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Effect of human resource workload management on project result

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ABSTRACT
Successful project management depends upon practicing nine knowledge areas; managing project scope, time, cost, quality, time and workload management for human resources, stakeholder communication, procurement, risk and integration of all these. However, existing literature does not give primary importance to workload management for human resources. From July 2007 to April 2009, this study observes that in the IT industry working in Islamabad, Pakistan, workload management was considered as support or secondary function of human resource management. Focusing on workload management this study hypothesized that the quality of the workload management determines the project outcome. Adopting stratified sampling 70 heterogeneous IT projects from 24 different software houses were selected. Using a reliable instrument, data was about the quality of workload management by the project managers and the consequent results of the IT projects was collected in a cross sectional manner. The data was analyzed using frequency distribution, Pearson correlation and linear regression. The findings confirmed a strong correlation and dependency of project outcome on proper workload management. This study recommends good quality workload management a primary tool for determining the project's scope, time and cost. The study contributes guidelines and templates to help project managers improve workload management skills and its role in project outcomes respectively.

Introduction

Accomplishing a project successfully is an inherit need of all businesses. Every time bound project depends on heterogeneous factors for its success. The knowledge of project management recommends practice of nine knowledge areas that include managing project scope, time, cost, quality, risk, procurement, communication, human resource (HR) and integration of all. Each knowledge area further indoctrinates certain functions for strengthening the project management during the life time of the project (Project Management Institute [PMI], 2008; Schwalbe, 2010 & Dinsmore, 1990). In the umbrella of project management, this study focused on the time management as this knowledge area is ranked among the primary needs and constraints for every type of project. Further, through experiential learning and observations the study identified that critical time constraints dictate compromises on quality standards expected for HR management especially in the workload of team working on the project. The study identified facts that human resource engaged in various heterogeneous projects with the IT industry working in Islamabad Pakistan between Jan 2006 to Dec 2008 complained of being overloaded, negatively stressed and compressed with tight and irrational timelines for extensive, demanding and challenging magnitude of project work.

Literature advises giving higher precedence to time management function of project management than HR management (Schwalbe, 2010). This study witnessed facts in the practices at the above mentioned industry that time requirements of projects dominated HR predilections and even limits. Such compromise in the industrial practices for HR that are indirectly supported in literature led project teams to compromised performance that ultimately affected project's result adversely. Nevertheless, HR management is declared a support function for projects, imbalance in the integration of HR management and time management for projects in the selected sample did not lead them to a successful end. The study therefore focused on workload management for project team to explore how substandard quality practices in this function impacts the project result.

Experts in the selected IT industry acknowledged that cost of IT projects and performance of team get affected by the time management performed for the HR. IT professionals were reported overloaded especially near deadlines of the projects. It was reported that the imposed overstress affected the health that subsequently affected the project's progress. Stress management is associated with Time and workload management for project as it affects the employee's performance that determines project progress. IT professionals Rafique (personal communication, March 10th, 2006), Ismail (personal communication, April 9th, 2006) and Mateen (personal communication, April 11th, 2006) informed that they remained overburdened due to workload of projects tasks demanding extra long hours and restless throughputs. This used to affect health and morale of team members and resultantly timelines could not be met as scheduled. Sick leaves were also reported more in software houses where employees were engaged into voluminous workload. Therefore, rationality in timelines while setting workload was reportedly an improvable area in the HR practices in the selected industry. In summary, the study observed room for improvement in the exercise of defining, designing and

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distributing workload for project team members by the project managers.

Problem Statement

The literature on project management renders time management a constraint for project ranking it a primary function. Practitioners in IT industry working in Islamabad, Pakistan were reported to prefer time requirements without maintaining equilibrium between HR requirements of project team and project time requirements. Although the literature declares HR workload management a support function for projects, but rendering this HR function secondary or merely a support function is not rational as in real practices the study observed projects suffering due to substandard workload management for teams.

Literature Review

Every project seeks a successful accomplishment. However, project success is polymorphic term. IT professionals in the selected industry believed accomplishing project within stipulated time and budget fulfilling end user's requirements and gaining good reputation. Standing, Guilfoyle and coauthors (2006) *endorsed same parameters for defining project success. The study identified that satisfaction of HR or team accomplishing the project was not catered as a parameter to gauge project success.*

Aaron, Dov, Ofer and Alan (2001) added that project success is more than meeting timelines, requirement and staying in budget. Aaron et al (2001) contributed four major dimensions to project success that were; (1) project efficiency, (2) impact on the customer, (3) direct business and organizational success, and (4) preparing for the future. This study found the fourth parameter, preparing for the future, a function capable of covering the HR concerns in terms lessons learnt, identified training requirements for skill development and adoption, identified gaps in team size triggering expansion or rightsizing, quality of workload setting and required improvements etc. That is how Aaron et al (2001) endorsed indirectly the theme of this study that HR functions hold significance in determinations of project success, although in real practices it is yet measured only in financial and timely gains.

This study focused on workload management for HR as reports confirmed that projects suffered due to substandard practices in this HR function. It simultaneously acknowledges the fact that for project success integrating various knowledge areas is critical (PMI, 2008). However, it declares the description of knowledge areas and functions out of its scope as it limits to understanding impact of workload setting on project result.

Literature emphasizes on the intervention of line managers to ensure workload distribution and accomplishment. Workload management is therefore critical and challenging task for project manager being line managers. Qadeer, Shafique and Rehman (2011) contributed that in case the workload of an employee is set heavy, the morale and performance of the employee and even that of the management is affected adversely. This reinforces the perception that project result is affected by the workload settings. McConville (2006) & McConville and Holden (1999) acknowledged when workload accrues, tension and even role conflicts occurs deteriorating performance. Watson et al (2007) shared that line managers are restricted to HR relations for being in-charge of workload setting and distribution. Such hindrances in HR involvement remain counterproductive in team management and also enhance job pressures. These evidences in literature indicate that project managers being line managers are required to be involved less in team relations as they are expected to take work from teams. Such restrictions however lead project manager to give more precedence to project's work in comparison of understanding the HR capacity and predilections. This fact leads project managers to set workload as demanded by project work requirements instead of HR's capacity and skills. Eskildson, Westlund and Kristensen (2004) and Neill (2005) emphasized that project managers should ensure good balance between HR needs and timelines keeping workload settings encouraging, pragmatic and challenging. Nevertheless, workload management is usually centered on tight timelines without considering or sometimes understanding the team's capacity and skills. Such observation and experience in the selected IT industry led this study to interpret the same rational as already acknowledged in the literature in terms of workload management.

Theoretical Framework

The study adopted the model of project success as recommended by Standing et al. (2006) as it was flexible to accommodate the additional benefits to organization like HR development, satisfaction, learning, skill enhancement etc. along with conventional project success yardsticks profit, timeliness and customer satisfaction. The study appended the fourth parameter recommended by Aaron et al. (2001) under the other benefits dimension of project success kept flexible by Standing et al. (2006). The study thus selected project result or outcome as a dependent variable with an optimized operational definition. As explained earlier, the study took workload setting for human resource of project team as an independent variable defining it as recommended by Eskildson et al. (2004) & Neill (2005). Figure 1 depicts the theoretical model of the study.

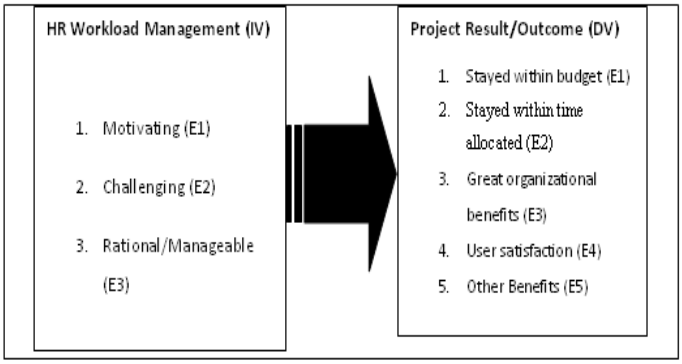

Figure 1 – Model of the Study

Hypotheses Statement

H1: Better the quality of workload setting (WS) for team members, greater the prospects for Project Success (PS).

H2: Workload setting (WS) in real practice of project management deserves a primary importance.

Methodology

This was a cross sectional study that was conducted in the IT industry of Islamabad and Rawalpindi, Pakistan during the period from July 2006 to April 2009. The study selected 24 large software houses and telecom organizations. It selected the stratified sampling technique to identify and select sample of 70 heterogeneous IT projects that have been scheduled during the time frame mentioned. The IT projects were mainly dealing with large databases, ERP solutions, telecom software support and development and certain other types like online web portals, etc. The study's selection criteria for the IT project was to ensure that the project team size was at least 5 members or above and

its scope was large enough to demand at least 1.5 years for its accomplishment. The study adopted pre-tested, reliable and valid instrument formulated on 5 point interval scale (Eskildson et al. (2004) & Neill (2005)). In additional based on experiential learning in the industry and preliminary investigation during 2006 – 2007 the study included adequate number of demographic variables to ensure collection of various facts, figures and reasons.

For data analyses, the study employed SPSS 15.0 for conducting the analysis of frequency distributions of the dependent variable that is given in Tables 2. The study tested the anticipated correlation between workload management and project result through Pearson's correlation that is elaborated in Table 3. The study also applied linear regression between workload management and project result to learn and analyze the impact and significance of their relation. Table 4 provides details of regression analysis.

Data Analyses and Findings

The demographic variables in the instrument helped the study identifying the following reasons for compromise on the standards of workload management for project team members:

1. The HR management functions are believed to be secondary in their precedence as advised by the literature.
2. The projects are earned/gained on a very short notice without adequate planning and adequate time to arrange human resource and logistics.
3. Staffing usually is a very time taking processing and time constraints in real world forced software houses to depend on existing resources for all existing and new projects.
4. Project managers used to assign project tasks based on their personal assessment, confidence and expectation from a well known existing resource while its phenomenal no to rely on new untested resource for million dollar projects.
5. Cost control or mitigation remained the key objective for project manager that s/he manages through limiting human resources and logistics for projects in hands.
6. Use of formal project management software was not a common habit among subjects especially those whose projects were reported suffered. Agile approach of managing projects was reported a norm which provided leverage to project manager to manage projects casually without any structured approach towards various knowledge areas including HR management.

Table 1 depicts a high reliability of the instrument (Alpha > 0.7). The content validity of the instrument was confirmed seeking expert's opinion. Table 2 presents the frequency analysis of the dependent variable project result based on its relation with workload management for HR. 3.0 is interpreted as the threshold value for at least satisfactory completion of project. Lesser the value than 3.0 closer the project result to failure is. On the other hand more the value towards 5.0, better the accomplishment of project. It revealed that out of the selected 70 IT projects of different types, 34.3% IT projects suffered for substandard practices in workload assignment while 65.7% remained successful for good practices in same HR function. These figures indicate that about 46 projects remained successful while 24 suffered in the selected sample due to quality of HR practices in the workload settings. These statistics confirm that project result is associated with workload management set for projects team and therefore compromise in this HR function should be avoided.

Table 3 indicates that workload management and project result are highly correlated (Pearson value = 0.718 and $P < 0.000$). As Pearson correlation between the two variables under discussion is high and significant, the study interpreted that project result strongly depends on better quality of workload management for its teams. From these empirical findings the study substantiates its hypothesis H1 stating better the quality of workload setting (WS) for team members, greater the prospects for Project Success (PS). Such finding further reinforces the significance of work load management for project success and the study finds it logical not to consider it a secondary or support function for project management.

To further confirm the findings, the study applied linear regression between workload setting (WS) and project result (PS) to further validate and confirm the findings and interpretations. The results in Table 4 indicate that workload setting (WS) as an independent variable is a significant determinant of the results of IT projects ($P < 0.05$, $F = 19.947$, $R^2 > 0.7$ and Standard error < 1.0). Table 4 indicates that β coefficient for the independent variable remains positive. It is evident that workload setting (WS) plays as a significant factor for the project result (PS) of IT projects as it is positively correlated with it. In Table 4 the respective t value depicts the relative importance of the independent variable for project result. Workload setting possesses high importance for the project result ($t > 1.0$). Table 4 further confirms that the regression between workload management and project result remained highly significant within the selected sample ($P = 0.000$ and $R^2 > 0.7$). This regression result is interpreted under assumption that the essential knowledge areas and prerequisites for the projects were kept intact. Table 4 further clarifies that workload setting (WS) singularly shall not be an effective factor for project result if other determinants are not kept intact ($P = 0.202$) (Sekaran, 2000 & Cooper and Schindler, 2003). These findings reinforce the findings and interpretations of this study. It therefore substantiates its H2: Workload setting (WS) in real practice of project management deserves a primary importance.

Conclusion

Based on the aforementioned findings, the study interprets that both its hypotheses H1 and H2 are acceptable and therefore it substantiated them. The study infers that workload management is one of the significant determinants of project success which should not be considered secondary in routine project management practices. The study acknowledges that all the rest of the knowledge areas and prerequisites for project success should also be maintained simultaneously and only then the good quality in workload management will help. For example, if good quality human resources are not hired to form the project team, good quality in workload management singly will not be helpful. Similarly, all other knowledge areas are important.

The study concludes that the significance of workload management is not secondary and hence it should not be declared secondary or a support function for project management. As per the findings of this study, the workload management is one of the key factors for defining the scope, time, cost and quality standards for an IT project effectively. The study thus recommends that considering workload management as one of the primary tools for leading the management of primary functions of the project that are scope, time and cost.

Recommendations

The study recommends that workload management for project team should be considered a primary function of HR management without any compromise on the quality of its practice. To help project managers assign rational, motivating and challenging work assignments to their team, the study contributes the following guideline

1. It recommends avoiding agile or unstructured approach for managing HR functions, especially workload management/setting.

Preferably, hire as many human resources as needed by the project's requirements. A comprehensive work breakdown structure (WBS) should help a project manager in assessing the right team size while the available project budget and timelines will be the constraints. It recommends utilizing a human resource only for one project at a time. However, if a human resource is required to be utilized in multiple projects simultaneously, then the timelines for different projects must not be kept parallel. In other words in parallel running projects, a single human resource must not be assigned tasks with same timelines. Under non-trivial circumstances, if projects have to be run with less number of human resources then:

a. Compensate the overloaded human resources either through monetary overtime incentives or non-monetary benefits like in-lieu leaves etc.

b. Relax the timings for overloaded human resources adopting flexi timing approach, where applicable.

2. Even if right team size for project has been achieved, project managers should employee any project management software like MS Project 2003 or Primavera while performing workload setting so that the software may highlight the overloaded resources promptly.

3. Project manager should view the Resource Histograms before finalizing the quantitative workload settings for team members. It must be ensured that the Resource Histogram shows no red lines (over allocated symbols) for any of the human resource. Indeed this is ideal to achieve such allocation. If realistically it is not possible through any means, then perform Resource Leveling using mentioned software.

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Table 1 – Reliability of the Instrument

Number of cases	Number of organizations	Value of alpha
70	24	0.9539

Table 2 – Frequency Distribution Project Result (Dependent Variable)

Values between 1 to 5	Frequency	Percent	Valid Percent	Cumulative Percent
Project Badly Failed				
1.33	1	1.4	1.4	1.4
1.50	1	1.4	1.4	2.9
1.67	4	5.7	5.7	8.6
1.83	2	2.9	2.9	11.4
Project Failed	5	7.1	7.1	18.6
2.17	2	2.9	2.9	21.4
2.50	6	8.6	8.6	30.0
2.83	3	4.3	4.3	34.3
Satisfactory Project Completion	2	2.9	2.9	37.1
3.17	3	4.3	4.3	41.4
3.33	1	1.4	1.4	42.9
3.50	1	1.4	1.4	44.3
3.67	4	5.7	5.7	50.0
3.83	2	2.9	2.9	52.9
Effective Project Completion	10	14.3	14.3	67.1
4.17	12	17.1	17.1	84.3
4.33	3	4.3	4.3	88.6
4.67	3	4.3	4.3	92.9
4.83	1	1.4	1.4	94.3
Excellent Project Completion	4	5.7	5.7	100.0
Total	70	100.0	100.0	

Table 3 - Pearson's Coefficient of Correlations

Variable		Work Load (IV)	Project Result (DV)
Work Load (IV)	Pearson Correlation	1	.670(**)
	Sig. (2-tailed)	.	.000
	N	70	70
Project Result (DV)	Pearson Correlation	.670(**)	1
	Sig. (2-tailed)	.000	.
	N	70	70

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

Table 4 - Result of Linear Regression

Constant	Work Load (IV)	R Square	F
-0.543	0.093	0.812	19.947
(0.598)	(0.146)		
[-0.909]	[0.638]		
0.376	*0.532*		*0.000*

Coefficient, Standard Error in Parenthesis, t-value in brackets and P-Value in italic