Measuring the contribution of conflict resolution dexterity among stakeholders to effective software engineering projects in Nigeria

[1]Adanma Cecilia Eberendu; [2]Edem Okon Peter Akpan; [3]Emmanuel.C Ubani; [4]Kelvin A. Okorocha
[1] *Department of Computer Science, Madonna University Nigeria*
[2] *Faculty of Engineering, Akwa Ibom State University, Ikot-Akpaden, Nigeria*
[3 & 4] *Department of Project Management Technology, Federal University of Technology Owerri, Nigeria*

Abstract
When actions of a stakeholder interfere, obstruct, or make another stakeholders performance ineffective, conflict occurs. Conflict can occur among software engineering stakeholders due to disagreement on methodology, technology, tools to be used, personality, stakeholder requirements, or misconception of the problem which might deprive software project from succeeding. Success is subject to a large extent on whether or not stakeholders have thrived to establish a supportive environment. Conflict among project stakeholders is inevitable, but what is wrong in most cases is the form it takes. For software engineering project to succeed, project organization need to resolve conflict as soon as it is notice. This study empirically evaluates the effect of conflict resolution dexterity to effective software engineering projects in Nigeria. It used survey to gather data from 130 respondents which was analyzed using Pearson correlation coefficient and Regression analysis. It was discovered that conflict resolution dexterity significantly contributes to effective software engineering projects in Nigeria.

Keywords: *Conflict resolution dexterity, Software engineering projects, Stakeholder management, Project stakeholders, Conflict*

Introduction

Project stakeholders have different personalities, mindsets, perceptions, and knowledge of the project, with the same objective. In software projects, clients usually demand state-of-art product, developers want straightforward implementation, and sponsors want cost-effective system. These discrepancies in interest of the stakeholders can be a major cause of conflicts in project. The interests of these stakeholders must be aligned and set expectations from the project before the project can succeed (Shahu, Pundir, & Ganapathy, 2012).

Another cause of conflict is change in project scope at the middle of the implementation especially from the management because the project developers are bound to disagree with that. Even when the developing team agrees, conflict may arise when there is a request for additional resources to meet up with the change and project manager might not be happy to work with limited resources according to Li, Ng, and Skitmore, (2012). Conflict may also arise due to disagreement over method of communication. Since stakeholders differ, their preferred mode of communication will also differ; compelling every stakeholder to one method of communication might be annoying unless a consensus is reached before using the method (Yang, Shen, Ho, Drew, & Chan, 2009).

In order to bring software projects to successful completion, conflict need to be resolve as quickly as possible before it escalates into major dispute. Amicable resolution of conflict helps stakeholders to collaborate with one another to allow the flow of activities in the project. Although, software engineering projects in Nigeria have been victims of failure, abandonment, challenged, and restarts, conflict resolution strategy among stakeholders can go a long way to help software projects in Nigeria to succeed. Unfortunately little attention has been given to study the effects of conflict resolution on software projects. This research is carried out to examine whether conflict resolution dexterity among stakeholders contributes to effective software engineering projects (SEPs) in Nigeria.

Related Literatures

Conflict is inevitable in software engineering project (SEP) due to the involvement of various stakeholders from different backgrounds and orientations in the project. According to Susser (2012), it occurs in a situation where the stakeholders involved in a software

project are aware of the dependencies between project participants in the context of solving project activities.

Yang et al (2009) recognized that conflicts and coalitions among stakeholders should be analyzed as well. Conflicts in SEP may involve external or internal stakeholders or both (Moura & Teixeira, 2010). According to Li et al. (2012), conflicts among external stakeholders are difficult to resolve due to diversity or lack of established procedures for tackling them. Freeman et al (2007) believed that analyzing the conflicts and coalitions among stakeholders is a critical factor in stakeholder management. El-Gohary et al. (2006) proposed guidelines for resolving conflicts among stakeholders, which can be applied before or after dispute. The guideline includes facilitation, negotiation, mediation and arbitration while Chen and Chen (2007) opined that effective communication among stakeholders helps in achieving mutual solution during conflict.

Conflict can arise from differences in values, attitudes, requirements, expectations, perceptions, resources, and personalities. The project managers are required to have the ability to solve problems, provide milestones to ensure the conclusion of compromises, solve personal differences, and ultimately resolve conflicts (Li, Lu, & Peng, 2011). Developing conflict resolution skills can assist project managers and other stakeholders to handle and resolve conflicts effectively Chua (2009). Li et al (2011) outlined five strategies for conflict resolution in projects as shown in table 2.

Table 2: Conflict Resolution Strategies

Confronting	Described as problem solving, integrating, collaborating or win-win style, that is, the conflicting stakeholders meet face-to-face and collaborate in open and direct communication to reach an agreement that satisfies them.
Compromising	Conflicting stakeholders negotiate and agree on mutually acceptable solution. The stakeholders give up something in order to reach a decision and leave with some degree of satisfaction.
Smoothing	This approach highlights the areas of agreement and downplays the areas of disagreement. The project manager might forfeit his own requirements and expectations in order to satisfy the requirements and expectations of the other stakeholders.
Forcing	This occurs when one stakeholder imposes requirements to others while disregarding the requirements and expectations of the other stakeholders.
Avoiding	This involves postponing or withdrawing from the situation for the meantime. It is a temporary measure because the problem or conflict will reoccur again.

For SEP to succeed, the conflict level should be minimized. Forum should be created for all stakeholders to express their requirements and expectations relating to the project and this will help stakeholder to believe that the project manager is open to understand each stakeholder's interest. In order to minimize project failure, project managers also need good communication skills to detect and reconcile conflicts early among stakeholders. Assudani and Kloppenborg (2010) implored project management teams to acquire negotiation and communication skills capable of managing expectations of key stakeholders. Sometimes, adversarial relationship might exist between developing team and other stakeholders due to project teams overriding other stakeholders' requirements to suit their own purpose. It is important to balance communication in a way that sufficiently reminds the stakeholders of the project objectives without inundating them with messages (Cadle & Yeates 2008).

Methodology

In order to achieve the aim of this research, 180 questionnaires were disseminated to individuals who work in public establishment that develop software and those that have been involved in the development of software. This choice is because these stakeholders have been involved in software projects and were in the best position to judge the performance of such projects. Only 130 questionnaires were returned and analyzed using SAS 9.4 program.

The researcher used a statistical tool (Pearson Correlation Coefficient and Regression Analysis) to analyze the data collected with the questionnaire and to establish whether there is any significant relationship between the conflict resolution dexterity and effective SEPs in Nigeria.

Results and Discussions

Research Question: To what extent does conflict resolution dexterity among stakeholders contribute to effective SEPs in Nigeria?

Table 1: The Correlation Procedure for Conflict Resolution Dexterity among Stakeholders and Effectiveness of SEPs in Nigeria

The CORR Procedure

2 Variables: Effectiveness and Conflict Resolution Dexterity

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
Effectiveness	130	63.30769	14.64243	8230	27.00000	97.00000	Effectiveness
Conflict Resolution Dexterity	130	30.82308	7.62743	4007	13.00000	50.00000	Conflict Resolution Dexterity

Pearson Correlation Coefficients, N = 130

Prob > |r| under H0: Rho=0

	Effectiveness	Conflict Resolution Dexterity
Effectiveness	1.00000	0.57118
Effectiveness		<.0001
Conflict Resolution Dexterity	0.57118	1.00000
Conflict Resolution Dexterity	<.0001	

Table 1 indicates that the Pearson's correlation coefficient (R) between Conflict Resolution Dexterity among Stakeholders and SEPs effectiveness is obtained as 0.57. This indicates a strong positive linear relationship between conflict resolution dexterity among stakeholders and effective SEPs in the organizations under study. It shows that over the years, organizations with high conflict resolution dexterity among stakeholders also experienced high SEPs effectiveness. We therefore conclude that conflict resolution dexterity among stakeholders contributes to effective SEPs in Nigeria to a relatively high extent.

The result indicates that it is wrong to ignore the stakeholders or attempt to impose a rigid detailed control on the project stakeholder relationship. These are challenging and demands which the project organization cannot overlook, but have to take into consideration and address. The obtained results are in line with the findings of Shahu, Pundir, and Ganapathy (2012). Project manager, as a representative of project organization, has the responsibility to realize the change of stakeholders' influence and relationships, promote a steady relationship with them, and communicate with them properly and frequently to avoid conflict (Li et al., 2012).

Test of Hypothesis

Null hypothesis: Conflict resolution dexterity among stakeholders does not significantly contribute to effective SEPs in Nigeria

Alternative hypothesis: Conflict resolution dexterity among stakeholders significantly contributes to effective SEPs in Nigeria

Table 2: The Regression Procedure for Conflict Resolution Dexterity among Stakeholders and Effectiveness of SEPs in Nigeria

The REG Procedure

Model: MODEL1

Dependent Variable: EFFECTIVENESS

Number of Observations Read 130

Number of Observations Used 130

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	9023.09549	9023.09549	61.98	<.0001
Error	128	18635	145.58279		
Corrected Total	129	27658			

Root MSE	12.06577	R-Square	0.3262
Dependent Mean	63.30769	Adj R-Sq	0.3210
Coeff Var	19.05893		

Parameter Estimate

Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	29.51052	4.42148	6.67	<.0001
Conflict Resolution Dexterity	Conflict Resolution Dexterity	1	1.09649	0.13928	7.87	<.0001

Table 2 shows that the regression model for the effect of Conflict Resolution Dexterity among Stakeholders on SEPs effectiveness is obtained as:

Model 1: $Y = 29.51052 + 1.09649\ X$ (1)

Where

Y = Effectiveness of SEPs in Nigeria

X = Conflict Resolution Dexterity among Stakeholders

Regression analysis was conducted to empirically determine whether conflict resolution dexterity was a significant determinant of effective SEPS in Nigeria. Regression results in table 2 indicate the goodness of fit for the regression between conflict resolution dexterity and effective SEP was satisfactory.

Model 1 confirms that there is a positive linear relationship between Conflict Resolution Dexterity among Stakeholders and Effectiveness of SEPs in Nigeria. Table 2 also shows that the computed F-value for Model 1 is 61.98 with a significance probability of <0.0001, which is less than 0.05. Thus, the test is significant ($P < 0.05$) at 5% level of significance. We therefore reject the null hypothesis and accept the alternative hypothesis. Consequently, we conclude that conflict resolution dexterity among stakeholders significantly contributes to effective SEPs in Nigeria. However, the R-square value of 0.3262 shows that

Model 1 explains only about 32.6% of the variations in Effectiveness of SEPs in Nigeria. This implies that an increase in conflict resolution dexterity by 1 unit leads to an increase in effective SEPs by 1.09649. Thus the model is not suitable for prediction purposes since it does not account for up to 75% of the variations in Effectiveness of SEPs in Nigeria, even though Li et al (2012) asserted that managing conflict contributes to project success. There is a positive linear relationship between Conflict Resolution Dexterity among Stakeholders and Effectiveness of SEPs in Nigeria. This is indicated by the computed F-value (61.98) with a significance probability of <0.0001, which is less than 0.05. This concludes that conflict resolution dexterity among stakeholders is important to effective SEPs in Nigeria. In addition, Susser (2012) emphasized that conflict ridden projects rarely succeed because the opponents will not allow the proponents to act and project might linger over its due date.

The findings agree with those of Moura and Teixeira (2010) and Winch (2004) which demonstrated that there is a positive relationship between the effectiveness of projects and conflict resolution dexterity.

Conclusion

The study evaluates how conflict resolution dexterity among project stakeholders contributes to effective software engineering projects in Nigeria. The result suggested that the objective set at the beginning of the study was verified statistically at 5% level of significance which proved that conflict resolution dexterity contributes significantly to effective SEP in Nigeria. The result revealed that there is a positive relationship between conflict resolution dexterity and effective SEPs in Nigeria. This finding agrees with Karn and Cowling (2008) who concluded that SE projects should not be conflict free; rather, they should be conflict managed. It is the management that is more important because of its contribution to project success. Therefore, an increase in conflict resolution dexterity leads to an increase in effective SEPs. Further studies can be carried out to investigate how conflict affects collaboration among project stakeholders.

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