International Research Symposium
Rajarata University of Sri Lanka

IRSyRUSl 2015

Factors Contributing to Successful Implementation of Construction Projects in Anuradhapura District, Sri Lanaka

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ABSTRACT

Construction industry is very dynamic in nature owing to increasing uncertainties in turbulent environment, in which building construction projects have now become much more complicated. Hence, the main objective of this study was to identify the factors contributing to successful implementation of construction project. The study encompasses five independent variables such as contractor experience, project planning, project team motivation, project control systems and project manager capabilities while keeping project success as the dependent variable. Population of this study was all registered and unregistered building contractors of the National Constriction Association of Sri Lanka, in Anuradhapura District and among them 50 respondents were taken as a sample of the study based on simple random sampling technique. Data were collected from 50 respondents through closed ended questionnaires by Licked five scale systems and 100% response rate was achieved. Both independent and dependent variables were measured. Collected data were analyzed through descriptive tests, correlation analysis and multiple linear regression analysis with reference to the research objectives via SPSS software. Correlation of the study indicated that project planning and project team motivation have statistically significant positive correlation with project success while contractor experience, project control systems and project management capabilities showing statistically insignificant correlation with project success. Finally, light of regression indicated that project planning and project team motivation are the most important to forecast project success. As recommendation, researchers suggests that project manager should have a well-developed project plan and a policy package to motivate project team to make their project success.

Key words: - *Construction Industry,Project Success,*

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1. Introduction

The Project is a complicated, non-routing, one time endeavor limited by time, budgets, resources and performance specifications designed to meet customer requirements .Not only that, Munns&Bjeirmi (1996) declared the project as the achievement of a specified objective which involves a series of activities and tasks that utilize resources. As well as, Larson (2005) pointed out that the major characteristics of project are temporarily well defined activity that has predetermined starting and ending time, unique activity which has never been done in advance, universal concept which is engaged in every sectors such as private and public sectors, developed and developing countries. At the same time, Project management is a task derived from an organization that enables professional project managers to use their skills, tools and knowledge which support to plan, execute and control a unique project within a limited lifespan by meeting requirements of the organization. The Construction industry in developing countries is a prominent barometer of economic performance as it makes salutary contribution to nation (Salleh, 2009). Project success" can be defined as meeting the required expectations of the stakeholders such as client, employer, contractor and project manager (Jari and Bhangale, 2013) and also, Time, cost and quality have been identified as "triple constraint" or most important elements of project success.

1.1.Problem Statement

The success of a construction project is pretentious by various organizational factors such as organizational planning, use of control systems and project manager commitment, (Salleh, 2009). Not only that capabilities and competences of project manager along with adequate finacial resources make a substantial impact on project success, (Nguyen et al. 2004). In addition to that project nature works as a key determinant of project success especially in construction field. That nature had been identified by Ashley (1986) through his six project success criteria naming budget performance, schedule performance, employer satisfaction, task orientation, contractor satisfaction and project manager satisfaction. The factors that make project success might vary project to project (Muller & Turner, 2007). This argument was further strengthened by (Gunathilaka, Tuuli, and Dainty, 2013) indicating that success of the project depends on project size, participants, scope of services and sophistication of the owners. This success is a like a coin side concept which directs for the success of a one project at one time will turn as an indication of abject of another project in next time (Muller & Turner, 2007). Therefore, there is no common agreement among the scholars about the common factors that make construction project success specially in SriLankan literature. Hence, it was very difficulty to findout the factors contributing to successful implementation of construction projects in Anuradhapura district, Sri Lanka. That was the problem of this study.

1.2.Objectives of the Study

The objective of this study was to identify factors contributing to successful implementation of construction projects in Anuradhapura district, Sri Lanka.
This study will help small and medium scale contractors to enhance their existing knowledge about factors affecting successful implementation of project activities. As well, the study will fill the literature gap in the field of project management and will disclose a theoretical model to explore project management practices to find out factors which lead project success in future.

2. Literature Review

Project success is a complicated concept owing to the project's complexity and dynamic (Ngugen and Chovichien, 2013). Therefore, there is no universally accepted definition for the project success and the different scholars have interpreted it in different ways. As well,as the definition of the project success differs depending on each project team, industry and individuals' point of views (Parfitt&Sanvido, 1993). In addition to that, the project success concept differs among different projects depending on participants, project size, scope of services and the time needed to execute a project in the construction industry (Ngugen and Chovichien, 2013). Project success is the meeting the required expectations of the stakeholders such as client, employer, contractor and project manager and so forth (Jari and Bhangale, 2013). According to Jari and Bhangale (2013), a project which is delivered in the nick of time and managed within the budget can be defined as project successful. Success factors that change from project to project depending on its participants, scope of the project, the size of the project, technological implications, and a variety of other factors. Salleth in2009 through his study identified seven factors which affects to the success of construction project as organizational planning, use of control systems, project

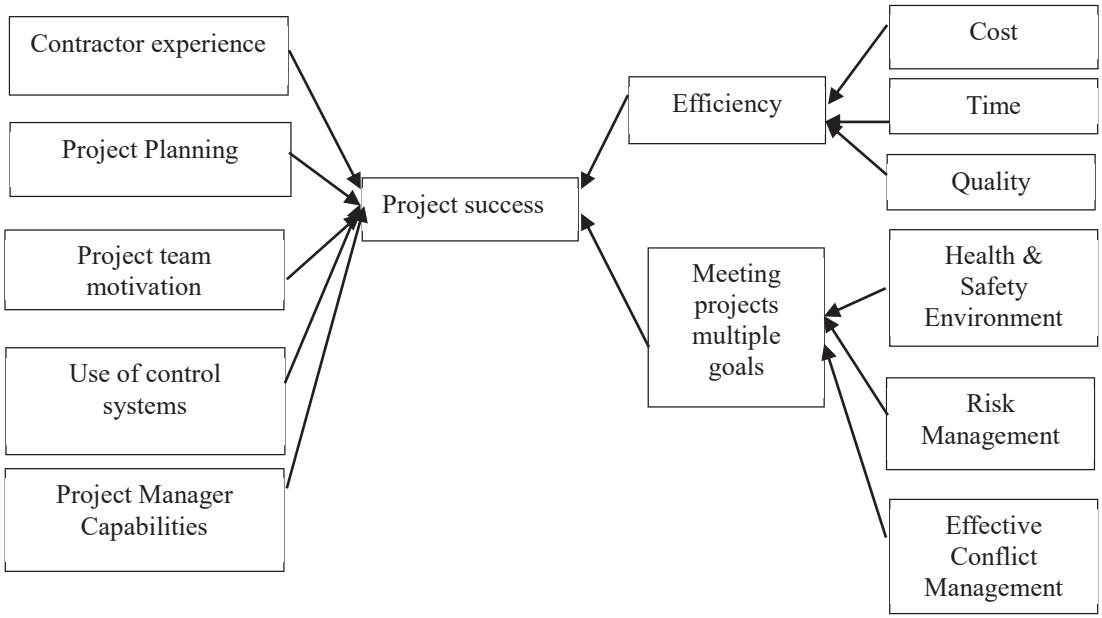
manager's goal commitment, project team's motivation and goal orientation, clarity of the project scope and work definition, project manager's capabilities and safety free cautions and applied procedures. Not only that, the study conducted by Ashely (1986) recognized similar factors which fuel project success as construction activities programming, design planning, project manager commitment to the goal, project team motivation, project manager capabilities, control systems and definition of work and its fied. The mentioned factors might change according to the nature of the project, the type of activities and the project environment (Muller & Turner, 2007).

3. Methodology

3.1.Research Design

The study of factors contributing to successful implementation of construction projects in Anuradhapura district is a quantitative type study and descriptive in nature as it describes the factors affecting to the success of a construction project. The study collected data from individual contractors of Anuradhapura District, hence the unit of study was individual in this study. Conceptual framework was developed by the researchers taking "Improving performance of construction project" done by Lianying Zhang Weijie Fan in 2013 and "Critical Success Factors of Project Management for Brunei Construction Projects" done by Salleh, in 2009 as based papers.

3.2.Conceptual Framework



Source: Lianying Zhang Weijie Fan, (2013)& Salleh (2009)

According to the conceptual framework, study considered Contractor Experience, Project Planning, Project Team Motivation, Use of Control System and Project Manager Capability as independent variable of the study while Project Success was considered dependent variable.

3.3.Population, Sample& Sampling Technique

Sekaran (2007) defined population as the entire group of people, events or things of interested that the researcher wishes to investigate. In this research, the population was building contractors who were registered in National Construction Association of Sri Lanka and Non- registered building contractors, among them 50 building contractors were selected as sample of this study using a simple random sampling technique.

3.4.Data Collection & Analysis

Data were collected from primary sources through delivering a structured questionnaire to the sample and collected data were measured in Liker five point scale and analyzed via SPSS application software. Descriptive statistics, correlation analysis and regression analysis were run to address to the research question.

4. Result and Discussion

The Construction industry is much more complicated and dynamic. As well as, persons who work in this field should capable enough to work long hours, even in night, and work away from home and relatives Hence, females are less likely engage with project environment that has been provided by the study as follows. According to the table number 01, all respondents belong to male category.

Table 3: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	50	100.0	100.0	100.0

Source: Survey data

The findings of this study is simil literature such as Wanjiku (2012) who pointed out that most of the males tend to the construction industry than the females. Lingard& Lin(2004), Found that women have to encounter difficulties at balancing both family and career success in the construction industry. As a result, there is a less possibility of entering females into this field.

Table 4: Age Distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25-34	5	10.0	10.0	10.0
	35-44	14	28.0	28.0	38.0
	45-54	23	46.0	46.0	84.0
	>54	8	16.0	16.0	100.0
	Total	50	100.0	100.0	

Source: Survey data

According to the table no 02 per 45-54), have high intention to enter into the construction field but most of the younger don't have intention to engage with construction field. This result was confirmed by Wanjiku (2012) through his study, which indicated that persons, who belong to middle age, have high intention to enter into the construction field.

Table 5: Descriptive Statistics

Variables	N	Mean	Std. Deviation
Project Success	50	4.5461	.16227
Contractor Experience	50	4.3360	.43601
Project Planning	50	4.6900	.25535
Project Team Motivation	50	4.7160	.31322
Use of Controlling System	50	4.3533	.38339
Project Manager Capability	50	4.2950	.32218
Valid N (listwise)	50		

Source: Survey data

Current situation of the variables are clearly indicated by the above table. Accordingly mean value of project success was 4.5461, it is very close to the strongly agree level and it indicates that current projects are at success level. All independent variables (contractor experience, project planning, project team motivation, use of controlling system, project manager capability) mean values were very close to strongly agree level. It indicates that contractor experience, project planning, project team motivation, use of controlling system, project manager capability exist in the sample.

4.1.Correlation Analysis

In order to identify the factors contributing to successful implementation of construction project, researcher tests the association through a correlation analysis using collected data from the respondent. Following table indicates the test result.

Table 6: Correlation Analysis

Variables		Project Success	Contractor Experience	Project Planning	Project Team Motivation	Use Controlling System	Manager Capability
Project Success	Pearson Correlation	1	.212	.343*	.467**	.102	.213
	Sig. (2-tailed)		.139	.015	.001	.482	.138
	N	50	50	50	50	50	50

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data

According to the correlation test, correlation coefficient of contractor experience and project success was 0.212 and sig value was 0.139. Hence, Contractor experience has no any association with project success, hence it found that there is no statistically significant association between project success and contractor experience. The study further identified that project success is not merely depend on contractor experience but are influenced by numbers of factors like health and safety environment, quality, financial resources, labor resources, time, cost, rules and regulations of the government and economic conditions. Therefore, those factors have a higher level of significance than the contractor experience; hence the association was statistically insignificant.

According to the correlation test, correlation coefficient of project planning and project success was 0.343 and sig value was 0.015. Accordingly, there is a statistically significant positive association between project success and project planning because pre-project planning, regular updates, good resource planning, budget planning, schedule planning, have already shown the positive impact of its on project through previous studies. Wang & Gibson (2008) demonstrated that better planning in the early stage of the project life cycle has positive impact on the project success and Dvir, Raz&Shenhar (2003) found that there is a Positive relationship between the amount of project planning and the project success.

Based on the correlation analysis it was found there is a statistically significant positive association between project success and project team motivation as sig value of test was less than 0.05. The finding of this result was compatible with the reported literature such as Ashley (1986) and Salleh (2009).They emphasized that project team motivation is the most important factor in determining the project success and positively correlated with the project success. As well, a study conducted by Alexandrova & Ivanova in 2012, identified that the motivation of the project team members is extremely important for project success.

Based on the test, the correlation coefficient of the use of control system and project success was 0.102 and sig value was 0.482. Accordingly, results indicated that a statistically insignificant association between project success and use of control systems, but the result was not similar to findings of previous literatures. A study conducted by Salleh in 2009 and Ashley in 1986 found a statistically significant positive correlation between project success and use of control systems. Further analysis revealed that small scale contractors in Anuradhapura District do not apply sophisticated project control system in managing projects. Based on the correlation analysis, it was found there was no statistically significant association between project success and project manager capabilities. This result was not match with the finding of Rao, Prasad &Gopalkrishna (2014), Salleh (2009), Ashley (1986) and Alexandrova&Ivanova (2012).

Based on the correlation analysis, it was found that only project planning and project team motivation have significant association with project success. Hence, these two variables were forwarded to regression test and hypothesis based on contractor experience, use of controlling system, project manager capability were automatically rejected through correlation test.

4.2.Regression Analysis

Casual relationship between dependent variable and independent variables was measured through regression analysis and regression was run taking only statistically correlated variables take in to account in this study.

Table 7: Table: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.554[a]	.307	.277	.13797

a. Predictors: (Constant), PTM, PP

Source: Survey data

According to the model summery R square was 0.307, it indicates that 30% variation of the dependent variable is explained by the independent variables.

Table 8: ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.396	2	.198	10.394	.000[a]
	Residual	.895	47	.019		
	Total	1.290	49			

a. Predictors: (Constant), PTM, PP

b. Dependent Variable: PS

Source: Survey data

ANOVA table indicates that model is strong enough to predict the regression relation between dependent and independent relationship as sig value of the test was less 0.05.

Table 9: Regression Coefficient Table

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.588	.447		5.790	.000
	PP	.190	.078	.299	2.450	.018
	PTM	.226	.063	.437	3.576	.001

a. Dependent Variable: PS

H2: Project planning has sign Source: Survey data

According to the regression coefficient table regression coefficient of project planning was 0.190 and sig value was 0.018. It was less than 0.05.Hence, study rejected H0 and accepted H1: Project planning has significant impact on project success. Accordingly, there is a statistically significant linear relationship between project planning and project success. It indicates that 1% increase of project planning will lead to increase project success by 19%.

H3: The project team motivation has significant impact on project success

Based on the regression coefficient table regression coefficient of project team motivation was 0.226 and sig value was 0.001. It was also less than 0.05.Hence, study rejected H0 and accepted H1: The project team motivation has significant impact on project success. It denotes that 1% increase of the project team motivation will lead to increase project success by 22.6%.

5. Conclusion and Recommendations

5.1.Conclusion

The study of factors contributing to successful implementation of construction projects in Anuradhapura district was conducted to find out answer to the research question stated at top of the study. The study found that all of the contractors of this study were males. Hence, construction activities in Anuradhapura District are dominated by male. As well study found people who are in age between 45 -54 have high propensity to engage commercial construction activities. The light of correlation analysis indicated that project planning and project team motivation have statistically significant positive association with project success while contractor experience, project control systems and project manager capabilities indicate statistically insignificant association with project success. Accordingly regression was run taking only significant associated variables. Consequently, there is a statistically significant linear relationship between project planning and project success. It indicates that 1% increase of project planning will lead to increase project success by 19%. As well regression coefficient of project team motivation was 0.226 and sig value was 0.001. It was also less than 0.05. It denotes that 1% increase of the project team motivation will lead to increase project success by 22.6%. Finally study revealed that project planning and project team

motivation as major contributing factors to successful implementation of construction projects in Anuradhapura district, Sri Lanka

5.2.Recommendations

The study recommends that in order to increase the success of the project, the project planning should be given paramount consideration. This will provide noteworthy positive impact on overall project success. The study also suggests that to take the project success into a higher position, the project team motivation should be maximized through financial and non- financial motivational programs which must be linked strategies of the organization to get the maximum contribution from the employees to achieve organizational goals and objectives successfully.

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