

Team Development – Why doesn't it Work in Project Teams?

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ABSTRACT

Human resource management is important in improving organizational performances. It also plays a significant part in any project management body of knowledge. However, in the literature there are contradictory results regarding the impact of human resource management on project success. This paper focuses on one important human resource management process, named “team development”, and its effectiveness in projects. This paper’s purpose is to investigate the importance of team development activities in the project environment, which is part of the operational level of organizations. In this study, we explore the impact of team development on project success and suggest three variables that may moderate this relationship. Sixty three project teams, from different organizations and industries in Israel, were included in this study. Data was collected from project managers and project manager supervisors. Results show that team development practices to have no influence on project success. Moreover, no moderate variables were found to strengthen this relationship. This means that current team development practices are not effective in the project environment. Alternative project-tailored team development practices are suggested in the paper.

Keywords: project management, human resource, project teams

Category: Research paper

INTRODUCTION

Human resource management (HRM) practices are considered critical to organizational success. However, its importance in the project environment is still unclear. On the one hand, HRM is an important part of any project management body of knowledge. On the other hand, several recent empirical studies in the area of project management found HRM to have a very limited effect on project success. The motivation for this study was to further investigate the effectiveness of HRM in the project environment.

This paper focuses on one of the most important HRM processes in projects, called “project team development”. In the literature team, development is identified as being under the responsibility of the project manager, and it is suggested that project managers engage in particular team development activities such as training, rewarding, and collocation in order to support this process. In spite of the above, it appears that project managers tend to invest a majority of their effort in other types of project management activities, such as scheduling, budgeting, risk management, controlling, and other project management practices. It has been suggested that the tendency of project managers to invest a minimal amount of effort in team development lies in their lack of effective team development practices knowledge. To complicate matters even more, the project management literature lacks ample reference to project-tailored tools. In this paper, we propose to: (1) explore the effectiveness of team development practices on project success and, (2) investigate potential moderator variables that may influence this relationship. In the following sections, we review the relevant literature, present our research model, hypotheses, results, and conclude with a discussion of the filed study.

LITERATURE REVIEW

This section reviews the relevant literature in the areas of teams, project teams, and project team development.

Human Resource Management and Team Development

HRM is considered a major component of any manager's job (Gomez-Mejia, *et al.*, 2001). A managerial approach to human resources and HR strategy implies that all managers, regardless of their position in the organizational hierarchy, their functional area, or the size of their firm, must deal effectively with HR issues because these issues are at the heart of being a good manager. Thus, all managers within any given organization need not only adequate technical training to enhance productivity, but also training in administrative (e.g., budgeting, scheduling, monitoring, etc.) and interpersonal skills (e.g., interpersonal and communication skills, sharing of information, conflict management, feedback, motivation, etc.). These skills are required whether managers manage individual workers, or teams. However, in addition to

the above, managers who manage teams, need to be knowledgeable in team development skills in particular in order to enhance team productivity. The Project Management Body of Knowledge (PMI, 2004) also mentions that one of the major roles any project manager has is to develop his project team, and the “team development” process is part of the HRM project knowledge area.

Project Teams

With the growing complexity of the work environment, many organizations have reconstructed individual work procedures into team processes to increase productivity and enhance organizational effectiveness (Banker *et al.*, 1996; Dulebohn and Martocchio, 1998; Katzenbach and Smith, 1993; Mohrman *et al.*, 1995). A team is defined as “a small number of people with complementary skills who are committed to a common purpose, performance goals and approach for which they are mutually accountable” (Katzenbach and Smith, 1993). Team members have specific roles or functions, and the life span of membership is limited (Cannon-Bowers and Salas, 1998).

Project teams are referred to as teams that carry out defined, specialized, time-limited projects that disperse upon completion of project (Chen *et al.*, 2004). There are three phases in development of project teams (Weinkauff and Hoegl, 2002). The first phase is referred to as the “conceive phase”. During this phase, the project manager and team are focus on: project goal setting, determination of approach, and resource planning. This is followed by the “organizing phase” in which the manager and team members engage in: boundary establishment, delineation of relationships, team task design, determination of values and norms and the securing of resources. Finally, during the “accomplish phase”, most of the activities are directed toward enabling the team members to work together as effectively as possible in order to successfully complete the project at hand.

Project Team Development

A project is defined as any series of activities and tasks that have a specific objective to be completed within certain specifications, have defined start and end dates and funding limits (Kerzner, 2006). A project has four phases: initiation, planning, execution, and closure (PMI, 2004). In this paper, we focus on the execution phase of the project. During this phase, team members engage in actual work and team related activities in order to advance and successfully complete the project at hand. As a result, a large amount of effort is directed toward the coordination of people and resources in order to enable effective performance (PMI, 2004). In fact, the PMI (2004) identifies seven processes included in this phase, one of which is team development, upon which we focus in this study. Project success is usually measured according to four dimensions: (1) schedule overrun, (2) cost overrun, (3) project

performance, and (4) customer satisfaction of project outputs (Kerzner, 2006; Wu and Wang, 2006).

Project team development is a major effort that a project manager is responsible for in any project. Project team development is defined as the process of taking a collection of individuals with different needs, backgrounds, and expertise and transforming them into an integrated, effective work unit (Thamhain and Wilemon, 1987).

Project team development is included in most project management textbooks and bodies of knowledge (e.g. Kerzner, 2006; Meredith and Mantel, 2006; PMI, 2004). In addition, some studies have found team development very critical to project success and failure (e.g. Todryk, 1990; Tampoe and Thurloway, 1993; Barczak and Wilemon, 1992; Thamhain, 2004). However, the literature also suggests some contrasting views. Pinto and Prescott (1988) identify the personnel factor as being only a marginal variable in project success. Belout and Gauvreau (2004) found personnel factors to have an insignificant impact on project success. Ebtehaj and Afshari (2006) did not find HRM practices to have a significant impact on project success in twelve large oil and gas large projects.

Furthermore, in line with the research findings indicated above, the project management research has not found clear and strong support regarding the impact of HRM practices on project performance and success. Thus, when a project manager has to choose in which activities to engage, in order to bring the project to a successful completion, team development practices may indeed not be of high priority.

CONCEPTUAL FRAMEWORK

The Research Model

We propose a model in which the impact of team development on project success is dependent on project duration, project cost, and project risk (see Figure 1). Thus, our model includes one independent variable i.e., Project Team Development Index – PTDI (includes the specific team development areas listed below); three moderating variables i.e., project duration, project cost and project risk, and four dependent variables relating to project success, i.e., schedule overrun, cost overrun, project performance and customer satisfaction, which are common in literature (e.g. Kerzner, 2006; Zwikael and Sadeh, 2007).

The PTDI consists of six team development areas identified in literature (e.g. Williams, 2002; Richards and Moger, 2000; Stokes, 1990; PMI, 2004; Kerzner, 2006). The six areas include: (1) team building, (2) reward and recognition, (3) training, (4) goal clarity, (5) cost clarity, and (6) physical environment (collocation).

Figure 1: The Conceptual Framework

Project duration, project cost, and project risk serve as the moderator variables. The dependent variable, project success, was measured using four dimensions stated in literature (Kerzner, 2006; Zwikael and Globerson, 2006): (1) schedule overrun from the approved due date), (2) cost overrun (from the approved budget), (3) project performance, (in comparison to the agreed upon objectives/goals), and (4) customer satisfaction of project outputs.

Finally, based on the literature review (e.g., Kerzner, 2006; Meredith and Mantel, 2006; Thamhain, 2004b; Swink *et al.*, 2006; Oltra *et al.*, 2005) we conclude that the project management literature recognizes project duration, project cost and project risk having a potential impact on project management behavior and project results. In line with the latter, we propose to investigate if these serve as moderators in the team development effort and project success relationship. As a result, the research model is described in Figure 1.

Research Hypotheses

In line with the conceptual framework, we propose three hypotheses. These hypotheses test the moderation effect that project duration, project cost and project risk may have on the relationship between project team development and project success. Hence, the following hypotheses are essential for testing moderating effect:

1. The impact of team development effort on project success – In spite of the inconsistent findings in the literature stated earlier (e.g. Todryk, 1990; Tampoe and Thurloway, 1993; Barczak and Wilemon, 1992; Thamhain, 2004; Pinto and Prescott, 1988; Belout and Gauvreau, 2004; Ebtehaj and Afshari, 2006), we tend towards assuming that project success is related to the amount of effort invested in team development activities. This hypothesis is based upon the general HRM literature. Therefore, we the first hypothesis is:

H₁: There is a positive correlation between the extent of use of project team development and project success.

2. The interaction of project duration, project cost and project risk with team development on project success – There may be a limited direct influence of team development effort on project success. Yet, interacting with different project scenarios, such as project duration, project cost and project risk, team development effort may affect project success. The explanation for this hypothesis is the importance of these factors, as has been stated in the literature (e.g. Kerzner, 2006; Meredith & Mantel, 2006; Oltra *et al.*, 2005; Thamhain, 2004; Swink *et al.*, 2006). Hence, the last research hypothesis is:

H₂: There is a significant interaction between project duration, project cost and project risk and team development on project success.

The Questionnaires

For each project, two questionnaires were administered: one to the project manager and the other to his/her supervisor. The questionnaire distributed to project managers focused on the amount of effort he/she had invested in team development practices. In this questionnaire, the project managers were asked to rate the relative amount of effort they extended in each of the particular team development practices, during the last project completed. Twenty-nine of the major team development practices identified in the project management literature (e.g., Williams, 2002; Richards and Moger, 2000; Stokes, 1990; PMI, 2004; Kerzner, 2006) were included in the research questionnaire. Each item was rated on a seven-point Likert scale ranging from 1 (never) to 7 (always).

The questionnaire's reliability was calculated using Cronbach alpha. The index value for all 29 team development items $\alpha = 0.871$, which reflects high reliability (Cronbach, 1951; Garnezy *et al.*, 1967). This index is our PTDI index. A factor analysis was performed to ensure the grouping of the 29 practices into areas. Using the 29 items included in the questionnaire, the factor analysis suggests the explanation of 71% of the variance. Hence, the grouping of the 29 team development practices into six areas, as appears in the questionnaire, may be valid. The reliability level of each team development area including more than one item is specified in Table 1. The conclusion from these analyses is that the questionnaire is reliable for assessing project team development.

Table 1: Cronbach Alpha Reliability Measures for each of the Six Team Development Areas

The second questionnaire, distributed to the project manager's supervisor, focused on project success. The supervisors were asked to refer to the same project that was referred to by the project managers. The questionnaire distributed to the supervisors includes eight items pertaining to project success dimensions and supervisor evaluations of additional project characteristics. Project success results were reported by the project manager's supervisor in order to avoid 'same source bias' with data supplied by the project manager.

Data Collection

Data was initially collected via 99 project teams from 37 different organizations in Israel during the years 2004-2005. Organizations have been chosen randomly to include both small and large companies and to relatively reflect different sectors across the country. For each project, two questionnaires have been administered: one to the project manager, and the other to his/her supervisor. The questionnaire distributed to project managers focused on the

amount of effort he/she had invested in team development practices. In this questionnaire, project managers have been asked to rate the relative amount of effort they extended in each of the particular team development practices. The major team development practices identified in the management literature (e.g., Williams, 2002; Richards & Moger, 2000; Stokes, 1990; PMI, 2004; Kerzner, 2006) were included in the research questionnaire. Each item has been rated on a seven-point Likert scale ranging from one (never) to seven (always).

Additional analyses of organization type indicated that sixty seven percent of the project teams included in this study came from organizations in the private work sector, whereas thirty three percent came from public sector organizations. For frequency of organization, type and size of the 63 projects included in the study see Table 2.

Table 2: The Distribution of Organizations and Projects in the Research Sample

As can be seen in Table 2, the software industry is highly represented in this study. Some engineering projects were performed in engineering organizations, as well as in production and communications.

RESULTS

Hypothesis 1 – The Direct Impact of Team Development Effort on Project Success

The first hypothesis claims that there is a positive correlation between the extent of use of project team development practices and project success. Project success is measured using four common measures: schedule overrun, cost overrun, project performances, and customer satisfaction.

Firstly, correlations were calculated between PTDI and each of the four project success variables. Table 3 presents the Pearson correlations values. Significance levels appear in brackets, while significant values are marked with asterisks.

Table 3: Correlations between Project Team Development and Project Success Dimensions

Table 3 shows PTDI to significantly correlate only with schedule overrun. No other significant correlations were found with the other three project success measures. These results indicate only a limited impact of team development on project success.

Hypothesis 2 – Project Duration, Project Cost and Project Risk Interact with Team Development to Influence Project Success

The previous sections showed no significant impact of team development effort on project success. The second hypothesis examines the moderating role of these variables on the team development - project success relationship.

A linear regression was executed with the each of the four project success measures acting each time as the dependent variable. The independent variables included: (1) the PTDI, represent team development practices (2) project duration, project cost and project risk (3) interactions between these two groups of variables. Table 4 presents significance levels, while significant values are marked with asterisks.

Table 4: The Impact of the Interactions among Project Characteristics and Team Development Practices on Project Success

Table 4 shows no significant interactions to influence project success. This means that under these circumstances, project team development has no influence on project success. The next section identifies the potential reasons for these results.

DISCUSSION

The initial motivation for this study was to further explore the contradictory results that appear in the literature regarding the impact of project team development on project success. Because of our exposure to this literature, we proposed a model in which we specify the effect of team development practices on project success. We found that team development had no significant impact on project success. Moreover, even in long, expensive, and high risk projects, there was no significant influence of team development practices on project success.

Investigating the causes for this phenomenon, we may assume several reasons, which include:

1. Time limited projects – the project is a temporary time-limited endeavor, while team development takes time. Moreover, the effect of team development on team performance and success, takes even more time. Therefore, the positive effect of team development efforts may not manifest themselves by the end of the project. For example, due to these reasons project team members are rarely sent to training sessions during a busy project life cycle.
2. Team members' availability – Unlike most organizational teams, the project team may include employees who participate in several projects simultaneously. Hence, it is more

complicated to develop a team based on team members who spend only part of their time on the project.

3. Heterogeneous teams – The project team involves members from different disciplines. For example, a software development project may include a programmer, data base analyst, quality assurance manager, as well as an account manager, a lawyer and human resources representatives for implementation and end users' training. Hence, it is more difficult to develop employees with different background into one cohesive team.
4. Project manager's assignment – In some cases the project manager is assigned to the project after it has already started (Foti, 2005). In these cases, the project manager must rush into project planning and execution, which leaves him no time for team development activities.
5. Lack of authority – in many cases project team members are not directly managed by the project manager, but by their functional supervisor. Most employees pay more attention to their functional manager, who is responsible for their promotion, training, and leave. Moreover, the project manager has no authority in many team development areas, such as reward and training, which are decided by the functional manager.
6. Job oriented – In many technological organizations, project managers are assigned to projects due to their technical skills. In these cases, many project managers are task oriented, rather than people oriented. The end result is that these project managers have questionable skills in developing their own team, while using HRM practices.
7. Unique team development practices – Most team development practices that can be used by project managers are "generic" and were imported from the general HRM literature. This means that they don't always fit the unique project environment.

CONCLUSIONS

Previous studies, as well as this one, have found team development practices to have very limited influence on project success. All these studies have used current team development practices used by project managers in many organizations, such as reward, recognition, and collocation. These practices were adapted from the HRM literature to project management bodies of knowledge and are not effective in the project environment.

In spite of the above, we still believe that team development practices can be useful in the project environment. Yet, project-tailored approaches should be used. Based on this study's findings, we may suggest some practical advice, in both the organizational level and in the project managers' level to improve team development's effectiveness. An organization may support project managers, so they will be able to improve team development in the unique project environment, as follows: (1) assigning the right project manager, (2) assigning

the project manager on time, (3) enable the project manager to be equipped with the authority to engage in team selection, and (4) setting clear project success measures for all projects.

In addition, some advice is directed towards the project manager in order to improve team development: (1) we suggest that the project manager develop a productive working relationship with the functional manager, (2) use brainstorming techniques to engage team members, (3) choose a team name to unite the team, and (4) clearly define project team members' authority and responsibility. These will further be discussed in the presentation.

Further studies may include data collected in different countries. Findings of this study also point to the need of developing new and more efficient team development tools to be used by project managers. Project tailored team development practices, and their potential effect on project success, can be developed and tested in future studies. Finally, further research should also investigate team member, project team manager, and top management perceptions of team development activities and project success in different types of organizations, sectors, and projects.

Finally, although much of the recent HRM literature has recommended studying HRM systems, this paper is focused on the project environment, where the authority of a project manager in managing a HRM system are limited, and managing HRM practices and processes is a more applicable approach.

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Figure 1: The Conceptual Framework

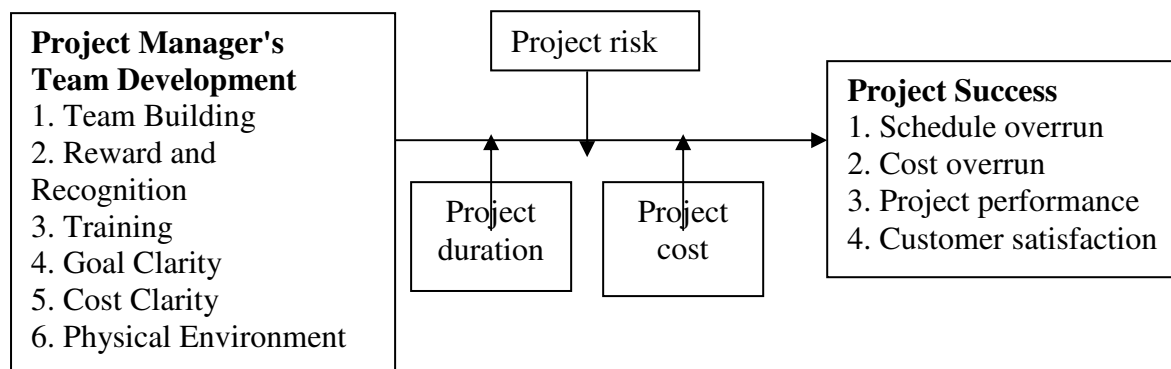


Table 1 – Cronbach Alpha Reliability Measures for each of the Six Team Development Areas

Team Development Areas	Number of Items	Cronbach Alpha
Team Building	10	0.75
Reward and Recognition	6	0.79
Training	3	0.91
Goal Clarity	3	0.84
Cost Clarity	1	*
Physical Environment (collocation)	6	0.77

* Reliabilities could not be assessed as these areas were measured by a single item only

Table 2 – The Distribution of Organizations and Projects in the Research Sample

Sector	Organization type	Project type
Software	46%	54%
Communications	11%	3%
Services	13%	6%
Production	11%	0%
Engineering	14%	35%
Others	5%	2%

Table 3 – Correlations between Project Team Development and Project Success Dimensions

Project Success Measure Independent Variable	Schedule Overrun	Cost Overrun	Project Performance	Customer Satisfaction
PTDI	-0.25 (0.04)*	-0.13 (0.34)	0.04 (0.75)	0.03 (0.83)

* $p < .05$; ** $p < .01$

Table 4 – The Impact of the Interactions among Project Characteristics and Team Development Practices on Project Success

Project Success Measure Independent variable	Schedule Overrun	Cost Overrun	Project Performance	Customer Satisfaction
PTDI	0.23	0.63	0.93	0.08
Project duration	0.94	0.72	0.40	0.60
Project cost	0.38	0.49	0.41	0.67
Project risk	0.15	0.28	0.96	0.07
PTDI * Project duration	0.94	0.73	0.40	0.63
PTDI * Project cost	0.76	0.94	0.67	0.52
PTDI * Project risk	0.19	0.35	0.91	0.07

* $p < .05$; ** $p < .01$