PROJECT MANAGEMENT AND ORGANIZATIONAL PRODUCTIVITY

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Abstract

Project management are becoming an integral part of every aspect and activity in the organizations that are crucial to survive in a competitive environment, and thus has a general idea that it's a "problematic endeavour". In project management, three criteria (cost, time & quality) have been used for measuring project management success. However, the objectives of this research is to: assess the effect of time performance of project on organizational efficiency; determine the impact of cost performance of project on organizational profit; and analyze the effect of quality performance of project on customer satisfaction of software companies. This study is intended to cover the assessment of project management and organization productivity in Interswitch Nigeria Limited & Union Systems Limited, this study applied qualitative research designs. From a population of 41 and 1,084 employees of Union Systems Limited and Interswitch Nigeria Limited respectively, this research took 82 employees from the project management department of both organizations as it. The copies of questionnaire were be distributed by the researcher directly to the target respondents within the population. Data analysis was conducted using software SPSS 19 (Statistical Package for Social Sciences) Version 23 and Microsoft excel 2007 by applying techniques of descriptive analysis (means and standard deviations) and inferential analysis using regression analysis to reveal the impact of time, cost and quality performance of project on organizational productivity. The result of the study confirmed that timely completion of project such as deadlines, schedule, and milestone have significant impact on organizational efficiency. The study also confirmed that cost management of project have significant impact on organizational effectiveness. Lastly. The third major findings brought to light is that quality delivery have significant impact on customer satisfaction.

Keywords: Project management, time performance, cost performance. Quality performance, organizational productivity.

Introduction

Nowadays, most of the organizations are managing projects in a very complex environment. Development of new product, implementation of new policies and outsourcing, proper system of implementation and development are considered as key project initiatives of an organization (Project Management Institute, 2008).

Project management are becoming an integral part of every aspect and activity in the organizations that are crucial to survive in a competitive environment, and thus has a profound impact on the productivity of the organization (Aldholay, Isaac, Abdullah, & Ramayah, 2018; Aldholay, Isaac, Abdullah, Abdulsalam, et al., 2018).

The need to obtain successful projects calls for the need to also undertake optimum practices. Productivity of group of projects managed by an organization may differ from productivity of another group of projects with similar characteristics but managed by another organization. The kind of project management practices carried out by different organization for achieving project success may also influence variation in the organization's productivity.

The focus of this study highlighted the key project management practices suited for a software company that impacts their organizational productivity. Software companies needs project management practices given their limited resources in order to improve productivity in terms of increased market share and profits from successful projects.

Management of projects in software companies has different characteristics to project management practices of projects in other sectors (Turner, et al,2010). Technology/software companies require less bureaucratic methods of management, with great flexibility.

The main objective is to establish the impact of project management practices on organizational productivity measured in terms of time, cost and quality performance of project of software companies. However, the following specific objectives guided the study to:

i. Assess the effect of time performance of project on organizational efficiency;
ii. Determine the impact of cost performance of project on organizational profit; and
iii. Analyze the effect of quality performance of project on customer satisfaction.

Literature Review

Concept of Project Management

According to Kerzner (2013), project management is a series of planning, organizing, directing and controlling the organization resources to achieve the specific goals and objectives.

According to Vittal Anantatmula (2020), managing a project includes identifying requirements, establishing clear and achievable objectives, balancing competing demands of quality, scope, cost, and time, adapting specifications, plans, and approach to meet expectations of all key stakeholders including the client and the end-user. We define project management as the art and science of using experience, knowledge, skills, tools, and techniques efficiently and effectively to meet stakeholder expectations. Current trends in the project suggest that organizations manage several projects simultaneously. Long-term success in managing projects requires proven and established project management practices and processes and several successful projects to emulate. Therefore, organization-wide resource allocation becomes necessary to succeed, which may not always be possible. Also, required skills and expertise are always not available locally. Consequently, virtual teams are becoming common for project execution.

Project Management triangle

The concept of the Iron Triangle, also sometimes referred to as the Triple Constraint, or the Project Management Triangle, is a fundamental aspect of how we understand success in projects. The Iron Triangle is a representation of the most basic criteria by which project success is measured; namely whether the project is delivered by the due date, within budget, and to some agreed level of quality, performance or scope. The Iron Triangle has become the standard for routinely assessing project performance (Pinto, 2010,). The concept of the Iron Triangle is an effective way of communicating the interrelationships between these central success criteria. It is typically depicted as a triangle with the criteria on the vertices. Movement of one criteria, for example in response to client demands or resource limitations, can put pressure on the other criteria. Failure in one constraint will likely lead to negative pressure on one or both of the other two (Mokoena, 2013,).

IT project managers have little control over the constraints of the Iron Triangle. This leads to pressure to work long hours, the only area in which they have any remaining control, despite still being held responsible for the project's success.

1. Cost

According to Jason Westland (2022), the financial commitment of the project is dependent on several variables. There are the resources involved, from materials to people, which all include costs.

There are also the fixed and variable costs inherent in any project, such as equipment or labour, which must be calculated. This can seriously come into play with the use of contract workers or outsourcing.

2. Scope

As mentioned, the project scope refers to all the project work required to complete the project. Managing that work is critical for project success. When managing scope it's critical that you prioritize your tasks, enabling you to plan and assign resources effectively. Jason Westland (2022).

3. Time

At its basic, the project schedule is the estimated timeline allotted to complete the project, or produce the final deliverable. Usually, this is figured out by first estimating the time that each project task will take. Jason Westland (2022).

A Work Breakdown Structure (WBS) is used to identify all the project activities. Then project managers can use different scheduling techniques such as the critical path method or PERT charts to determine the total duration of the project.

Theoretical review

Resource Based Theory

Resources are inputs into a firm's production process, such as capital, equipment, skills of individual employees, patents, finance, and talented managers. Resources are either tangible or intangible in nature. With increasing effectiveness, the set of resources available to the firm tends to become larger. Individual resources may not yield to a competitive advantage. It is through the synergistic combination and integration of sets of resources that competitive advantages are formed. The Resource-based Theory (RBT) is a project management theory that is widely used in project management. It examines how resources can drive competitive advantage (Killen et al., 2012). The RBT has become one of the most influential project management theories

cited in project management literature due to its immediate face validity, appealing core message, and ease to grasp and teach (Kraaijenbrinket al, 2010). However, these advantages don't come without criticism. Those who are against the application of the RBT are criticizing areas that are mainly related to the state of the definitions that RBT is based on, the conceptual and empirical methodology, and so-called deficiencies of the concept (Truijens, 2013). With the help of this theory one can understand how to utilize the available resources, select our suppliers, do contract reviews to accomplish and implement a given project effectively by prioritizing the project needs.

Empirical Review

Onifade Morakinyo Kehinde, Oluwaseyi Joseph Afolabi, Ibrahim Adekunle Omogbolahan (2017) of the Department of Management Technology, Bells University of Technology, Ota, Nigeria carried out a research entitled: evaluation of the effect of project management techniques on road construction projects in Nigeria using Julius Berger Nigeria Plc. The population of the study was ninety (90) respondents, personal observation and interviews in the study area. Secondary data emanated from published and unpublished sources. The findings were presented in descriptive and inferential form using frequencies, percentages, tables, mean and chi-square analytical techniques. The targeted groups of respondents were contractors, site engineers, project managers and project site supervisors. Based on the Hypothesis testing, the Null Hypothesis (There is no significant relationship between the utilization of project management techniques in construction project) is rejected while the Alternate Hypothesis (There is significant relationship between the utilization of project management techniques in construction project) is accepted. Based on the findings of the study, it is clear that the Julius Berger Nigeria Plc Staffs have high level of knowledge on project management which has benefited the company in increasing construction project success rate. The most important step towards project management maturity is to set up project management operations that can best be developed and utilized. Skilled personnel and direct efforts are used via a set of project management practices. In the construction industries, some components and practices include work scope, time, resources, costs, quality, communication, and risk and contracts procurement. Out of all these practices this study found out that if these management practices are well managed, there is a very high possibility of having a viable project that will guarantee a sound business success.

Ocharo & Kimutai (2018) from the Department of Business Administration, Kenyatta University, Kenya, carried out a study entitled: Project management

practices and implementation of power projects in Kenya. Their specific objective was to find out how project practices and implementation of power projects in Kenya affect project success. The population of the study was three hundred and eighty-four (384) respondent from employees at power generating , distributing and transmission agencies in the government of Kenya adopted a descriptive survey with a questionnaire and regression analysis as it statistical tools. The findings of the study recommends that project planners need to involve all stakeholders in designing the project, monitoring it, controlling it and evaluation. Project planning and implementation need to check each other to ensure the project is on schedule, budget and scope. Monitoring and Evaluation need to be applied in every project via participatory method which facilitates communication of challenges and successes in the project implementation process. This also assists in the continued improvement of future upcoming project through the rigorous process of understanding the lessons learnt from these projects. Questioning approach also needs to be employed to promote project orientation, culture and practice all aimed at proper implementation of the project.

Methodology

Qualitative data on project management is organized into categorical statements and assigned various level of agreement to enable a qualitative measurement of organizational productivity. Data for this measurement was obtained through survey questionnaire.

From a population of 41 and 1,084 employees of Union Systems Limited and Interswitch Nigeria Limited respectively, this research took 82 employees from the project management department of both organizations as it. For this study, purposive sampling was used as the most appropriate of the non-probability sampling techniques. This is because it allows the researcher to decide what is needed to be known and to find people who are willing to provide the information by virtue of knowledge or experience (Lewis & Sheppard 2006). The project management department is crucial and the sample was drawn from it and it include project consultants, project leaders/managers, project supervisors and project members working on certain projects undertaken by Union Systems Limited and Interswitch Nigeria Limited.

Copies of questionnaire was distributed to employees in the project management department. There were five multiple choice options

representing five Likert scale that is; 5=strongly 4=agree, 3=undecided, 2=disagree and 1=strongly disagree. The questionnaire was a structured type and will provide answers to the research questions and hypotheses therein. More importantly, the questionnaires were prepared cautiously to ensure that respondents are not misunderstood.

Data Presentation and Analysis

Table 1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791[a]	.781	.780	.14885

a. Predictors: (Constant), Milestone, Schedule, Deadlines

Hypotheses one: Timely completion of project has no significant impact on the organizational efficiency.

Source: SPSS Output, 2022

The result in table 1 above shows the R^2 which is the coefficient of determination gives approximately 78.1%. This implies that 78.1% of organizational efficiency (dependent variable) is affected by timely completion of project (independent variable) while the remaining percentage of the organizational efficiency may be affected and determined by other unexplained factors. Also, the R square adjusted which is the level of correlation between the two variables i.e. organizational efficiency and timely completion of project shows .780 which indicate that there is
high degree of correlation between the variables. This implies that timely completion of project as a proxy of project management is positively related to organizational efficiency.

Table 2 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.955	3	29.652	1338.269	.000[b]
	Residual	1.706	77	.022		
	Total	90.661	80			

a. Dependent Variable: Organizational efficiency

b. Predictors: (Constant), Milestone, Schedule, Deadlines

Source: SPSS Output, 2022

The F-statistics in table 2 above show that the ANOVA table is significant since the ANOVA significance of .000 is less than the alpha level of .05, thus the result is achieved. Also, the regression sum of square of 88.955 is greater than residual sum of square of 1.706, this further show the significance of the overall model therefore the proxies which are milestone, schedule as well as deadlines are major determinant of factors affecting organizational efficiency.

Table 3 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.406	.061		6.625	.000
	Deadlines	.236	.048	.275	4.899	.000
	Schedule	.541	.051	.573	10.623	.000
	Milestone	.132	.036	.162	3.700	.000

a. Dependent Variable: Organizational efficiency

Source: SPSS Output, 2022

In table 3 above, the coefficient of individual independent variable indicated that deadlines (.236) has a fair effect as a proxy of timely completion of project on organizational efficiency. In addition, the (probability) and t-statistics value of (.000) and 4.899 further suggest that the relationship between deadlines and organizational efficiency is significant since alpha level of 0.05 is greater than the p-value of 0.000. Therefore, deadlines has influence on organizational efficiency.

The coefficient of individual independent variable indicated that schedule (.541) and milestone (.132) have strong and fair effect respectively as proxies of timely completion of project on organizational efficiency. In addition, the (probability) and t-statistics value of schedule (.000) and 10.623 and milestone (.000) and 3.700 further suggest that the relationship between schedule, milestone and organizational efficiency is significant since alpha level of 0.05 is greater than the p-values of 0.000 and 0.000. Therefore, schedule and milestone have influence on organizational efficiency. Scheduling has the highest beta coefficient compared to factors which implies that scheduling has the highest impact on timely completion of project. This is because scheduling incorporates deadline and milestone of activities involved in executing a project and at the same time achieving higher productivity.

Therefore, since R^2 of 78.1% is positive and the ANOVA significance of .000 is less than p-value of .05, therefore, the null hypothesis which state that **"timely completion of project has no significant impact on the organizational efficiency"** is not accepted and the alternate hypothesis when stated is accepted. This result is supported by the study conducted by Howell, (2010) who concluded that to manage a project properly, by ensuring on time completion and to take full profit is crucial to identify, analyze and control risks involved in the regard.

Hypotheses two: Cost management of project has no significant impact on organizational effectiveness.

Table 4 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.775[a]	.750	.748	.24450

a. Predictors: (Constant), Budget, Expenditure, Cost variation

Source: SPSS Output, 2022

The result in table 4 above shows the R^2 which is the coefficient of determination gives approximately 75%. This implies that 75% of organizational effectiveness (dependent variable) is affected by cost management of project (independent variable) while the remaining percentage of the organizational effectiveness may be affected and determined by other unexplained factors. Also, the R square adjusted which is the level of correlation between the two variables i.e. organizational effectiveness and cost management of project shows .748 which indicate that there is high degree of correlation between the variables. This implies that cost management of project as a proxy of project management is positively related to organizational effectiveness.

Table 5 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	86.953	3	28.984	484.851	.000[b]
	Residual	4.603	77	.060		
	Total	91.556	80			

a. Dependent Variable: Organizational effectiveness

b. Predictors: (Constant), Budget, Expenditure, Cost variation

Source: SPSS Output, 2022

The F-statistics result in table 5 above shows that the ANOVA table is significant since the ANOVA significance of .000 is less than the alpha level of .05, thus the result is achieved. Also, the regression sum of square of 86.953 is greater than residual sum of square of 4.603, this further show the significance of the overall model therefore the proxies which are budget, expenditure, as well as cost variation are major determinant of factors affecting organizational effectiveness.

Table 6 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.234	.111		2.106	.038
	Cost variation	.165	.080	.196	2.075	.041
	Expenditure	.501	.088	.534	5.700	.000
	Budget	.251	.092	.259	2.716	.008

a. Dependent Variable: Organizational effectiveness

Source: SPSS Output, 2022

In table 6 above, the coefficient of individual independent variable indicated that cost variation (.165) has a fair effect as a proxy of cost management of project on organizational effectiveness. In addition, the (probability) and t-statistics value of (.041) and 2.075 further suggest that the relationship between cost variation and organizational effectiveness is significant since alpha level of 0.05 is greater than the p-value of 0.041. Therefore, cost variation has influence on organizational effectiveness.

The coefficient of individual independent variable indicated that expenditure (.501) and budget (.251) have strong and fair effect respectively as proxies of cost management of project on organizational effectiveness. In addition, the (probability) and t-statistics value of expenditure (.000) and 5.700 and budget (.008) and 2.716 further suggest that the relationship between expenditure, budget and organizational effectiveness is significant since alpha level of 0.05 is greater than the p-values of 0.000 and 0.000. Therefore, expenditure and budget have influence on organizational effectiveness. Expenditure has the highest beta coefficient compared to factors which implies that expenditure has the highest impact on cost management of project. This is because

expenditure is highly considered when it comes to project execution. While budget is only used during the start and as a guideline throughout the project, cost variation happens naturally as a result of cost discrepancies but expenditures is the actual value it actually cost to complete the project and thus considered as productivity after completion of the project.

Therefore, since R^2 of 75% is positive and the ANOVA significance of .000 is less than p-value of .05, therefore, the null hypothesis which state that **"Cost management of project has no significant impact on organizational effectiveness."** is not accepted and the alternate hypothesis when stated is accepted. This result is supported by the study conducted by Dury (2008), who found that project cost management has a positive influence on organization productivity as financially successful project management and increased organization productivity in terms of increased profits.

Hypotheses three: Quality delivery has no significant impact on customer satisfaction.

Table 7 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.758[a]	.718	.715	.34820

a. Predictors: (Constant), Planned quality, Actual quality, Defect frequency/failure rate

Source: SPSS Output, 2022

The result in table 7 above shows the R^2 which is the coefficient of determination gives approximately 71.8%. This implies that 71.8% of customer satisfaction (dependent variable) is affected by quality delivery (independent variable) while the remaining percentage of the customer satisfaction may be affected and determined by other unexplained factors. Also, the R square adjusted which is the level of correlation between the two variables i.e. customer satisfaction and quality delivery shows .715 which indicate that there is high degree of correlation between the variables. This implies that quality delivery as a proxy of project management is positively related to customer satisfaction.

Table 8 ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	104.544	3	34.848	287.429	.000[b]
	Residual	9.335	77	.121		
	Total	113.879	80			

a. Dependent Variable: Customer satisfaction

b. Predictors: (Constant), Planned quality, Actual quality, Defect frequency/failure rate

Source: SPSS Output, 2022

The F-statistics in table 8 above shows that the ANOVA table is significant since the ANOVA significance of .000 is less than the alpha level of .05, thus the result is achieved. Also, the regression sum of square of 104.544 is greater than residual sum of square of 9.335, this further show the significance of the overall model therefore the proxies which are planned quality, actual quality, as well as defect frequency/failure rate are major determinant of factors affecting customer satisfaction.

Table 9 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.332	.161		-2.057	.043
	Defect frequency/failure rate	.323	.135	.298	2.391	.019
	Actual quality	.524	.125	.442	4.187	.000
	Planned quality	.256	.110	.238	2.327	.023

a. Dependent Variable: Customer satisfaction

Source: SPSS Output, 2022

In table 9 above, the coefficient of individual independent variable indicated that defect frequency/failure rate (.323) has a fair effect as a proxy of quality delivery on customer satisfaction. In addition, the (probability) and t-statistics value of (.019) and 2.391 further suggest that the relationship between defect frequency/failure rate and customer satisfaction is significant since alpha level

of 0.05 is greater than the p-value of 0.019. Therefore, defect frequency/failure rate has influence on customer satisfaction.

The coefficient of individual independent variable indicated that actual quality (.524) and planned quality (.256) have strong and fair effect respectively as proxies of quality delivery on customer satisfaction. In addition, the (probability) and t-statistics value of actual quality (.000) and 4.187 and planned quality (.023) and 2.327 further suggest that the relationship between actual quality and planned quality and customer satisfaction is significant since alpha level of 0.05 is greater than the p-values of 0.000 and 0.023. Therefore, actual quality and planned quality have influence on incubates customer satisfaction. Actual quality has the highest beta coefficient compared to factors which implies that actual quality has the highest impact on timely completion of project. This is because actual quality is the real quality delivered compared to planned quality and defect, thus the actual quality delivered highly affects customer satisfaction on the project as well as organizational level of productivity.

Therefore, since R^2 of 71.8% is positive and the ANOVA significance of .000 is less than p-value of .05, therefore, the null hypothesis which state that **"Quality delivery has no significant impact on customer satisfaction."** is not accepted and the alternate hypothesis when stated is accepted. This result is supported by the study conducted by Doolen, (2013) who in their study confirmed that as projects are accomplished by teams, one of the measures of success is how much the work team was satisfied in working together which ensures the quality of project delivered.

Conclusion

Hence, from the findings of this study, this study concludes that timely completion of projects significantly affects organizational efficiency positively. Also, cost management of project had a significant influence on organizational effectiveness. Cost management of project such as cost variation, expenditure, as well as budget are an important factor affecting the organizational effectiveness. When organizations manage the costs involved in executing a project, the cost implications and financial loss associated to the project is minimized and thus makes the organization effective in project execution and thus enhancing the organizations productivity. Hence, from the findings of this study, this study concludes that cost management of projects significantly affects organizational effectiveness positively.

Furthermore, the findings showed that quality delivery had significant influence on customer satisfaction. Quality delivery like defect frequency/failure rate, actual quality, and planned quality are important factors affecting the customer satisfaction. Quality project delivery is very germane to organizations as it helps in gaining more trust and loyalty from customers which thus enhance the customers satisfaction and eventually make the organization productive one.

The overall conclusion from the above findings derived from the measurement of each objectives therefore is that, project management significantly affects organizational productivity positively.

A crucial assessment of the effect of project management on organizational productivity with a particular reference to Union System Limited and Interswitch Nigeria Limited was made and conclusions were reached.

Recommendations

In view of the findings given above, the following recommendations were suggested;

1. Project managers in organizations should ensure that they make timely completion of project more serious and as an important criterion for project success as this helps to boost or increase the number of projects completed by organization within a short period and achieve higher efficiency. This can be achieved by setting shortest possible deadlines for projects, create the best schedules for the project after serious deliberation and considerations.
2. Project managers in organizations should as well ensure that they provide effective cost management techniques for project to achieve higher effectiveness. This can be done by using such budgeting techniques as cash budgeting, biddings and quotations on each activity involves in the projects and also monitor all expenditures involved during the execution of the projects.
3. To enhance organizational productivity, project manager should deliver projects that are of high quality to customers as this helps to enhance their satisfaction level. This can be achieved through reduction of project failure or defects, by using quality materials and resources only for all projects, and ensuring that there is planned quality before the start of the project which is then compared with the actual quality at the end of the project.

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