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Evaluation of Software Project Failure and Abandonment in Tertiary Institutions in Nigeria

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Abstract
Many organizations have embraced software development project only to abandon it later after considerable time and effort has been put in it. Project abandonment occurs when either problems arise in perceiving, analysing, designing, or configuring the system objectives or the technological basis for the system and its behavioural, political, or organizational issues directly or indirectly affect ways to bring the project to a successful completion within the estimated budget and schedule constraints, or when organizational environmental factors combined to reduce the project's expected benefits or increase its expected costs. The study is investigative in nature using questionnaire method to collect data directly from the respondents. The research subjects were heads of computer units in government-owned tertiary institution in the South-East and South-South geopolitical areas of Nigeria who are expected to be well-informed about projects carried out in their organizations. The findings of the study, though preliminary in nature indicates software projects failure and abandonment as multifaceted issue defying easy explanations. Paying attention to these factors during software project development can help avoid failure and increase successful completion of the project.
Keywords: project management, abandonment, failure, software project, warning signals

1. Introduction

Information Technology (IT) investment accounts for over one quarter of capital budget of any organization, yet many software projects are cancelled completely, completed late, overrun budgets, or fails to deliver the promised business capabilities and financial return on investment. Addison and Vallabh, (2002) discover that the failure rate of software project has been proven to be high, and the incidence of failure is becoming worse as more companies venture into software development. According to Standish Group Report (2004), an international research and professional organizations only 40% of software projects in the world are completed in time and within budget, while 60% of the projects are either cancelled or abandoned. The report revealed that US government and businesses spend approximately $81 billion on cancelled software projects, and $59 billion for budget overruns, only one-sixth of all IT projects were completed on time and within budget (Standish Group, 2004). Generally, one-third of all software projects were cancelled outright, well over budget, behind schedule, and contain only 50% of the original features. Unfortunately, software projects in Nigeria are not exception in this aspect. One of the major causes of cost and time overrun in Nigeria public sector projects is restarts. Some projects can have many restarts before they succeed. For example, Nation Identification card project was proposed in 1963(Akinlabi, 2010), reconceived in 1979 during Obasanjo's military administration as Department of National Civil Registration under Decree 51. Every successive administration allocated annual fund to it until 2001 when the same Obasanjo, as a President of Nigeria revived it as National Identity Management Commission (NIMC) and established Committee on Harmonisation of National Identity Cards in 2006 to review existing ID card projects and recommend ways of integrating them into a single multi-application card (Punch Editorial Board, 2013). The project is yet to achieve its objectives despite gulping over forty billion naira (₦40B) of Nigeria economy.

Looking at what is meant by project failure and abandonment, May (1998) views it from practitioners' perspective as any software project with severe cost or schedule overruns, quality problems, or suffers outright cancellation. But Ewusi-Mensah and Przasynski (1991) see failure as the consequence of dwindling expectations of the implemented system and abandonment as temporary or permanent discontinuation of a project under development. Johanna Rothman (2008) is of the opinion that abandon is a light word compared to what happened to the project. She argues that the project has been stopped permanently meaning that it is killed for life and will not be revisited or restarted again. Whether it is killed permanent or put on the parking lot, what we mean by abandoning the project is that the development of that project has been stopped and no budget or resources is assigned to it as of now. A research study (Ewusi-Mensah & Przaanyski, 1991)asserted that 35% of abandoned projects are not abandoned until the implementation stage of software development life cycle. While software project failure and abandonment has been an issue of research in many publications (Ewusi-Mensah & Przaanyski, 1991; Kappelman, McKeeman, & Zhang, 2006; Jones, Bruce, Klasnja, & Jones, 2007), little or no attention has been given to developing countries like Nigeria. This work answers the following questions. In what way does Requirements Specifications contribute to software project success or failure? In what way does Cost and schedule estimation affect project success or failure? To what extend do conflicts among stakeholders

affect the success of software projects. The study will also check whether the knowledge or expertise of the project Team personnel contributes to project success or failure. Finally the paper considers the effect contract scam and corporate politics on projects. The study concentrates on these six and not cover the other 46 areas listed in Kappelman et al (2006) such as project definition and planning, change and management, communication, Skill requirements, System Input, organizational culture, and others too many to mention.

2. Related works

The study covers only six warning signal areas where project failure and abandonment is paramount comprising end user participation or involvement, requirements specifications, cost and schedule estimation, relationship among stakeholders, project team personnel and contract scam and corporate politics. Ewusi-Mensah and Przaanyski (1991) saw user involvement and participation as an integral part of project development group because they may be the initiators of the project. Requirements specification has a rule for the project to succeed (keep it simple), which mean requirements must be to the point, straight forward, and unambiguous (Goldstein, 2005). Estimation of cost and schedule are the most complicated of all as it is difficult to estimate schedules and costs with acceptable accuracy and consistency as in Addison and Vallabh (2002). Any project of significance has many stakeholders who contribute resources for the project to succeed and the relationship among them is important for the project to achieve its target (Kappelman L. A., 2010). Issues surrounding project team personnel include their corporation, willingness, and knowledge of the software to be developed.

Information technology projects evaluation is a thing of concern with top management in many organizations. Ewusi-Mensah and Przaanyski (1991) attribute it to the escalating development cost of software projects and their great potential for affecting the strategic and competitive nature of the industry. Inadequate nature of the user input, stakeholder conflicts, ambiguous requirements, unrealistic cost and schedule estimation, inept technical experts, hidden cost of downsizing, failure to plan, communication breakdown, ignorance of approaching disaster are contributing factors to project abandonment(May, 1998). Lyytinen and Hirschehelm (1987) also confirm that software project failures continue in organization despite immense progress and improvements made in the development processes.

Jones et al (2007), present the following factors that emerged as particularly compelling and frequently-cited reasons for systems abandonment: visibility, scalability, co-adoption, return on investment and integration. Tarawneh (20110 classified these factors into: organizational, people, culture, and technical. What he called culture factor is more or less organizational issue, therefore the culture factor is considered as organizational factors. While Redmond (1996) categorizes the factors into four broad categories: People, Process, Product, and Technology. Software projects can be abandoned due to cost overrun, non-involvement of end-users, overly ambitious schedule, bloated and constant changing requirements, and management turbulence among others (Ewusi-Mensah & Przaanyski, 1991). Software project failure and abandonment can occur when any of these factors is present during development life cycle.

The Standish Group survey found that the number one reason that IS projects succeed is because of user involvement (Standish Group, 2004). User participation is a vague concept covering many approaches which may have varied drawbacks and benefits. Cavaye (1995) defines user participation as a set of activities and operations performed by the end users during software development. Harris and Weistroffer (2008) investigated fourteen published articles to determine the significance of user participation in project development. They conclude that users with functional expertise develop negative attitude toward the system being developed if the feel being left out, thus jeopardise the success of that project. Another aspect of user involvement occurs when requirements are elicited from stakeholders who are not regular user of the existing system. Inputs from highly knowledgeable users without hidden assumptions and conflicts will assist the developer in understanding the system and its environment (May, 1998). End users may be the initiator of the project by providing the necessary requirements essential to the project team. Thus, their expectations are major inputs in the evaluation of the project progress (Ewusi-Mensah & Przaanyski, 1991). In Kujala's (2003) study of how to improve the understanding of user involvement and its worth in practice, show that ineffective participation may result in low quality of the system, costly system features, bloated requirements or changing requirements frequently that results in scope creep, and negative attitude of the users towards the project. Users participation and understanding of the needed requirements is a major factor to be considered in minimizing or containment of software project failure and abandonment

Some projects have more requirements than they need right from the beginning. Performance is stated as requirements more often than it needs to be, and that can unnecessarily lengthen a software schedule. Users tend to be less interested in complex features than marketing and development are, and complex features add disproportionately to a development schedule. May(1998) points out that requirements are bloated to impress the stakeholders that the developer knows what to do and justify the funding. Project can fail if the developing team is unable to meet the technical specifications set forth in the requirements (Ewusi-Mensah & Przaanyski, 1991). The stakeholders may not have good ideas on what the project should do initially and they will be revising and

refining their ideas as the project progresses, thus overshooting the scope of the project (Addison & Vallabh, 2002). Even if you're successful at avoiding requirements gold-plating, the average project experiences about a 25-percent change in requirement over its lifetime (Jones, 1994). Such a change can produce at least a 25-percent addition to the software schedule, which can be fatal to a rapid development project. Many users are unaware of the effects of constant changes in software development, it is appropriate for project managers to distinguish desirable functionality from absolutely necessary functionality. According to Masters (2009), one obvious solution is to establish a reasonable requirements baseline at the onset and then control scope creep to the barest minimum.

It is unjust to term a project as failure if it fails to meet cost and schedule targets that were integrally unachievable (May, 1998). Every software project has a minimum attainable schedule and cost, any attempt to avoid this minimum limit backfires. Most contractors accept projects with known unrealistic cost and schedule with the hope of skimping some activities. Skimping leads to weak design, dramatically higher defect densities, much more rework and virtually endless testing. Addison and Vallabh (2002) suggest flexible schedule. Projects that skimp on upstream activities typically have to do the same work downstream at anywhere from 10 to 100 times the cost of doing it properly in the first place according to Fagan 1976; Boehm and Papaccio, 1988. They believe that fixed schedule leads to pressure and that people working under pressure produce either unsatisfactory results or nothing at all. According to Galorath (2013)**, t**he challenges faced by someone building a three-month application are quite different from the challenges faced by someone building a one-year application. Setting an overly optimistic schedule sets a project up for failure by under scoping the project, undermining effective planning, and abbreviating critical upstream development activities such as requirements analysis and design in agreement with Bowley (2011). It also puts excessive pressure on developers, which hurts developer morale and productivity.

Conflicts among stakeholders affect the success of project when stakeholders could not acknowledge deep incompatibilities in their business interests; they misconstrue that everybody will get whatever they wanted. Friction between developers and customers can arise in several ways. Customers may feel that developers are not cooperative when they refuse to sign up for the development schedule that the customers want, or when they fail to deliver on their promises. Developers may feel that customers unreasonably insisting on unrealistic schedules or requirements changes after requirements have been the baseline. There might simply be personality conflicts between the two groups. Projects in Nigeria normally are the bone of contention when a new administration takes over. These projects are cancelled because the new administration either does not like the outgoing one or will like to get a share in the project cost. May (1998) discover that project managers may be liaising with the wrong stakeholder, while sidetracking the main person who will decide the success or failure of the project. The true and deciding stakeholders need to assess the project in fragments rather than en masse. The primary effect of this friction is poor communication resulting poorly understood requirements, poor user-interface design, and in the worst case, customers' refusing to accept the completed product. Many Software developers do not have overview of the project especially when it is large. They have no clue of how their own pieces of work should fit into the whole architecture (May, 1998). Project managers should ensure that communication channel is open to all stakeholders to avoid failure. Although it is important to keep a record of communication, team members should be encouraged to communicate in person according to Dan Hope (2014), send reminders and reports through email. This boost team morale, good atmosphere and communication skills. Sometimes, friction between customers and software developers is so severe that both parties consider cancelling the project (Jones 1994). Such friction is time-consuming to overcome, and distracts both customers and developers from the real work of the project. One of the most common causes of friction between developers and their customers or managers is unrealistic expectations. Although unrealistic expectations do not in themselves lengthen development schedules, they contribute to the perception that development schedules are too long, and that can be almost as bad. A Standish Group (2004) survey listed realistic expectations as one of the top five factors needed to ensure the success of an in-house business-software project.

Individual capabilities of the team members and their relationship as a team probably have the greatest influence on productivity (Boehm, 1981, Lakhanpal, 1993). Projects involving high technology need managers with solid technical skills. This is not so in public sector projects in Nigeria; decisions are made by people with no technical expertise in the project area yet they had all authority. The main issue is getting a good manager that can get above-average results from average employees rather than getting a mediocre manager that squanders the potentials of great employees (May, 1998). Hiring from the bottom of the barrel threatens a rapid development effort. Failure to deal with problem personnel also threatens development speed. This is a common problem and has been well-understood at least since Gerald Weinberg published *Psychology of Computer Programming* in 1971. Failure to take action to deal with a problem employee is the most common complaint that team members have about their leaders (Larson and LaFasto, 1989). Some software developers place a high emphasis on project heroics, thinking that the certain kinds of self-assurance can be beneficial (Bach 1995). But emphasizing boldness in any form usually does more harm than good. A small development team may hold an organisation

hostage if they refuse to acknowledge that there is problem meeting their schedule. An emphasis on heroics encourages extreme risk taking and discourages cooperation among stakeholders in the software-development process.

There are many ways politics subvert projects goals and jockeying for position makes people protect the decision maker, promising what will cost them fortune to fulfill (Scheindler, 2013). For example, the NIMC project awarded to a French contractor Sagem at $214M attracted a scam of $2M for the awarding committee members. According to the Punch publication (Amaefule, 2012), *"The contract was marred in 2003 by allegations that Nigerian officials collected more than $2m bribes to influence the award of the contract.* It achieved little but got enmeshed in several controversies that saw to wastage of billions of oil revenue money. Putting politics over results is fatal to speed-oriented development. Statutory organizations sometimes contract out projects which can be developed in-house by inflating the cost to their own personal gain. But contractors frequently deliver project that is late, with unacceptable low quality, or fails to meet specifications (Boehm, 1989). Schedules and budgets are determined by people who are political appointees and developers are scared to say no even when the estimates are unrealistic. Kappelman et al (2006) point out that failed IT projects reveal that long before the failure, there were significant symptoms or early warning signs of trouble. These warnings are ignored by the developing team and no one dares to mention it to the *big bosses* for fear of losing out. As the work goes on, most milestones may not be on schedule yet, no corrective action taken; not until the project deadline is few weeks ahead that anyone dares to inform the decision makers of the impeding danger. Risks such as unstable requirements or ill-defined interfaces can be magnified when contractors are brought into the picture. If the contractor relationship is not managed carefully, the project can be slow down rather than speed up, thereby missing vital milestones and deadlines.

3. Research Methodology

The purpose of field research design is to study the background, current status, and environmental interactions of a given social unit, in this case tertiary institutions in South-East and South-South geopolitical areas of Nigeria. The field of education research has provided frameworks for categorizing different types of research designs, methods, and strategies (Isaac & Michael, 1997). Descriptive survey methods are used to capture the quantitative and qualitative variables that are important to model the minimization of software project failure and abandonment. In this light, the research approach adopted for this work is a combination of field research and quasi-experimental research. The nature of the research questions played the major role in determining the selection of these approaches. There are 60 tertiary institutions and 11 states in the south-east and south-south geopolitical areas of Nigeria with focus on heads of ICT units but only two institutions from each state participate in the study. Convenience sampling is used since it is one of the purposive or non-probability sampling procedures where the participants are those that the researcher has accessibility to. Questionnaire method which is used to obtain information from the respondents contains two sections: demographical information and the research questions. For effective data analysis, Likert scale consisting of five items comprising strongly agree, agree, neutral, disagree, strongly disagree was used to measure attitude or opinion of the respondents in an analytical survey (Jamieson, 2004). The questionnaire contained 24 questions of which 22 is based on identifying the warning signals of project failures and abandonment and the result will be used to carry out the evaluation and draw inference about the whole population.
The models involved are:

Cronbach Alpha: For reliability, the internal consistency method provides a unique estimate of reliability for the given model using Cronbach's alpha developed by Rosenberg (Cronbach, 1951). It is expressed as the correlation as follows:
$\alpha = Np/[1+p(N-1)]$, where N equals the number of questions and p equals the mean inter-question correlation.

Relative Importance Index (RII): based on the work of Lim and Alum (Lim & Alum, 1995).
$RII = (5Y_5 + 4Y_4 + 3Y_3 + 2Y_2 + Y_1)/5N$, where N = number of respondents
Response using Likert rating: Strongly Disagree $\mathbf{Y_1}$, Disagree $\mathbf{Y_2}$, Neutral $\mathbf{Y_3}$, Agree $\mathbf{Y_4}$, Strongly Agree $\mathbf{Y_5}$

Regression Model: In multiple linear regressions, there are several independent variables or functions of independent variables. In the more general multiple regression model, there are *p* independent variables:

$$y_i = \beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_p x_{ip} + \varepsilon_i$$ (Freedman, 2005)

where x_{ij} is the i^{th} observation on the j^{th} independent variable, and where the first independent variable takes the value 1 for all *i* (so $\boldsymbol{\beta}_1$ is the regression intercept).
The least squares parameter estimates are obtained from *p* normal equations. The residual can be written as

$$\varepsilon_i = y_i - \hat{\beta}_1 x_{i1} - \ldots - \hat{\beta}_p x_{ip}$$

The **normal equations** are

$$\sum_{i=1}^{n}\sum_{k=1}^{p} X_{ij}X_{ik}\hat{\beta}_k = \sum_{j=1}^{n} X_{ij}y_i$$

j = 1, 2, ... , p

SPSS is used to generate this multiple regression model

4. Research Findings

4.1 Demographic Analysis

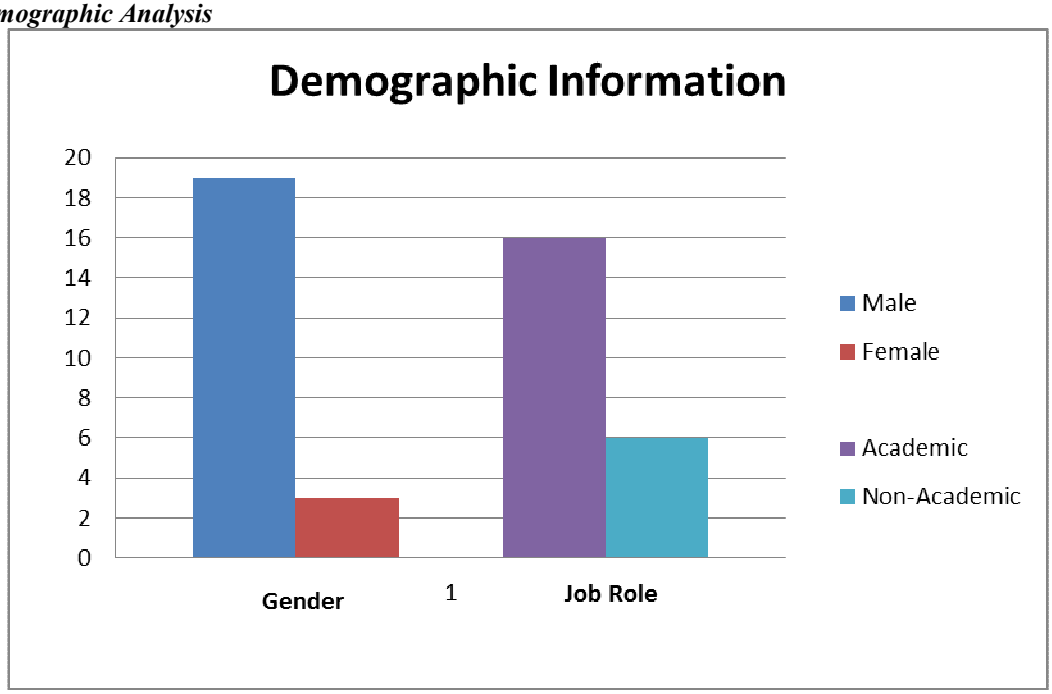

Figure 1: Gender and Job Role

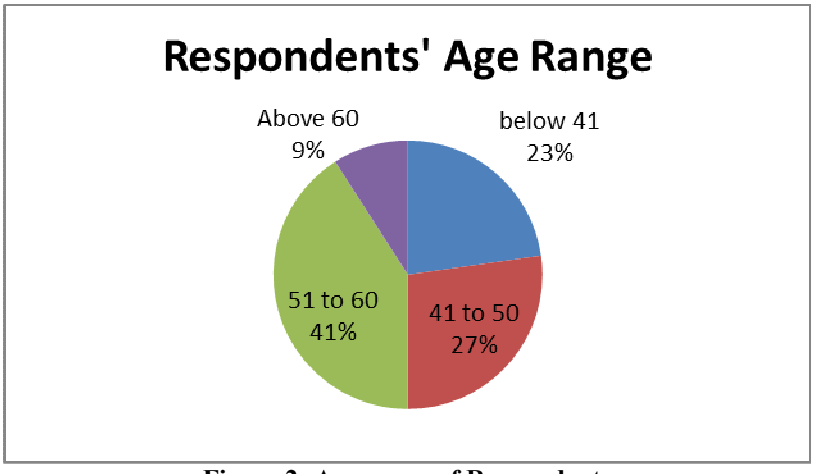

Figure 2: Age range of Respondents

The result presented below summarizes the view of respondents. A total of 22 heads of ICT unit participated in the survey out of 30 who were contacted showing 73% response rate but 86% are male. The survey also determined whether the Head is an academic (faculty member) or non-academic where the participated Heads of ICT unit stands for. Responses from the academic staff formed a larger proportion of the total respondents of 72.73% as shown in figure 1. Figure 2 depicted the age range of the participants showing that those between 51 to 60 management the ICT unit mostly with 41% with only 9% above 60. This means that those above 60 must have either retire or are no longer in service.

4.2 Data Analysis

To test the strength of the relationship between the independent variables (End-user Involvement, Requirement Specification, Cost Estimation, Relationship among Stakeholders, Project Team, and Contract Scam and Corporate Politics) and the dependent variable (Failure and Abandonment), the Pearson's product-moment correlation coefficient was used for each of 22 questions forming the six categories. A regression analysis was carried out on the construct from the reliability test for the purpose of testing the validity and reliability of the study's two (null and alternative) hypotheses: H_o: *Noncompliance to Factors contributes to Project Failure and Abandonment, and; H_1: Noncompliance to Factors does not contribute to Project Failure and Abandonment.* The test statistics was computed using the SPSS Package's Reliability, Regression and Correlation function on the combined data or responses from respondents. The values of the regression and correlation coefficients and the ANOVA table were imported directly from SPSS.

4.2.1 Cronbach Alpha Analysis

The SPSS output shown on Table 1 above indicates that the Cronbach's Alpha score for the questions forming the first category was 0.928, second category was 0.78, third category was 1.01, fourth category was 1.13, fifth category was 1.00, and sixth category was 0.97. This shows that there is high level of consistency between the items (questions) being tested in each category except for second category which has medium stake testing. The correlation coefficients of all the categories were calculated, though requirements specifications play a major role in influencing the project situation.

Table 1: Cronbach Alpha

Factor Group	Cronbach alpha, α
End user participation or involvement	0.92785
Requirements Specifications	0.7803
Cost and schedule estimation	1.01082
Relationship between developers and customers	1.13312
Project Team personnel	1.00505
Contract scam and corporate politics	0.966667

Mean respondents 78.95455
SD respondents 6.607912
Variance respondents 43.6645

Cronbach's α = N/(N-1)*(1-(sum of variance/variance of respondents), or $\alpha = Np/[1+p(N-1)]$,
where N = 22 questions
Cronbach's α= 1.02310726501477, If $\alpha \geq 0.9$, then Excellent (High-Stakes testing)

Analysing the effect of the questions using Cronbach alpha, α, revealed that the questions used provide excellent testing because $\alpha \approx 1$, which is greater than 0.9. The mean output as shown is generated from Table 1 shows how the answer is either right (1) or wrong (0), the mean ranges from 0 to 1. If $\alpha = 0.9$ indicates that the question is fairly easy and thus 90% of the testers scored it. It is a common mistake that people look at each item individually and throw out the item that appears to be too difficult or too easy. Indeed, the entire test is taken into consideration.

4.2.2 Relative Importance Index (RII) Analysis

Table 2: Percentage Response

Factor	Y_1	%	Y_2	%	Y_3	%	Y_4	%	Y_5	%
End-users were actively involved in the project formulation	11	50	2	9.1	6	27	3	14	0	0
Management approved of end-user participation in requirements elicitation	5	23	6	27	5	23	6	27	0	0
End-users are frightened about the effect of the project on their job	5	23	0	0	9	41	8	36	0	0
The requirements specification followed the principle of "keep it simple"	13	59	7	32	0	0	2	9.1	0	0
The requirements described at a high level what functions the program should perform	13	59	6	27	3	14	0	0	0	0
The requirements were clear, precise, and complete	15	68	4	18	3	14	0	0	0	0
Requirements were elicited from different stakeholders	8	36	7	32	0	0	7	32	0	0
Available resources were adequate to meet the project completion	8	36	0	0	4	18	8	36	2	9.1
Activities were mapped out in accordance with available resources	7	32	2	9.1	8	36	5	23	0	0
Deadlines and milestones were strictly adhered to	7	32	2	9.1	8	36	5	23	0	0
Developers/Customers relationship affect the progress of the project	15	68	2	9.1	2	9	3	14	0	0
There is effective communication between developers and customers	9	41	2	9.1	9	41	2	9.1	0	0
Developers act on feedback from customers	13	59	7	32	0	0	0	0	2	9.1
Customers are able to contribute towards improvements of system via frequent opportunities available	10	45	7	32	0	0	5	23	0	0
There is a set of shared objectives among team members	8	36	9	41	3	14	0	0	2	9.1
Teams' effectiveness are often discussed by team members	10	45	7	32	5	23	0	0	0	0
There is close communication among team members for the purpose of achieving teams' objective	3	14	13	59	3	14	3	14	0	0
Project budget was unrealistic	0	0	2	9.1	5	23	10	45	5	23
The project was outsourced due to lack on in-house experts	2	9.1	0	0	5	23	8	36	7	32
The project was outsourced despite the presence of in-house experts	0	0	0	0	7	32	7	32	8	36
Present administration are not in agreement with the project objectives	2	9.1	0	0	8	36	5	23	7	32
Project fund is usually been redirected elsewhere	0	0	5	23	0	0	6	27	9	41

Table 3: Relative Importance Index

Factor	Y_1	Y_2	Y_3	Y_4	Y_5	RII
End-users were actively involved in the project formulation	11	2	6	3	0	0.41
Management approved of end-user participation in requirements elicitation	5	6	5	6	0	0.51
End-users are frightened about the effect of the project on their job	5	0	9	8	0	0.58
The requirements specification followed the principle of "keep it simple"	13	7	0	2	0	0.32
The requirements described at a high level what functions the program should perform	13	6	3	0	0	0.31
The requirements were clear, precise, and complete	15	4	3	0	0	0.29
Requirements were elicited from different stakeholders	8	7	0	7	0	0.45
Available resources were adequate to meet the project completion	8	0	4	8	2	0.56
Activities were mapped out in accordance with available resources	7	2	8	5	0	0.5
Deadlines and milestones were strictly adhered to	7	2	8	5	0	0.5
Developers/Customers relationship affect the progress of the project	15	2	2	3	0	0.34
There is effective communication between developers and customers	9	2	9	2	0	0.44
Developers act on feedback from customers	13	7	0	0	2	0.34
Customers are able to contribute towards improvements of system via frequent opportunities available	10	7	0	5	0	0.4
There is a set of shared objectives among team members	8	9	3	0	2	0.41
Teams' effectiveness are often discussed by team members	10	7	5	0	0	0.35
There is close communication among team members for the purpose of achieving teams' objective	3	13	3	3	0	0.45
Project budget was unrealistic	0	2	5	10	5	0.76
The project was outsourced due to lack on in-house experts	2	0	5	8	7	0.76
The project was outsourced despite the presence of in-house experts	0	0	7	7	8	0.81
Present administration are not in agreement with the project objectives	2	0	8	5	7	0.74
Project fund is usually been redirected elsewhere	0	5	0	6	9	0.72

The RII are low because respondents see most of these factors as lacking in their institution and they believe they should be given consideration during software development. Using relative importance index, the analysis shows that the main causes of project failure and abandonment in Nigeria are contract scam and corporate politics with an average of 0.72 RII while requirements elicitation has on average 0.40 RII. This is in agreement with (Ewusi-Mensah & Przaanyski, 1991; Masters, 2009), which state that project fails when project team is unable to meet the technical specifications set forth in the requirements. The respondents agree that requirements specifications and strongly agree that project team play major role in the success of project.

In end user involvement and participation, 50% of the respondents viewed it as lacking during software project development and this gives relative importance index of 0.5 on average. Clear, precise, and complete requirements has the highest percentage of 68 as those who strongly disagree that requirements specification was given due consideration during project development and this factor contributes to project abandonment. This has a relative important index of 0.34.

On projects team factor45% of the respondents strongly disagree that there are effective communication and collaboration among team members, thus giving a relative important index of 0.35. This agrees with Freese and Sauter(2003) who say that project requires that all team members have a clear understanding of their roles and duties in the project. They must understand how expectations versus achievements will be measured and graded. It is left to the project manager to properly implement the communication of these responsibilities, to provide feedback, and to assure all understand that for which they will be held accountable. Contract scam and corporate politics has 36% of the respondents agreeing that it is a main cause giving relative importance index of 0.72 and this concurs with what happens in NIMC project (Punch Editorial Board, 2013). Moreover, management sometimes embarks upon gigantic projects for personal ego without much consideration to funding and relevance. Sometimes, projects are mismatched when there is no clear vision on how the project can be useful to the organization.

4.2.3 Correlation Analysis

Table 4: Correlation Analysis

		End-user participation and involvement	Requirements Specifications	Cost and schedule estimation	Relationship between developers and customers	Project Team	Contract scam and corporate politics
End-user participation and involvement	Pearson Correlation	1	0.471	.969**	0.575	0.174	-0.314
	Sig. (2-tailed)		0.424	0.007	0.31	0.78	0.607
	N	22	22	22	22	22	22
Requirements Specifications	Pearson Correlation	0.471	1	0.396	.982**	0.715	-0.878
	Sig. (2-tailed)	0.424		0.509	0.003	0.174	0.05
	N	22	22	22	22	22	22
Cost and schedule estimation	Pearson Correlation	.969**	0.396	1	0.53	-0.034	-0.154
	Sig. (2-tailed)	0.007	0.509		0.358	0.956	0.805
	N	22	22	22	22	22	22
Relationship between developers and customers	Pearson Correlation	0.575	.982**	0.53	1	0.619	-0.821
	Sig. (2-tailed)	0.31	0.003	0.358		0.266	0.088
	N	22	22	22	22	22	22
Project Team	Pearson Correlation	0.174	0.715	-0.034	0.619	1	-.951*
	Sig. (2-tailed)	0.78	0.174	0.956	0.266		0.013
	N	22	22	22	22	22	22
Contract scam and corporate politics	Pearson Correlation	-0.31	-0.878	-0.154	-0.821	-.951*	1
	Sig. (2-tailed)	0.607	0.05	0.805	0.088	0.013	
	N	22	22	22	22	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4 above shows the correlation analysis based on the individual responses for each of the six categories of the factors that contained project failure and abandonment. To allow for objective testing, the correlation analysis was based on two-tailed tests, meaning that the correlation between the independent and dependent variables was tested for both directions, that is, positive and negative directions from the significant level or either 0.01 and 0.05. There is a positive correlation between variables except for contract scam and corporate politics which has negative correlation with other variables. These relationships are strong as indicated by their high values, thus both variable increases and decreases simultaneously while negative correlation imply that an increase in one variable is associated with a decrease of the other variable. It is equally important to point out that the highest value of a correlation coefficient is ±1. A 2-tailed specifies how statistically significant a correlation between variables is, that is, increase or decrease in one variable do or do not significantly relate to increase or decrease of the other variable. When significant (2-tail) values are less than or equal to 0.05, the conclusion is always that there is a statistically significant correlation between the variables (Cochran, 2007; Saldana, 2012). Therefore, the high significant levels in almost all the correlation boxes can be interpreted to mean that a change in one variable may not necessarily indicate a change in the other. This means each of the six variables have a somehow independent influence on project failure. However, the purpose of this study was to measure how these variables collectively influence project failure and abandonment and not how each individual variable influences it.

4.2.4 Regression Analysis

To describe the statistical relationship between the independent and dependent variables, regression analysis was conducted. The ANOVA (analysis of variance) framework computed using SPSS package captures the statistical relationship between the outcome variable and the predictor variables. This analysis was carried out along the six categories of questions highlighted above.

Table 5: ANOVA table

ANOVA [a]						
Model		Sum of Squares	Degrees of freedom	Mean Square	F	Sig.
1	Regression	14.096	4	3.524	5.911	007
	Residual	14.904	25	.596		
	Total	29.000	29			

a. Dependent variable: Failure & Abandonment

b. Predictor variables: End-user Involvement, Requirement Specification, Cost Estimation, Relationship among Stakeholders, Project Team, and Contract Scam & Corporate Politics

The F-value was used to capture the appropriateness of the regression model in testing the statistical relationship between the dependent and predictor variables. Like the preceding analyses, the F-value was computed using the SPSS package 21, with F-value of 5.911 indicating a relatively low chance of some of the regression parameters being zeros or that the statistical relationship between the predictor variables and the outcome variable is not purely random. Further, a very small difference between the regression value of 14.096 and residual value of 14.904 indicates that there is a very small difference between what was expected and what was observed in the study. This also supports the appropriateness of the regression model in analysing the data. The significance level for the statistical relationship between the dependent variable (Failure & Abandonment) and predictor variables (End-user Involvement, Requirement Specification, Cost Estimation, Relationship among Stakeholders, Project Team, and Contract Scam & Corporate Politics) is .007. This shows that the strong statistical relationship between the predictor variables and the outcome variable is valid.

4.2.4 Regression Coefficients

Table 6: Regression Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients
	B	Std. Error	Beta
(Constant)	-0.245	2.323	
End-user participation and involvement	1.019	0.15	0.969
Requirements Specifications	0.869	0.097	0.982
Cost and schedule estimation	0.922	0.136	0.969
Relationship between developers and customers	-0.334	0.073	-0.377
Project Team	-0.946	0.109	-0.717
Contract scam and corporate politics	-0.72	0.136	-0.951

a. Dependent variable: Failure & Abandonment

b. Predictor variables: End-user Involvement, Requirement Specification, Cost Estimation, Relationship among Stakeholders, Project Team, and Contract Scam & Corporate Politics

Even without extending the test to Turkey's Honestly Significant Difference (HSD) test for Post hoc comparisons of mean effects when there is statistical significance as in this case, the regression coefficients in table 4-3a below shows that End-user Involvement contributes more towards project failure and abandonment as other predictor variables are held fixed, followed by Cost and Schedule Estimation with regression coefficients of 1.019 and 0.922 respectively. Table 5 above shows Beta values that are less than 1 for all the predictor variables indicating low volatility in the statistical relationship between the predictor variables and the outcome variable. Contract Scam and Corporate Politics has the lowest likelihood of volatility with a Beta-value of -0.951 while Requirements Specification has the highest likelihood of volatility with a Beta-value of 0.982.

5. Discussion

The descriptive statistical analysis as well as the regression and the correlation statistics for the entire sample confirm that factors used have major influence project failure and abandonment. The results presented in section four above shows that the level of End-user Involvement, Requirement Specification, Cost Estimation, Relationship among Stakeholders, Project Team, and Contract Scam & Corporate Politics contribute to project failure and abandonment. This strong relationship is supported by Table 4 above where an *F-value* of 5.911 indicates that the statistical relationship between software project failure and abandonment is not based on randomness. Further, a *significant level of .007* shown on Table 4 indicates that the relationship between the outcome (containment of failure & abandonment) and predictor variables (End-user Involvement, Requirement Specification, Cost Estimation, Relationship among Stakeholders, Project Team, and Contract Scam & Corporate Politics) is valid. This sweeping finding seems to concur greatly with the views of many researchers (Charette, 2012; Ewusi-Mensah & Przaanyski, 1991), who were of the opinion that if software project failure and abandonment is communicated properly, the damage to the morale of the team will be minimal; therefore giving them more hope in future. This argument draws its impetus from the correlation results that there is a positive relationship between project team and contract scam and corporate politics, an indicator that team

communication and cooperation influences project failure and abandonment

6. Conclusion

As expected, this finding was in tandem with the reviewed literature where it emerged that user involvement and participation as an integral part of project development group because they may be the initiators of the project. For software project to succeed stakeholders must adhere to rule of Keep It Simply Simple (KISS), which means requirements must be to the point, straight forward, and unambiguous. The models used in this study aid in evaluating the root causes (factors) of project failure and abandonment, which if addressed will reduce the effects of software project abandonment in tertiary institutions in Nigeria. Keeping track of these factors and putting some plans in place to minimize their occurrence will increase the probability of successful software project result. These models also show factors that will jeopardize software project success more if not addressed properly. There are other factors which were not considered here. However, future studies should seek to expand on this study area by looking at other public institutions in Nigeria.

7. References

Addison, T., & Vallabh, S. (2002). Controlling Software Project Risks - An Empirical Study of Methods used by Experienced Project Managers. Proceedings of SAICSIT , 128-140.

Akinlabi, A. (2010). Nigeria National Identification Card: Its Costs and Benefits. Retrieved June 5, 2014, from www.gamji.com/article6000/NEWS6202.htm

Amaefule, E. (2012, October 28). How National Identification Management System will stimulate development. The Punch Newspaper .

Bowley, R. (2011). Estimation is at the root of most software project failure. Retrieved July 22, 2014, from http://blog.robbowley.net/

Butler, J. G. (2012). A History of Information Technology and Systems. Arizon USA: University of Arizon.

Cavaye, A. (1995). User Participation in System Development revisited. Information and Management , 28, 311-323.

Charette, R. N. (2012, November). US Airforce Blows $1 Billion on Failed ERP Project. Retrieved May 20, 2014, from IEEE Spectrum: http://spectrum.ieee.org/riskfactor/aerospace/military/

Cochran, W. G. (2007). Sampling Techniques. New Delhi: Wiley India Pvt Limited.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika , 16 (3), 297–334.

Engelhardt, S. (2008). The Economic Properties of Software. Jena Economic Research Papers 2 , 18–45.

Ewusi-Mensah, K., & Przaanyski, Z. (1991). On Information System Project Abandonment: An Exploratory Study of Organizational Practices. MIS Quarterly , 67-86.

Freedman, D. A. (2005). Statistical Models: Theory and Practice. Cambridge UK: Cambridge University Press.

Frese, R., & Sauter, V. (2003). Project Sucess and Failure: What is Success, What is Failure, and How can you Improve your Odds for Sucess? Retrieved June 15, 2014, from http://www.umsl.edu/~sauterv/analysis/6840_f03_papers/frese/

Galorath, D. (2013). Reasons for Estimation failure. Retrieved July 22, 2014

Gliem, J. A., & Gliem, R. R. (2003). Calculating, Interpreting, and Reporting Cronbach's Alpha Reliability Coefficient for Likert-Type Scales. Midwest Research to Practice Conference in Adult, Continuing, and Community Education .

Goldstein, H. (2005). Who Killed the Virtual Case File. Retrieved May 20, 2014, from http://spectrum.ieee/computing/software/

Harris, M., & Weistroffer, H. (2008). Does User Participation lead to System Success. Proceedings of the Southern Association for Information Systems Conference, (pp. 1-6). Richmond, VA, USA.

Heemstra, F., & Kusters, R. (1996). Dealing with Risk: A Practical Approach. Journal of Information Technology , 11, 333-346.

Hope, D. (2014). Warning Signs that can help you avoid Project Failure. Retrieved May 20, 2014, from http://online.project_management-review/

Isaac, S., & Michael, W. B. (1997). Handbook in Research and Evaluation. San Diego, CA: EdITS.

Jamieson, S. (2004). Likert Scales: How to (Ab)use Them. Medical Education , 38 (12), 1217-1218.

Jones, E., Bruce, H., Klasnja, P., & Jones, W. (2007). Five Factors that Contribute to the Abandonment of Information Management Strategies.

Kappelman, L. A. (2010). Material Financial Risks of IT Projects: The Early Warning Signs of Failure. Interpreter IASA .

Kappelman, L. A., McKeeman, R., & Zhang, L. (2006). Early Warning Signs of IT Project Failure: The Dominant Dozen. Information Systems Management , 23 (4), 31-36.

Khatavakhotan, A. T., & Ow, S. (2011). MRMM: A Mathematical Risk Management Model for Iterative IT Projects based on the Smart Database. International Journal of Information and Electronic

Engineering , 1 (3), 229-233.
Kujala, S. (2003). User Involvement: A Review of the Benefits and Challenges. Behaviour and Information Technology , 22 (1), 1-16.
Kutner, M. H., Nachtsheim, C. J., & Neter, J. (2004). Applied Linear Regression Models, 4th ed. Boston, USA : McGraw-Hill/Irwin.
Lim, E., & Alum, J. (1995). Construction Productivity Issues Encountered by Contractors in Singapore. International Journal of Project Management , 13 (1), 51-58.
Lyytinen, K., & Hirschehelm, R. (1987). Information Systems Failure - A Survey and Classification of the Empirical Literature. Oxford Surveys in Information Technology , 4, 257-309.
Masters, M. (2009). Eliminating Ambiguity from your Requirements. Retrieved July 22, 2014, from www.modernanalyst.com/resources/
May, L. (1998). Major causes of Software Project Failures. CrossTalk: The Journal of Defense Software Engineering , 9-12.
Punch Editorial Board. (2013, November 7). Controversial National Identity Card Project. Punch Newspaper .
Redmond, W. (1996). Rapid Development: Taming Wild Software Schedule. Microsoft Press.
Rothman, J. (2008). Abandoning vs Killing Project. Retrieved July 2, 2014, from www.jrothman.com/blog
Saldana, J. (2012). The Coding Manual for Qualitative Researchers (2nd ed.). London: Sage Publishing Ltd.
Scheindler, E. (2013, June 26). 7 Signs your Project is Headed for Failure. Retrieved May 20, 2014, from http://quickbase.intuit.com/blog/
Sinovcic, I., & Hribar, L. (2010). How to improve Software Development Process using Mathematical Models for Quality Prediction and Elements of Six Sigma Methodology. IEEE Xplore .
Standish Group. (2004). CHAOS Rreport. West Yarmouth, MA: The Standish Group International Inc.
Tarawneh, H. (2011). A Suggested Theoretical Framework for Software Project Success. Journal of Software Engineering and Applications , 646-651.
Voropajev, I. V., & Gelrud, Y. D. (2012). Mathematical Model of Projects Management for Interested Parties. PM World Journal , 1 (3), 1-20.

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