000	.674	13. Allow resources to focus on core competency - quality	1.000	.839
5. Reduce regulatory and legal costs	1.000	.882	14. Improve conformance to quality	1.000	.725
6. Improve process responsiveness	1.000	.665	15. Improve product performance design quality	1.000	.844
7. Increase supply chain flexibility	1.000	.482	16. Allow resources to focus on core competency - time	1.000	.570
8. Increase volume capability	1.000	.703	17. Improve process capability and cycle times	1.000	.851
9. Multiple sourcing for uncertainty preparedness	1.000	.734	18. Improve process lead times	1.000	.839

Table 9: Rotated component matrix

Variable	Component				Variable	Component			
	1	2	3	4		1	2	3	4
1.Allow resources to focus on core competency – low cost	.026	.041	.949	-.021	10.Allow resources to focus on core competency - flexibility	-.174	-.036	.734	.185
2.Increase volume through new market penetration	.198	.114	-.016	.904	11.Access to specific labour and/or technology expertise	.492	-.403	-.051	.290
3.Lower total costs	.768	-.044	-.324	.070	12.Gain access to new technology	.008	.512	.088	.737
4.Reduce logistics costs	.788	.170	-.150	.038	13.Allow resources to focus on core competency - quality	-.012	-.070	.913	-.010
5.Reduce regulatory and legal costs	.875	.022	-.335	.071	14.Improve conformance to quality	.035	.850	-.028	-.035
6.Improve process responsiveness	.810	.056	.049	.065	15.Improve product performance design quality	.062	.897	-.057	.178
7.Increase supply chain flexibility	.684	-.115	.027	.012	16.Allow resources to focus on core competency - time	-.135	-.079	.731	-.100
8.Increase volume capability	.787	.220	-.039	.184	17.Improve process capability and cycle times	.084	.909	-.049	.125
9.Multiple sourcing for uncertainty preparedness	.822	.202	.115	-.068	18.Improve process lead times	.142	.881	-.066	.194

Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization

5.2.3 *Grouping of the Factors*

The four factors which altogether accounted for 73.3% of total variance in the 18 original factors may be regarded as composite factors influencing outsourcing of functions by telecommunications firms in Nigeria.

Factor 1 accounted for 30.585% of the total variance (Tables 7 and 9) and it is without doubt the most important factor. Of the 18 factors included in the analysis, eight of them loaded positively and significantly on this factor (Table 9). They included lower total costs (factor 3), reduce logistics costs (factor 4), reduce regulatory and legal costs (factor 5), improve process responsiveness (factor 6), increase supply chain flexibility (factor 7), increase volume capability (factor 8), multiple sourcing for uncertainty preparedness (factor 9), and access to specific labour and/or technology expertise (factor 11). The above-mentioned factors are the ones that are loaded strongly, positively and significantly, except factor 11 (access to specific labour and/or technology expertise) that didn't load strongly (0.492), though it loaded positively and significantly. This factor is therefore named 'cost and flexibility related factor'.

Factor 2 accounted for 20.083 percent of the total variance (Table 7). Associated with it are four factors which loaded strongly, positively and significantly. These are factors 14, 15, 17, and 18 (Table 9). Two of the factors are quality related and the other two are time related and it can be seen that all of them are strongly loaded (the minimum being 0.850), this factor will, however, be named 'quality and time related factors'.

Factor 3 accounted for 15.526 percent of the total variance (Table 4.3). These factors loaded highly on four factors. They are 'allow resources to focus on core competency-low cost', 'allow resources to focus on core competency-flexibility', 'allow resources to focus on core competency-quality', and 'allow resources to focus on core competency-time'. This factor is therefore named 'allow resources to focus on core competency related factors'.

Factor 4 is found to account for 7.11 percent of the total variance in the original data matrix. These are factors 2 and 12. That is, 'increase volume through new market penetration' and 'gain access to new technology'. These two factors loaded highly and the factor is named 'innovation related factors'. This is because new market penetration and new technology are issues related to the innovativeness of the firms.

While carrying out the review of literature, the researcher identified 18 factors which was mapped into five groups namely by the researcher as 'cost related factors', 'flexibility related factors', 'innovativeness related factors', 'quality related factors', and 'time related factors'. This research has, however, identified that these five groups cannot work for telecommunications firms in Nigeria and that the 18 factors can be re-grouped into four based on the outcome of this research. These are 'cost and flexibility related factors', 'quality and time related factors', 'allow resources to focus on core competency factors', and 'new market penetration/technology related factors'.

6. CONCLUSION

This study identified, assessed and categorised into a smaller number of groups the factors influencing outsourcing of functions by telecommunications firms in Nigeria. In the survey conducted, 18 telecommunications firms (involving five GSM operators, seven fixed wireless/CDMA firms, and six major vendors) participated. Findings from the study indicate that all the factors identified have means greater than 3 which shows that majority of the respondents agree that those factors are the ones actually influencing outsourcing of functions by telecommunications firms in Nigeria. Particularly, 'allow resources to focus

on core competency – low cost’, ‘allow resources to focus on core competency – quality’, ‘allow resources to focus on core competency – time’, ‘allow resources to focus on core competency – flexibility’ and ‘lower costs’ are the first five most rated factors influencing outsourcing of functions.

The findings of this study is illuminating in the sense that the study reveals more regarding the categorisation/grouping of the factors influencing outsourcing of functions by telecommunications firms in Nigeria. Through the use of factor analysis technique, these factors were reduced and grouped into a smaller number with the dictates of what is obtainable in telecommunications firms in Nigeria. These groups are ‘cost and flexibility related factors’ consisting of the following factors: lower total costs, reduce logistics costs, reduce regulatory and legal costs, improve process responsiveness, increase supply chain flexibility, increase volume capability, multiple sourcing for uncertainty preparedness, and access to specific labour and/or technology expertise. The ‘quality and time related factors’ group have the following as the sub-factors: improve conformance to quality, improve product performance design quality, improve process capability and cycle times, and improve process lead times. The ‘allow resources to focus on core competency factors’ group has ‘allow resources to focus on core competency-low cost’, ‘allow resources to focus on core competency-flexibility’, ‘allow resources to focus on core competency-quality’, and ‘allow resources to focus on core competency-time’ as sub-factors, while the ‘innovation related factors’ group has ‘increase volume through new market penetration’ and ‘gain access to new technology’ as sub-factors.

The outcomes of this study have wider implications for practice and research. Firstly, this research has provided illumination and insight into the factors influencing outsourcing of functions by the telecommunications firms in Nigeria and other developing nations can draw lessons from this in order for them to unravel and uncover their own local realities. Secondly, the findings have the capability of advancing theory in the subject by adding to the pool of existing literature in the subject. This will at the same time spur research activities within this research enclave that have received limited attention among researchers in the study area.

While this research sheds new light on the outsourcing of functions in the telecommunications firms in Nigeria and one of the areas that researchers need to give proper attention is congruence between competitive priorities and outsourcing decisions. This can still be for telecommunications firms, but it is recommended that this kind of study can be expanded beyond telecommunications firms. Further, a wider study with focus to similarities and differences in the impact of outsourcing and business performance across a variety of industries with regards to infrastructure outsourcing is recommended.

REFERENCES

- Adetoro, S.A. (1997). *Research Techniques for Projects, Proposals, Reports, Theses and Dissertations*. Zaria: Ahmadu Bello University Press Limited
- Alp O., Erkip N. K., and Güllü R.. (2003). Outsourcing Logistics: Designing Transportation Contracts Between a Manufacturer and a Transporter. *Transportation Science*, Vol. 37, No. 1, pp.23-39.
- Arzika, M. (2000). *National policy on telecommunications*. www.aitinfotech.com/nationalpolicy.htm
- Aubert, B.A., Rivard, S., and Patry, M., (2004). A transaction cost model of IT outsourcing. *Information & Management* 41 (7), 921-932.

- Bailey W., Masson R., and Raeside R.. (2002). Outsourcing in Edinburgh and Lothians. *European Journal of Purchasing and Supply Management* .Vol. 8, pp.83-95.
- Barney, J., (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management* 17 (1), 99-120.
- Benjaafar S., Elahi E., Donohue, K. L. (2007). Outsourcing via service competition. *Management Science*. Vol. 53, No. 2, pp.241-259.
- Bush A. A., Tiwana A., and Tsuji H. (2008). An empirical investigation of the drivers of software outsourcing decisions in Japanese organizations. *Information and Software Technology*, 50(6), May, pp.499-510.
- Chan, A.P. and Tam, C.M. (2000). Factors affecting quality of building projects in Hong Kong. *International Journal of Quality Reliability Management*, 17(4/5), 423-441.
- Chase, R.B., Jacobs, F.R., and Aquilano, N.J., (2004). *Operations Management for Competitive Advantage* (10th ed.). Irwin / McGraw-Hill: Boston.
- Choi T.Y., Hartley J.L. (1996). An exploration of supplier selection practices across the supply chain. *Journal of Operations Management*, Vol.14, No. 4, pp.333-343.
- Dekkers R.. (2000). Decision models for outsourcing and core competencies in manufacturing. *International Journal of Production Research*, Vol. 38, No. 17, pp.4085- 4096.
- Dixon, T. (1994). The Benefits of Property Research. *Chartered Surveyor Monthly*, November/December, 4(2). 83-89.
- Ellram L., and Billington C.. (2001). Purchasing leverage considerations in the outsourcing decision. *European Journal of Purchasing and Supply Management*, Vol. 7, pp.15-27.
- Field R. F. (2009). Zain Nigeria inks outsourcing deal with Ericsson. *Bussiness Times*. October 18, 2009.
- Fisher, M., Ramdas, K., and Ulrich, K., (1999). Component sharing in the management of product variety: A study of automotive braking systems. *Management Science* 45 (3), 297.
- Frohlich, M.T., Dixon, J.R., (2001). A taxonomy of manufacturing strategies revisited. *Journal of Operations Management* 19 (5), 541-558.
- Gilley K. M., Rasheed A. (2009) Making more by doing less: an analysis of outsourcing and its effects on firm performance. *Journal of Management*, Vol. 26, No. 4, pp.763-790.
- Gottfredson, M., Puryear, R., and Phillips, S., (2005). Strategic Sourcing: From Periphery to the Core. *Harvard Business Review* 83 (2), 132-139.
- Hassan, O., Oluwaranti, N., and Isola, O. (2009). Evaluation of Nigeria's Telecommunications Policy. *Journal of Mobile Communications*. 3 (1): 1-7.
- Heikkila, J., Cordon, C., (2002). Outsourcing: a core or non-core strategic management decision? *Strategic Change* 11 (4), 183-193.
- Holcomb, T.R., Hitt, M.A., (2007). Toward a model of strategic outsourcing. *Journal of Operations Management* 25 (2), 464-481.
- Ikediashi, D.I., Ogunlana, S.O., Boateng, P., Okwuashi, O. (2015). Analysis of risks associated with facilities management outsourcing, *Journal of Facilities Management*, 10(4), 301-316.
- Ikediashi, D., Ogunlana, S., Odesola, I. (2015). Service quality and user satisfaction of outsourced facilities management (FM) services in Nigeria's public hospitals, *Built Environment Project and Asset Management*, 5(4), 363-379.
- Insinga, R.C., Werle, M.J., (2000). Linking outsourcing to business strategy. *The Academy of Management Executive* 14 (4), 58-70.

- Jae-Nam L., Miranda S. M., Yong-Mi K.. (2004). IT Outsourcing Strategies: Universalistic, Contingency, and Configurational Explanations of Success. *Information Systems Research*, Vol. 15, No. 2, June, pp. 110-131.
- Kakabadse, N., Kakabadse, A., (2000). Critical review - outsourcing: A paradigm shift. *The Journal of Management Development* 19 (8), 670-728.
- Kakabadse, A., Kakabadse, N., (2003). Outsourcing best practice: transformational and transactional considerations. *Knowledge and Process Management* 10 (1), 60-71.
- Kern, T., Willcocks, L., (2002). Exploring relationships in information technology outsourcing: The interaction approach. *European Journal of Information Systems* 11 (1), 3-19.
- Koh, J., Venkatraman, N., (1991). Joint Venture Formations and Stock Market Reactions: An Assessment in the Information Technology Sector. *Academy of Management Journal* 34 (4), 869-892.
- Krell, E. (2006). What's wrong with outsourcing and how to fix it. *Business Finance Magazine*, 12(8), 18-27.
- Lankford, W.M., Parsa, F., (1999). Outsourcing: A Primer. *Management Decision* 37 (4), 310-316.
- Lee, H.L., (2004). The Triple-A Supply Chain. *Harvard Business Review* 82 (10), 102-112.
- Leonard-Barton, D., (1992a). Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development. *Strategic Management Journal* 13 (8), 111-125.
- Leonard-Barton, D., (1992b). The Factory as a Learning Laboratory. *Sloan Management Review* 34 (1), 23.
- Loh, L., Venkatraman, N., (1992). Determinants of information technology outsourcing: A cross-sectional analysis. *Journal of Management Information Systems* 9 (1), 7-24.
- McFarlan, F.W., Nolan, R.L. (1995). How to manage an IT outsourcing alliance. *Sloan Management Review* 36 (2), 9-23.
- Min, H., Galle, W.P., (1991). International Purchasing Strategies of Multinational U.S. Firms. *International Journal of Purchasing and Materials Management* 27 (3), 9-18.
- Murray, J.Y., Kotabe, M., (1999). Sourcing strategies of U.S. service companies: A modified transaction-cost analysis. *Strategic Management Journal* 20 (9), 791-809.
- Nigerian Communications Commission. (2012). <http://www.ncc.gov.ng> Accessed on September 28, 2012.
- Narasimhan, R., Das, A., (1999). An empirical investigation of the contribution of strategic sourcing to manufacturing flexibilities and performance. *Decision Sciences* 30 (3), 683.
- Olowa (2009). Outsourcing in Nigeria. *Bussiness Times*. October 18, 2009.
- Ren J. Z., and Zhou Y. P.. (2008). Call Center Outsourcing: Coordinating Staffing Level and Service Quality. *Management Science*, Vol. 54, No. 2, February, pp. 369-383.
- Rodriguez, T.F.E. and Diaz, M.R. (2008). Effects of internal and relational capabilities on outsourcing: an integrated model. *Industrial Management and Data Systems*, 108(3), 328-345.
- Rustom, R.N., and Amer, M.I. (2006). Modelling the factors affecting quality in building construction projects in Gaza Strip. *Journal of Construction Research*, 7(1/2), 33-67.
- Schniederjans, M.J., Schniederjans, A.M., and Schniederjans, D.G., (2005). *Outsourcing and Insourcing in an International Context* (1st ed.). M.E. Sharpe, Inc.: Armonk, NY.
- Shy O., Stenbacka R.. (2003). Strategic outsourcing. *Journal of Economic Behavior & Organization*, 50, 203-224.
- Smith, M.A., Mitra, S., and Narasimhan, S., (1998). Information Systems Outsourcing: A Study of Pre-Event Firm Characteristics. *Journal of Management Information Systems* 15 (2), 61-93.

- Syska Hennessy Group (2005). *Global best practices white paper: outsourcing considerations for critical facilities*. www.syska.com.
- Talluri, S., Narasimhan, R., (2004). A methodology for strategic sourcing. *European Journal of Operational Research* 154 (1), 236.
- Udoudoh, F.P. (2015). Obtaining the best urban infrastructure services through effective management strategy in Nigeria. *Journal of Land Management and Appraisal*, 3(1), 23-29.
- Weber, C.A., Current, J.R., and Benton, W.C., (1991). Vendor Selection Criteria and Methods. *European Journal of Operational Research* 50 (1), 2-18.
- Williamson, O.E. (1975). *Markets and Hierarchies: Analysis and Antitrust Implications*. Free Press: New York.
- Williamson, O.E., (1985). *The Economic Institutions of Capitalism*. Free Press: New York.