Effect of the learning support and the use of project management tools on project success: The case of Pakistan

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Abstract

This study examines the effect of learning support on project success with mediation effect of the use of project management tools. Data were collected form 40 international donor funded projects at federal level in Pakistan. The results suggest that learning support has a positive and significant effect on the use of project management tools which in turn has a similar effect on project success. Results also show that use of project management tools has a significant mediation effect between learning support and the project success.

Keywords: Project management, Project management tools, Learning support, International development agencies

1. Introduction

Discipline of project management marked its beginning in 1960s (Morris, 2004). Since then it has experienced an unprecedented growth. Now there is a variety of project management tools available for the project managers to plan, implement and evaluate the projects. Most commonly used tools include Work Breakdown Structure (WBS), Gantt Chart, Network Diagrams (Critical Path Method, Program Evaluation and Review Technique), and Earned Value Analysis (Taylor, 2004).

Does the use of the project management tools affect success of the projects? Some of the researchers like Longman & Mullins (2004) and Morris (2004) have been very critical about the effect of project management tools on success. For example, Longman and Mullins (2004) believed that most of the material related with discipline of project management is very tedious and its use may not justify time and efforts. Similarly, Morris (2004) stated that there is limited impact of project-based sectors. However, more recently Ika, Diallo and Thuillier (2010) investigated the effect of the use of project management tools on the success and found it significant. But more empirical studies are needed to validate such findings, as results may vary from one work setting to other.

Learning support is believed to be critical for success of the projects, as researchers like Kotnour (2000) found that impact of learning suipport on project success is significant. However, it is expected that learning support will promote use of project managemnet tools, which in turn would affect project success. Hence, there exists a need to investigate the mediation effect of the use of project management tool between learning support and project. The present study has attempted to fill this gap in literature.

Objectives of the study include: 1) to study effect of learning support and use of project management tools on project success; and 2) to test mediation effect of learning support between use of project management tools and project success.

Context of the study is the aid industry in Pakistan which is spread over sectors like health, education, information technology (IT) and telecommunication, infrastructure, agriculture and rural development, governance, and community development. Major aid agencies operating in Pakistan are World Bank, Asian Development Bank, USAID, European Union, and United Nations Development Programme (UNDP).

2. Theoretical considerations

2.1. Project Management

PMI has defined project as a temporary endeavor, having defined beginning and end, undertaken to create unique product, service, or result (PMI, 2008). PMI (2008) divides the Body of Project Management Knowledge (PMBOK) into five process groups i.e. initiating, planning, execution, monitoring and controlling, and closing. In the aid industry, the term of process groups is rarely used. Instead of process groups, the term of project cycle is used. Project cycle typically consists of stages like identification, planning, appraisal and approval, implementation, monitoring and evaluation. However, some

variations do exist in the project cycle of each aid agency.

2.2. Project Success

Success of a project matters differently to different stakeholders. Zolin, Cheun and Turner (2012) have identified several studies that have recognized the importance of stakeholders perspective of project success. Hence, success criteria also vary depending on the perception of stakeholders. Owing to complexity involved in the construct of project success, it is the least agreed upon in the discipline of project management (Shenhar & Dvir, 1997).

2.3. Project management tools

Tools are available for stages of project management, right from project identification to project evaluation. Most commonly used project management tools that are studied: Stakeholders Analysis, Logical Framework, Work Breakdown Structure, Operational Planning of Activities, Codification of tasks & Work Packages, Budgeting of Work Packages, Activities responsibilities matrix (Chart), Critical Path Method, Budget Monitoring, Work Progress Monitoring, Monitoring of Disbursements, Performance Indicators, Earned Value, and Microsoft Project Software (Ika, Diallo & Thuillier, 2010).

Bjeirmi (1996) believes that the use of project management concepts, tools and techniques have vital role in the success of the project. With preparation of proper project management plans for the project makes the things clear in the minds of all project stakeholders, providing them opportunity to make adjustments before the start of actual project.

2.4. Project Learning

Kotnour (2000) believes that the learning organization focuses on creating learning support all over the organization. It is hypothesized that learning support will have positive effect on the success of projects.

3. Theoretical framework

Learning support is believed to be a factor contributing towards the project success. Based on the theoretical considerations discussed in the previous section, the resultant theoretical framework is presented in Figure 1.
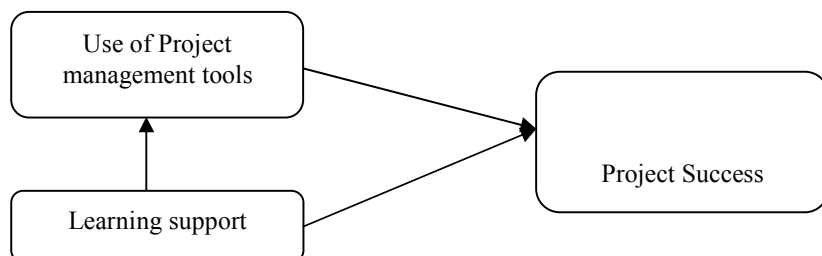

Figure 1 Theoretical Framework of the Study

Hypotheses are:

H1: Learning support positively affects the Use of project management tools

H2: Use of project management tools positively affects the project success

H3: Use of project management tools has an interaction effect with learning support for project success

4. Research methodology

Present study is explanatory in nature. Instrument is based on the work of by Ika, Diallo & Thuillier (2010) and Kotnour (2000). The items for the constructs of the use of project management tools and the project success have been adopted from Ika, Diallo & Thuillier (2010) and six items of learning support have been adopted from the work of Kotnour (2000). The items have been measured on 5-point likert scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

The population frame for this study consists of the project managers handling projects financed by aid agencies. Convenience sampling was employed for sample selection and the data collection. Data were through email / in person using the questionnaire. In total 55 project managers were approached, however, only 40 project managers responded.

Data was analyzed using SPSS software. Statistical techniques which were used in the achievements of study objective were simple descriptive statistics, correlation analysis, and regression analysis.

Reliability of the instrument was examined by using Cronbach's Alpha Test. Alpha values for all constructs are acceptable

Table 1 Alpha values of constructs

Construct	No. of items	Cronbach's Alpha
Project Success	10	0.895
Use of project management tools	33	0.904
Learning support	6	0.973

5. Results and Discussions

5.1. Demographics
The respondents were the project managers / assistant project managers of 40 international donor funded projects from health, education, livelihood, information technology sectors. Project managers accounted for 70 percent of all respondents. These project managers/ assistant project managers were involved in practicing the project management tools in their projects. Majority of the respondents represented health sector (52 percent), followed by livelihood related sectors (25 percent) and others (23 percent).

5.2. Correlation Analysis
Results given in Table 2 show that there is a positive and significant relationship between the use of project management tools and project success, and between learning support and project success.

5.3. Regression analysis – Model 1: Mediation effect of learning support on the use of PM tools
Mediation effect of the use of PM tools on effect between learning support and the project success was examined by adopting three-step model and employed Sobel Test.

Table 2 Correlation among constructs of the study

		Use of PM Tools	Project Success	Learning Support
Use of PM Tools	Pearson Correlation	1	.478**	.899**
	Sig. (2-tailed)		.002	.000
	N	40	40	40
Project Success	Pearson Correlation	.478**	1	.652**
	Sig. (2-tailed)	.002		.000
	N	40	40	40
Learning Support	Pearson Correlation	.899**	.652**	1
	Sig. (2-tailed)	.000	.000	
	N	40	40	40

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

5.3.1.   Step 1: Regression analysis – Effect of learning support on the use of PM tools

Model used in Step-1 involved the simple regression analysis with "use of PM tools" as criterion and the "learning support" as predictor. Adjusted R^2 of 0.803 indicates that 80 percent of variation in the use of PM tools is explained by learning support (Table 3). Table 4 shows that goodness of fit of the regression model is significant (F = 159.882, df = 1, 38, p = 0.000). Regression coefficients are presented in Table 5. Learning support is a significant determinant of the use of PM tools (t = 12.644, p = 0.000), as is evident from Table 5. Hence, H1 is accepted.

Table 3 Model Summary – Effect of Learning Support on the Use of PM Tools

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.899a	.808	.803	.23470

a. Predictors: (Constant), LearningSupport

Table 4 ANOVA – Effect of Learning Support on the Use of PM Tools

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.807	1	8.807	159.882	.000a
	Residual	2.093	38	.055		
	Total	10.900	39			

a. Predictors: (Constant), LearningSupport

b. Dependent Variable: UseofPMTools

Table 5 Regression Coefficients – Effect of Learning Support on the Use of PM Tools

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.021	.106		19.052	.000
	LearningSupport	.357	.028	.899	12.644	.000

a. Dependent Variable: UseofPMTools

5.3.2.   Step 2: Regression analysis – Effect of the use of PM tools on project success

Step-2 involved the regression analysis with "project success" as criterion and "the use of PM tools" as predictor. Adjusted R^2 of 0.208 indicates that 21 percent of variation in the project success is explained by the model (Table 6) with use of PM tools as criterion and learning support as the predictor. Table 7 shows that goodness of fit of the regression model is significant (F = 11.267, df = 1, 38, p = 0.002). Regression coefficients are presented in Table 8. Use of PM tools is a significant determinant of the project success (t = 3.357, p = 0.002). Hence, H2 is accepted.

Table 6 Model Summary – Effect of the Use of PM Tools on Project Success

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.478[a]	.229	.208	.85890

a. Predictors: (Constant), UseofPMTools

Table 7 ANOVA – Effect of the Use of PM Tools on Project Success

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.312	1	8.312	11.267	.002[a]
	Residual	28.033	38	.738		
	Total	36.344	39			

a. Predictors: (Constant), UseofPMTools

b. Dependent Variable: ProjSuccess

Table 8 Regression Coefficients – Effect of the Use of PM Tools on Project Success

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.810	.864		.938	.354
	UseofPMTools	.873	.260	.478	3.357	.002

a. Dependent Variable: ProjSuccess

5.3.3.   Mediation effect of the use of PM tools

In order to test the mediation effect of use of PM tools on the relationship between learning support and project success was examined by using Sobel (1982) test. Values of a, b, Sa and Sb were calculated by using regression analysis in SPSS and these values were put as input in the Sobel Test calculator (available online at http://quantpsy.org/sobel/sobel.htm).

Where:

a = raw (unstandardized) regression coefficient for the association between IV and mediator.
s_a = standard error of a.

b = raw coefficient for the association between the mediator and the DV (when the IV is also a predictor of the DV).

s_b = standard error of b.

Results of all three tests i.e. Sobel Test, Aroian Test and Goodman Test given in Table 9, show that mediation is significant at 0.05. Hence, H3 is also accepted.

Table 9 Median Tests

Input	Input value	Test	Test-Stat	Std. Error	p-value
a	2.021	Sobel Test	-2.06721256	1.00022859	0.03871413
b	-1.0231	Aroian test	-2.06440833	1.00158727	0.03897902
s_a	0.106	Goodman test	-2.07002826	0.99886806	0.0384497
s_b	0.492				

6. Conclusion

Results clearly show that use of PM tools positively and significantly affects the project success, and use of PM tools is significantly affected by the learning support. In other words, if adequate learning support is available to the project staff, they will be more inclined to learn and use project management tools. In the development sector, use of project management tools carries significant importance for project success.

7. Research limitations and suggested research for future

The current study covered only those foreign funded projects which fall in the domain of Federal Government. This is the first limitation of this study. Future studies are suggested to include greater sample size with greater coverage in terms of geographical context and the governance level. Future studies may also assess effect of the use of PM tools on project success at each stage.

References

Bjeirmi, A. K. (1996). The role of project management in achieving project success. *International Journal on Project Management*, 14, 81-87.

Ika, L. A., Diallo, A. & Thuillier, D. (2010). Project management in the international development industry. International Journal of Managing Projects in Business, 3(1), 61-93.

Kotnour, T. (2000). Organizational learning practices in the project management environment. *International Journal of Quality & Reliability Management,* 17(1), 393-406

Longman, A. & Mullins, J. (2004). Project management: key tool for implementing strategy. *Journal of Business Strategy,* 25(5), 54-60.

Morris, P. W. G. (2004). The irrelevance of project management as a professional discipline. [Online] Available http://www.indeco.co.uk/filestore/IrrelevanceofPMDiscipline.pdf (February 25, 2012)

PMI. (2008). *A Guide to the Project Management Body of Knowledge (4th ed)*. Pennsylvania: Project Management Institute.

Shenhar, A., & Dvir, O. L. (1997). Mapping the dimensions of project success. *Project Management Journal*, 28 , 5-13.

Taylor, J. (2004). *Managing information technology projects*. New York, NY: AMACON.

Zolin, R., Cheun, Y.F. & Turner, J.R. (2012). Project Managers' Understanding of Stakeholders' Satisfaction. *Project Perspectives 2012 – Annual Publication of International Project Management Association,* pp. 10-15. [Online] Available http://ipma.ch/assets/re-perspectives_2012.pdf (Feb 28, 2012)