

Factors Affecting the Choice of Project Scope Management Practices among Telecommunication Organizations

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Abstract

This study examined the factors influencing the choice of scope management practices on ICT projects implementation among telecommunication organizations in Nigeria. data were obtained through the use of questionnaire and interview to a total of three hundred and seventy five (375) respondents which include one hundred and twenty five (125) project sponsors, one hundred and twenty five (125) project managers/coordinators and one hundred and twenty five project team members on ICT projects. Data collected were analyzed using both descriptive and inferential statistics. Findings revealed that Competitive Advantage, Organizational Process Assets, Expert Judgment, Complex Activity List, Complex Project Scope Statement, Limited Resources, Fast Tracking, Project Delays, Client Demand, Technical Skills Required, Dynamism of Technology and Return on Investment were adopted factors influencing the choice of project scope management practices among telecommunication organizations.

Index terms— project scope, management practices, choice, telecommunication, organizations.

1 I. Introduction

s business needs change, Information and Communications Technology (ICT) develops in line with these changes especially in the present age of increased awareness and need. Organizations that maximize the use of new technologies found themselves dealing with projects that are difficult and expensive to implement (Ojiako et al., 2005). These projects are however embarked upon in order to meet up with several requirements. These include: contributing to organizations strategic plan, (its mission, goals and objectives), meeting up with executive sponsor requirements, technological advancement, legal requirements, commercial goals, political concerns, Government regulations, Nation building among others.

However, in order to ensure that these projects are implemented and delivered to the expectations of stakeholders, project management is embraced, especially in telecommunication industry, to proactively manage these projects such that the expected outcomes (products or services) will fulfill the purpose upon which they are embarked upon. Embracing project management to manage projects go a long way in improving upon project delivery success especially among ICT projects implemented by telecommunication organizations. However, the application of project management to manage projects are also governed by the methodologies applied but the objective remains the same, that is, improve upon project success and meet up with set project objective, goal and success criteria.

Several organizations face challenges in implementing these projects to desired expectations and these challenges do stem from improper gathering, interpretation and documentation of requirements and defining the boundary (scope) needed to fulfill project objectives. Significant efforts have been made in the identification, application and management of procedures, practices, processes, standards and methodologies towards ensuring that project requirements and scope are properly analyzed and documented to aid project delivery and success (Pmbok, 2013).

44 Project scope management is applied basically to aid the management of projects to success including ICT
45 projects embarked upon by Telecommunication organizations. It involves all the practices that will aid in ensuring
46 that all the work and only the work that are required are done on the project work. Project scope management
47 involves planning, gathering requirements, creation of work breakdown structure, verifying and controlling project
48 scope (Pmbok, 2013). It is noteworthy that organizations decide on the choice of project scope management
49 practices that they will embark upon and several factors can be responsible for the choice of project scope
50 management practices they will employ in implementing projects. These factors can combine to influence the
51 choice of practices the organization will employ to manage projects individually or translate to organization
52 standards for managing all projects. The primary objective of organizations is achieving project success and
53 reducing failures especially in a competitive environment. With the increasing competition and dynamism in
54 the ICT industry and also the need to improve upon cost savings and maximize profits, effective project scope
55 management is the most important factor that affects project success or failure (Avison and Torkzadeh, 2009).

56 2 II. Literature Review

57 Information and Communication Technology (ICT) is technology that supports activities involving the creation,
58 storage, manipulation and communication of information, together with the related methods, management
59 and application. In other words, Information Technology enables the easy way to record, store, process,
60 retrieve, and transmit information ??Robert and Murphy, 2010). It encompasses modern technologies such
61 as computers, telecommunications, facsimile and microelectronics. Older technologies such as document filling
62 systems, mechanical accounting machines, printing and cave drawings are also included in the term Information
63 Technology.

64 Emerging trends in socio-economic growth shows a high premium being placed on information and communi-
65 cation technology (ICT) by homes, organizations, and nations. This is fast making the world to become a global
66 village and the necessary tool for this process is communication of which tele-communication is a key player.
67 Projects implementation in the telecommunications sector all over the world is very rapid as one innovation
68 replaces another in a matter of weeks (Ajiboye et al., 2007). Communication without doubt is a major driver
69 of any economy. This introduction has brought about a revolution in the telecommunication sector services
70 worldwide.

71 Investments in ICT projects and training by telecommunication organizations have not totally led to massive
72 gains in corporate productivity and ultimately improvement upon nations gross domestic product (GDP). The
73 delivery of ICT projects among telecommunication organizations specifically, is failing to meet business and user
74 needs due to factors such as poorly defined scope, cost and time overruns, inadequate quality and meeting up
75 with expected features and functions to satisfy project stakeholders (CIO Magazine, 2001). Chaos manifesto,
76 2012 revealed that 39% of all projects (ICT projects inclusive) implemented in 2013 were successful (delivered
77 to time, on budget and with required features and functions), 43% were challenged (late, over budget with
78 unsatisfactory required features and functions) and 18% failed (cancelled prior completion or delivered and never
79 used). However, an increase in project success was observed over the years and this was as a result of several
80 factors such as methods, skills, costs, tools. Decisions, internal and external influences, team bonding, technology
81 and paramount amongst these is the increased awareness and introduction of project management especially in
82 the various stage of project implementation including project scope management practices needed for ICT projects
83 implementation (Heeks, 2002).

84 The introduction of project management into managing ICT projects comes with diverse methodologies.
85 Project management methodologies specify the best way to initiate, plan, execute, control and deploy projects to
86 achieve set objectives including customer satisfaction. There are several methodologies and the most suitable for
87 projects implementation are determined by considerations such as the industry, sector or project type. Whichever
88 methodology is considered or selected, they all also describe the approach for project scope management practices
89 that can be employed to accomplish project objectives. Some of the methodologies in place includes; Waterfall,
90 Agile, critical chain, critical path, scrum, PRINCE2, Project Management Institute (Varner, 2014). The Project
91 Management Institute (PMI) methodology approaches project by classifying project implementation into process
92 groups (Initiating phase, Planning phase, Executing phase, Monitoring and Controlling phase and Closing phase),
93 knowledge areas and processes. Project scope management is a knowledge area that has plan scope, collect
94 requirements, define scope, create work breakdown structure (WBS), verify scope and control scope as it processes
95 (PMBOK, 2013). These processes are the practices employed in project scope management of projects including
96 ICT projects implementation by telecommunication organizations.

97 Project scope management includes all those practices that are necessary to ensure that the project is
98 streamlined to only the required necessary work in order to achieve a necessary product, service or result. Scope
99 means what is needed to be done and scope management is the managing of what needs to be done (Wysocki,
100 2009). A well defined project scope is important for effective allocation of resources, plan expenditures, save
101 time and energy by eliminating and or reducing features that have little value to project objectives. However,
102 the process of defining scope can result in problems of the extreme if not well managed. Project definitions that
103 are too broad may lead a team into a morass of connecting issues and associated problems beyond the team's
104 resources. Project scopes that are set too narrow could restrict teams from finding root causes. The tendency is
105 to err on the side of making the scope too broad rather than too narrow (Mulcahy, 2009).

106 According to the PMI methodology, project scope management constitute the processes needed to ensure that
107 the project includes all of the work required and only the work required to complete the project implementation
108 successfully (Pmbok, 2013). There are five fundamental practices relating to project scope management
109 (Heldman, 2009). These include:

110 **3 III. Collect Requirements**

111 This is the practice whereby the customers and stakeholders expectation of the project is recorded. The captured
112 information must be elicited and analyzed in concrete detail. Requirement becomes the foundation of the work to
113 be done and serves as a guide to the cost, schedule, the quality and customer satisfaction baseline of the project
114 (Mulcahy, 2009).

115 **4 a) Define Scope**

116 Define scope is the practice of implementing a detailed documentation and description of the project and product.
117 The product scope describes the features and characteristics of the product, result or service of the project while
118 project scope describes the project work required to create the project deliverables (Heldman, 2009). Project
119 scope definition is primarily concerned with what is and is not included in the project to be implemented. Define
120 scope process usually qualifies major deliverables assumptions and initial constraints documented during the
121 project initiation stage or phase.

122 **5 b) Create work breakdown structure (WBS)**

123 This is a project scope management practice of subdividing the project goals and deliverables and work to be
124 done into smaller, more manageable units. Creation of the WBS requires the scope statement, requirement
125 documentation and organizational culture, practices and procedures. The method used to breakdown and
126 subdivide task and deliverables into smaller units is known as decomposition. The result of this process is the
127 WBS, which effectively divides goals and tasks by setting milestones, cost estimates schedule activities among
128 others (Pmbok, 2013).

129 **6 c) Verify Scope**

130 Scope verification involves the official acceptance of the completed project scope by the customer or stakeholders
131 (Schwalbe, 2011). This process is involved with formalizing the acceptance of the project deliverables. Reviews
132 are made with the customer concerning deliverables and the sponsor to en-sure that the scope is in line with the
133 initial goals of the sponsor. Several documents may be used to achieve this process including project management
134 plan, requirements documentation and validated deliverables. The main method of achieving this process is by
135 review and inspection.

136 **7 d) Control Scope**

137 This is the process of monitoring and controlling the status of the project and product scope. Control is used
138 to monitor the actual changes as they occur and integrated into the change control process. Controlling scope
139 is a challenge to many ICT projects ??Schwalbe, 2007). A reliable system must be in place to track, monitor,
140 manage, and review change to project scope. Controlling scope changes must focus on; determining if a scope
141 change is required; facilitating scope changes to ensure that changes are agreed upon; and managing the changes
142 if they happen. Throughout a project life cycle, the need for change will arise from project stakeholders however,
143 it is essential for project team members to proactively analyst, review and subject such changes to due approval
144 processes before implementation. This is achieved by having a change control system in place. The change
145 control system, handled by the project steering committee or change control board, is a process that estimates
146 the impact of the change on project scope and determines if the change will be accepted or rejected (Luckey and
147 Phillips, 2006).

148 **8 IV. Research Methodology**

149 The study covered two states of the Southwest geopolitical zone of Nigeria namely Lagos, and Oyo states. The
150 states have the largest concentrations of the telecommunication headquarters in Nigeria (NCC operators' data,
151 2013) containing details of all existing telecommunication firms in Nigeria. Twenty five telecommunication firms
152 in Nigeria were visited which consisted of five (5) Global Systems for Mobile Communications (GSM) firms; four
153 (4) Code Division Multiple Access (CDMA) firms and sixteen (16) fixed/fixed wireless firms. The ultimate goal
154 was to establish the effect of project scope management practices on projects implemented by telecommunication
155 organizations.

156 A set of questionnaire was designed and administered to a total number of 375 respondents comprising
157 125 project sponsors, project managers/ coordinators, and project team members respectively. It elicits
158 information on the factors influencing the choice of project scope management practices among telecommunication
159 organizations. These factors include: competitive advantage, organizational process assets, expert judgment,
160 complex activity list, complex project scope statement, limited resources, fast tracking, project delays, client's

11 C) CORRELATION MATRIX OF FACTORS INFLUENCING THE CHOICE OF PROJECT SCOPE MANAGEMENT PRACTICES EMPLOYED BY THE TELECOMMUNICATION FIRMS

161 demand, technical skill required, dynamism of technology and return on investment. The data gathered were
162 treated and subjected to analysis using descriptive and appropriate inferential statistics.

163 Inferential statistics such as correlation, Analysis of Variance (ANOVA) were used to examine the factors
164 influencing the choice of project scope management practices on ICT projects implemented by telecommunication
165 organizations.

166 9 V. Results and Discussion

167 10 a) Scope Management Practices Employed on Projects 168 among Telecommunication Firms

169 Table 1 presents the detailed analyses of the scope management practices employed on projects among
170 telecommunication organizations. According to the mean rank shown in the result, the major scope management
171 practices employed by the organizations were; Define Project Scope (4.00), Create Work Breakdown Structure
172 (4.07), Verify Scope (3.81) and Control Scope (3.72). All these factors had the mean rank of 3.5 and above.
173 The result also showed that, among the five scope management practices employed by the firms, only Collect
174 Requirement had a very low mean rank of 1.95. The reason for this may be the fact that projects are progressively
175 elaborated. This is in conformity with the findings of (Litten, 2013). 2 the highest (58.5%) proportion of the
176 respondents agreed that competitive advantage is a significant factor that affects the choice of project scope
177 management practices employed in the organizations. Also, Organizational Process Assets was agreed to be
178 slightly significant (38.7%) and moderately significant (21.7%) to the choice of project scope management practices
179 employed in the organizations, Expert judgment was also agreed to be slightly significant (41.5%) and moderately
180 significant (45.3%) to the choice of project scope management practices employed in the organizations. It was also
181 revealed that the highest percentage of the respondents (85.8%) agreed that Complex Project scope statement is
182 a significant factor that affects the choice of project scope management practices employed in the organizations.

183 The analysis further revealed that majority (60.9%) of the respondents agreed that Client's demand is very
184 significant to the choice of project scope management practices, Dynamism of technology (64.6%) and Returns
185 on the investment (52.5%) are also significant to the choice of project scope management practices employed by
186 the firms. Lastly, Fast-tracking (65.6%), Project delays (50.5%), Client's demand, and Technical skill required
187 (69.2%) were factors that significantly affect choice of project scope management practices employed by the
188 organizations.

189 The summary of these results revealed that twelve factors were identified and ranked proceeding to the
190 extraction exercised. Only four of these factors were extracted. The implication of these results is that these four
191 factors accounted for 4.00 and above of the variances observed as ranked in the analysis and critical for scope
192 management practices in the Telecommunication firms. KEY: 1 = Not significant, 2 = Slightly significant, 3
193 = Moderately significant, 4 = Significant, 5 = Very significant It can be deduced from the result that in order
194 for telecommunication organizations to provide better value on similar products offered to customers among
195 other competitors, they tend to match their existing core competencies with available opportunities so as to
196 become the market leader. Also the study is in conformity with Project Management Institute report (2004)
197 that Telecommunication organizations employ project scope management practices in projects implementation
198 in order to be able to meet up with the clients demand and their expectations.

199 The implication of these results is that while the contributions of other extracted factors on choice of project
200 scope management practices employed in the organizations should not be ignored; special attention should be
201 given to these four critical factors (Competitive Advantage, Complex Project Scope Statement, Clients' Demand
202 and Return on Investment). The knowledge and understanding of the contributions of these major factors are
203 very pertinent towards the choice of project scope management practices employed among telecommunication
204 organizations.

205 11 c) Correlation Matrix of Factors Influencing the Choice 206 of Project Scope Management Practices Employed by the 207 Telecommunication Firms

208 Table 3 shows the Correlation matrix of the existing relationship the listed factors have on choice of project
209 scope management practices employed by telecommunication organizations. The result revealed that only six
210 out of the twelve factors; Organizational process assets ($r = .448^{**}$: $p < 0.05$), Expert judgment ($r = .261^{**}$:
211 $p < 0.05$), Complex project scope statement ($r = .260^{**}$: $p < 0.05$), Limited resources ($r = -.425^{**}$: $p < 0.05$),
212 Client's demand ($r = .533^{**}$: $p < 0.05$), and Returns on investment ($r = .309^{**}$: $p < 0.05$) were shown to have a
213 significant relationship with the choice of project scope management practices employed in the firms. The six
214 factors were tested at 0.05 level of significance.

215 12 d) ANOVA Results of Factors for the Choice of Project

216 Scope Management Practices Table 4 shows the Analysis of Variance results of the factors for the choice of project
217 scope management practices employed in the firms from the opinion of the respondents. The result revealed that
218 there was a significant difference ($F = 4.027$, $P = 0.045$) in the opinion of the respondents that 'competitive
219 advantage' is a factor for the choice of project scope management practices employed in the organizations. Also,
220 'organizational process' asset had a significant difference ($F = 44.804$, $P = 0.0001$) with the choice of project
221 scope management practices employed in the organizations. 'Expert judgment' had a significant difference ($F =$
222 4.452 , $P = 0.037$) with the choice of project scope management practices employed in the organizations, 'complex
223 activity list' had a significant difference ($F = 60.014$, $P = 0.0001$) with the choice of

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225 Volume XVI Issue III Version I Year () project scope management practices employed in the firms, 'complex
226 project scope statement' had a significant difference ($F = 10.435$, $P = 0.0021$) with the choice of project scope
227 management practices employed in the organizations, 'limited resources' had a significant difference ($F = 10.230$,
228 $P = 0.0001$) with the choice of project scope management practices employed in the organizations, 'fast tracking'
229 had a significant difference ($F = 30.738$, $P = 0.0021$) with the choice of project scope management practices
230 employed in the organizations. However, the results showed that there was no significant difference ($F=2.910$, P
231 $= 0.091$) in the opinion of the respondents on 'project delay' as it affects the choice of scope management practices
232 employed by the organizations. The results further shows that there was no significance difference ($F=0.210$,
233 $P = 0.648$) in the opinion of the respondents on 'client's demand' as it affects choice of scope management
234 practices employed by the organizations, there was no significance difference ($F=.021$, $P = 0.886$) in the opinion
235 of the respondents on 'technical skill required' as it affects choice of scope management practices employed by
236 the organizations, there was no significance difference ($F=1.283$, $P = 0.272$) in the opinion of the respondents on
237 'dynamism of technology' as it affects choice of scope management practices employed by the organizations, there
238 was no significance difference ($F=2.706$, $P = 0.103$) in the opinion of the respondents on 'return on investment'
239 as it affects choice of scope management practices employed by the organizations.

240 14 VI. Conclusion

241 The study investigated project scope management practices among organizations in the telecommunication sector
242 in Nigeria and examined the determinant factors for the choice of project scope management practices employed
243 in the organizations.

244 The study revealed that major project scope management practices employed by telecommunication firms
245 were define project scope, create work breakdown structure, verify scope, and control scope. The factors
246 shown to significantly influence the choice of project scope management practices were competitive advantage,
247 organizational process assets, complex activity list, complex project scope statement, limited resources, fast
248 tracking, and expert judgment. The studies further revealed that the key significant impact of project scope
249 management practices on project success were customer expectation, customer satisfaction, resource allocation
250 and project duration.

251 The adoption of project scope management practices by telecommunication organizations in Nigeria are
252 majorly affected by 'Competitive advantage', 'Complex project scope statement', 'Client demand' and 'Return
253 on investment'. This will eventually ensure profitability, better return on investment and continued market share.

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Figure 1: KEY: 1 =

1

Parameters	5	4	3	2	1	Mean rank	SD
Collect Requirements	24 (25.5)	50 (53.2)	20 (21.3)	-	-	1.95	.68
Define Project Scope	23 (23.5)	48 (51.1)	23 (24.5)	-	-	4.00	.70
Create Work Breakdown Structure	27 (28.7)	47 (50.0)	20 (21.3)	-	-	4.07	.70
Verify Scope	7 (7.4)	63 (67.0)	24 (25.5)	-	-	3.81	.54
Control Scope	7 (7.4)	54 (57.4)	33 (35.1)	-	-	3.72	.59

Source: Field Survey (2014).

Figure 2: Table 1 :

2

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Factors	Competitive	5 -	4 62(58.5)	3 3 (2.8)	2	1 -	Mean
Global advantage	Organizational		12(11.3)	23(21.7)	41(38.7)	17(16.0)	3.68
Process Assets					41(38.7)		4.56
Expert judgment		-	12(11.3)	44(41.5)	48(45.3)	-	3.69
Complex Activity list		-	3 (2.3)	19(17.9)	32(30.2)	3	3.61
						(2.8)	
Complex Project scope	statement	9	91(85.8)	3 (2.8)	-	-	4.03
		(8.5)					
Limited resources		3	69(74.2)	21(22.6)	-	-	3.81
		(3.2)					
Fast-tracking		8	42(65.6)	14(21.9)	-	-	3.91
		(12.5)					
Project delays		2	48(50.5)	42(44.2)	3 (3.2)	-	3.52
		(2.1)					
Client's demand		56(60.9)	33(35.9)	-	-	3	4.51
						(3.3)	
Technical skill required		1	54(69.2)	20(25.8)	3 (3.8)	-	3.68
		(1.3)					

Figure 3: Table 2 :

3

	1	2	3	4	5	6	7	8				
Factors	1.00											
CA	-.173	1.00										
OPA	.448 **	.264	1.00									
EJ	.261 **	.476 **	.172	1.00								
CAL	.187	.372 **	.955 **	-.176	1.00							
CPSS	.260 **	.158		.235 *	.443 *	-.216 **	1.00					
LR	-.425 **	-.108	.261 *	.533 **	-.456 **	-.321		1.00				
FT	-.139	-.016		.176	.527 **	-.043	.771 **	-.516	1.00			
PD	-.207 *	-.135	.292 **	.004		-.007	.200	-.503 **	-.026			
CD	.533 **	-.074	-.160	-.441 **	.115	-.317 **	.360 **	-.166				
TSR	-.085	-.093		.115	.879 **	-.217	.426 **	.275	.360 **	.178		
DoT	.157	.094	.442 **	.518 **	.267 *	.441 **	-.458 *	.409 **	.378 **	-.084	1.00 **	1.00
RoI	.309 **	.236 *	-.035				.012	.044	-.102	-.096 *	-.436 **	-.06

*Significant at 0.05 (two tailed)
 **Significant at 0.05 (two tailed)

Figure 4: Table 3 :

4

FACTORS		Sum	of	Df	Mean	F	Sig.
		Squares			Square		
	Between Groups	1.197		1	1.197	4.027	.045
CA	Within Groups	30.331		102	.297		
	Between Groups	26.155		1	26.155	44.804	.000
OPA	Within Groups	51.955		89	.584		
	Between Groups	1.944		1	1.944	4.452	.037
EJ	Within Groups	44.114		101	.437		
	Between Groups	13.347		1	13.347	60.014	.000
CAL	Within Groups	12.010		54	.222		
	Between Groups	1.903		1	1.903	10.435	.002
CPSS	Within Groups	18.057		99	.182		
	Between Groups	19.960		1	3.266	17.230	.000
LR	Within Groups	3.266		91	.190		
	Between Groups	7.105		1	7.105	30.738	.000
FT	Within Groups	14.332		62	.231		
	Between Groups	.968		1	.968	2.910	.091
PD	Within Groups	30.279		91	.333		
	Between Groups	.138		1	.138	.210	.648
CD	Within Groups	58.609		89	.659		
	Between Groups	.007		1	.007	.021	.886
TSR	Within Groups	24.980		76	.329		
	Between Groups	.638		1	.638	1.283	.272
DoT	Within Groups	30.800		62	.497		
	Between Groups	1.726		1	1.726	2.706	.103
RoI	Within Groups	60.603		95	.638		

Figure 5: Table 4 :

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