

Research Article

Effectiveness of Project Teams and their Impact on the Performance of Saudi Construction Projects

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Abstract: The objective of this study is to determine the nature and strength of relationship between the different elements of teamwork effectiveness and overall project success. Literature has been reviewed on constituents of effective teamwork and indicators for project success to determine the relationship. Two questionnaires were used to determine the nature and strength of the relationship between components of effective teamwork and overall project success. Data on the questionnaires were gathered from 13 different project teams of large commercial buildings in Saudi Arabia. The research showed a positive and high correlation between team effectiveness and project success. Analysis of the obtained data indicated that three factors of teamwork are strongly associated with project success. These factors are team roles and responsibilities, team goals and objectives and team leadership. The research conducted is most beneficial for project managers and team leaders in construction organizations to adjust their focus on key components of effective teamwork that lead to augment the possibilities of project success.

Keywords: Building projects, project success, Saudi Arabia, teamwork effectiveness

INTRODUCTION

Saudi Arabia is currently witnessing a large boom in the construction of all types of projects, including roads, housing, large building projects, industrial and health care facilities. This boom is attributed to the substantial increase in the revenues of the oil and gas industries. However, the majority of these projects failed to meet the objectives of being delivered on time, cost targets and acceptable quality (Mitra and Tan, 2012). Bubshait and Al-Juwairah (2002), Assaf and Al-Hejji (2006), Al-Dosary *et al.* (2009) and Assaf *et al.* (2013) examined the various reasons of poor performance of the these projects and concluded that the main causes of poor performance are shortage of labor, untrained manpower, inexperienced contractors, poor management exercises, lack of advanced technology, adversarial relationships, claims, change orders, competition, corruption, manpower costs, unproductive labor, poor quality construction, government rules and regulations, fluctuation in building material prices, unavailability of resources, lack of scheduling and planning effectiveness. To overcome some of the aforementioned causes of poor performance, there is a need to examine project success from the perspective of the effectiveness of the team.

The objective of this study is to identify the relationship between factors leading to team performance and overall construction project success. The research conducted is most beneficial for project managers and team leaders in construction organizations to adjust their focus on key components of effective teamwork that lead to augment the possibilities of project success.

LITERATURE REVIEW

Teamwork is a characteristic of the construction industry where construction projects are delivered by various professionals as a team. These professionals include architects, contractors, material suppliers, specialists and others like government planners and engineers (Chow *et al.*, 2005; Winch, 2009; Spatz, 2000). Extensive research has been carried out on the relationship between components of effective teams and project success. Clear goals are major elements of project success (Dinsmore and Cooke-Davies, 2006; Rad and Levin, 2006). Parker (2008) further added that scope of the work is brought off in a much better way when goals are apparently defined and substantially understood and thus prospects of project and team success is increased.

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It has been established that knowledgeable leadership leads to project success through convincing people of the need to change and to motivate them to work together for accomplishing project objectives in difficult work environments (Keller, 1992; Anantamula, 2010; Juli, 2010). Moreover, clear, understandable and matching employees to their areas of expertise lead to project success (Pratt, 2010; Camilleri, 2011). Gido and Clements (2011) concluded that the characteristics of effective teams include high degree of cooperation, trust, open, timely effective communication and ethical behavior. These characteristics are important factors for project success. Previous studies in scope of teamwork remarked that the success of a project is heavily dependent on appropriate management of internal conflicts, effective communication, setting and agreeing on comprehensible goals and establishing good trusting relationships within the team (Kerzner and Saladis, 2013; Dalal, 2011). Effective communication has been strongly linked with project success (Rad and Levin, 2003; Williams, 2002; Clutterbuck, 2007; Hernon and Rossiter, 2006). Kerzner (2013) indicated that inadequate communication is a major drawback to the development of good teams as it induces low motivation levels, drops in team spirit; and it contributes to poorly stated targets and poor project control, coordination and flow of work. Stevens and Campion (1994) reviews literature on knowledge, skills and ability need for teamwork and concluded that good interpersonal relations, team initiative approaches, honesty, respect, trust, openness and collaborative behavior and cooperative attitude of team members are particularly attractive and unique factors linked to good team performance. A clear structure and well defined roles promote the stability of coordination within a team (Choi, 2002; Molleman *et al.*, 2004). Hoegl and Parboteeah (2003) reported after studying the data of leaders and managers of 145 teams specialized in software development that good coordination and open exchange of pertinent information during the task promotes team effectiveness. There is less number of conflicts and high understanding when members of team openly communicate with each other (Ensley *et al.*, 2000). Team performance improved when decisions are made unanimously (Bettenhausen, 1991; Jackson *et al.*, 2003). Hartenian (2003) suggested that teams with cooperative behavior are more likely to achieve their set goals properly. It was concluded that teams who are trained in solving conflicts and showed good performance in settling conflicts, agreeing on goals and planning adequately.

Team members should be selected based on the skills and expertise relevant to scope of work. According to Beale and Freeman (1991), the skills and expertise of key team members like client representative, leader of the designing team and the construction team leader are needed to be emphasized as to enhance team effectiveness. Palmer (2002) remarked that culture within the project team as a

significant element by pointing that organizations may not be capable of achieving specific goals simply by getting key people to work together if the culture of the project does not support the disciplines involved. Scarnati (2001) pointed out that by following proper structure of organization, enduring effective communication, making resources available, developing trust among team members, promoting respect for culture differences of the corporate and the conditions in which teamwork is conducted can lead to effective and high performing teams. McGrath (1970) identified team effectiveness, demographics and experiences and skills are important factors at individual level. Whereas, structure and composition of team are important factors at group level and finally situation of business, culture and physical conditions are major factors affecting team effectiveness. Smith and Wyatt (1998) stated that early planning of a project is crucial to its success or failure as it has immense effect on cost, time and quality at later stages of the project. Camilleri (2011) stated that personality and style of leader, management skills, employee commitment, participation and effective communication at all levels are the important factors for the successful outcomes of project. Cobb (2012) indicated that the main reason for the success of construction firms is making resources available when needed by project members. Chan and Tam (2000) concluded that the influential factors affecting performance of the project from quality point of view include the effectiveness of design team leader and project manager. They also indicated that nature, scope and complexity of the project, role of construction team leader, support from parent company, nature and competence of client, environment, client's emphasis on quality, time and cost, project management actions, procurement method and client size are also additional factors that affect the performance of the project team. Peter (2005) pointed out that the fluctuation of market prices for materials and labors, time and technical skills required for completing construction project are major factors contributing to the success of the project.

RESEARCH METHODOLOGY

Upon a review of literature, the authors adopted two questionnaires, one on team effectiveness (Azmy, 2012) and the other on overall project success (Shenhar *et al.*, 2001). The team effectiveness measures include six elements, including team goals and objectives; team leadership; team roles and responsibilities; team relationships; trust and values within project team; and team communication. The project success measures include the sum of the following elements: efficiency; impact on customer; business success; and preparation for the future. Six hypotheses were formulated. Figure 1 represents the conceptual framework model for the developed hypotheses.

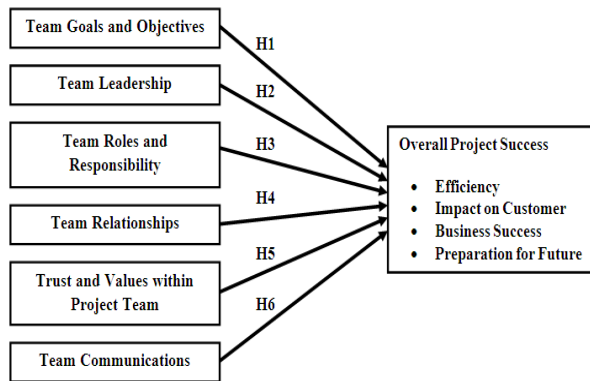


Fig. 1: Conceptual framework model for the developed hypotheses

- **H1:** There is a positive relationship present between project team goals and objectives and overall project success.
- **H2:** There is a positive relationship present between project team leadership and overall project success.
- **H3:** There is a positive relationship present between project team roles and responsibility and project success.
- **H4:** There is a positive relationship present between project team relationship and project success.
- **H5:** There is a positive relationship present between trust and values within the project team and project success.
- **H6:** There is a positive relationship present between project team communication and project success.

A survey was conducted to assess the developed hypotheses. Responses were obtained from 94 respondents who are members of 13 different high rise commercial building projects that have been already completed, or about to be completed in the Eastern Province of Saudi Arabia. The interviewed project managers are responsible for managing teams that range from 5 to 10 members. The typical composition of the teams surveyed included 13 project managers; 5 project engineers, 28 civil engineers, 11 planning engineers, 9 cost control engineers, 11 architects, 7 quality control engineers; and 10 purchasing engineers. Upon the tabulation of the obtained data, data was analyzed statistically to seek the nature and direction of

the relationship between the different measures of team effectiveness and overall project success.

Data analysis: Statistical analysis was performed using SPSS for Window operating system. Alpha value was set to 5% which is the most common level of significance. This means that test has been conducted in way where the possibility of saying that existence of correlation was a chance is not more than 5 out of 100. The tests were two-tailed. The reason is that because there is no availability of abundant researches to suggest type of relationship between different aspects of teamwork and project success. Cronbach's alpha was used to quantify the persistence and credibility of the team effectiveness and project performance scale scores.

All hypotheses statements for relating different aspects of team effectiveness with project success were tested one by one using Pearson's correlation coefficient as illustrated in Table 1. The Pearson correlation coefficient was used to analyze the strength and behavior of connection between teamwork effectiveness and project performance. In case of Pearson's correlation coefficient way above zero for a particular aspect of team effectiveness, then the null hypothesis will be rejected and it will concluded that there is a positive correlation between that aspect of team effectiveness and project success. The strength of the relationship will be reported and interpreted.

Pearson correlation coefficient is the main and oftenly practiced parametric measure to find the correlation between two variables. Its representation is by r and value varies between positive one to negative one. Figure 2 to 7 are scatter plots that show the relationship between the different team effectiveness measures and overall project success.

RESULTS AND DISCUSSION

The present study deepens existing knowledge about the factors affecting the project success. While prior studies looked at various factors affecting project success, this research only focused on different constituents of effective teamwork in relation to success of the project. A total of six hypotheses were developed to examine the relationship in the conceptual framework. Based on review of literature, it was expected that there will be significant positive relation between effective teamwork and project success.

Table 1: Pearson product moment correlation

Team effectiveness measures	Team goals and objectives	Team leadership	Team roles and responsibility	Team relationships	Trust and values within project team	Team communication
Overall project performance	0.869	0.866	0.923	0.837	0.841	0.839

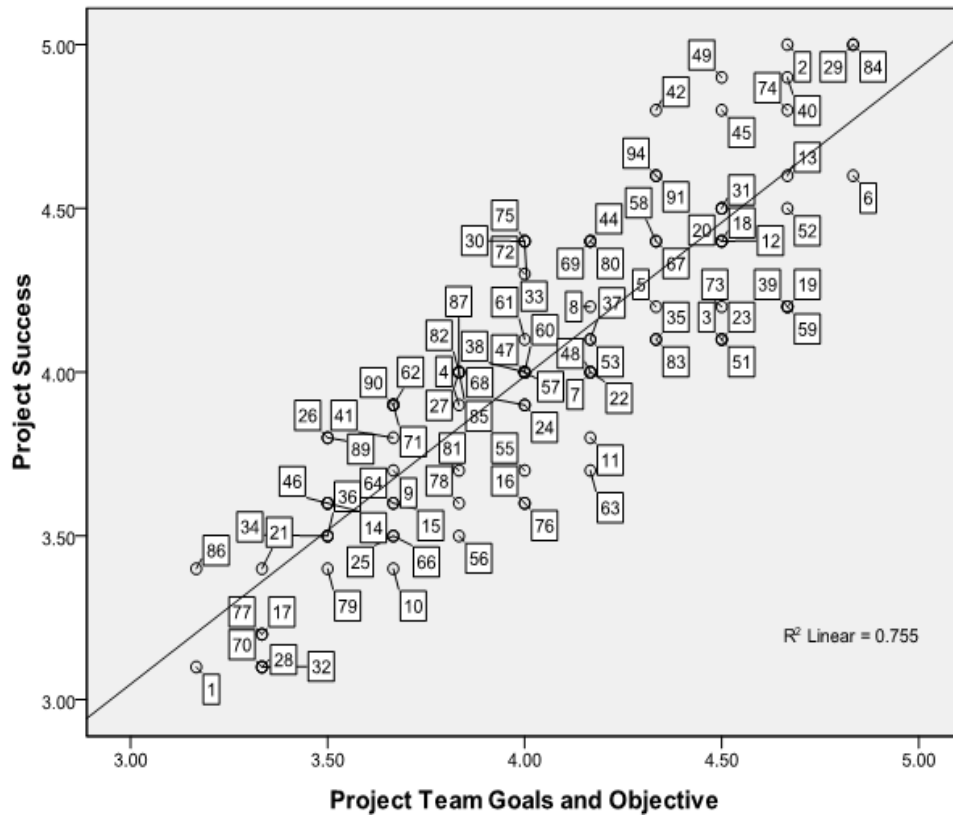


Fig. 2: Scatter plot (project success and project team goals and objective)

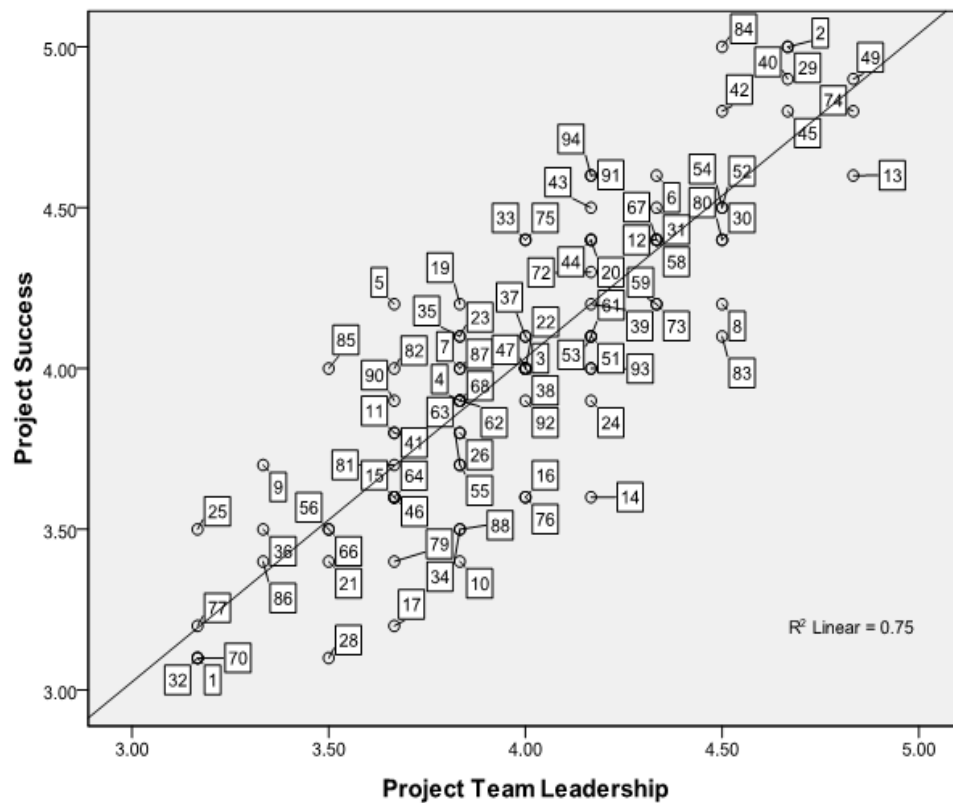


Fig. 3: Scatter plot (project success and project team leadership)

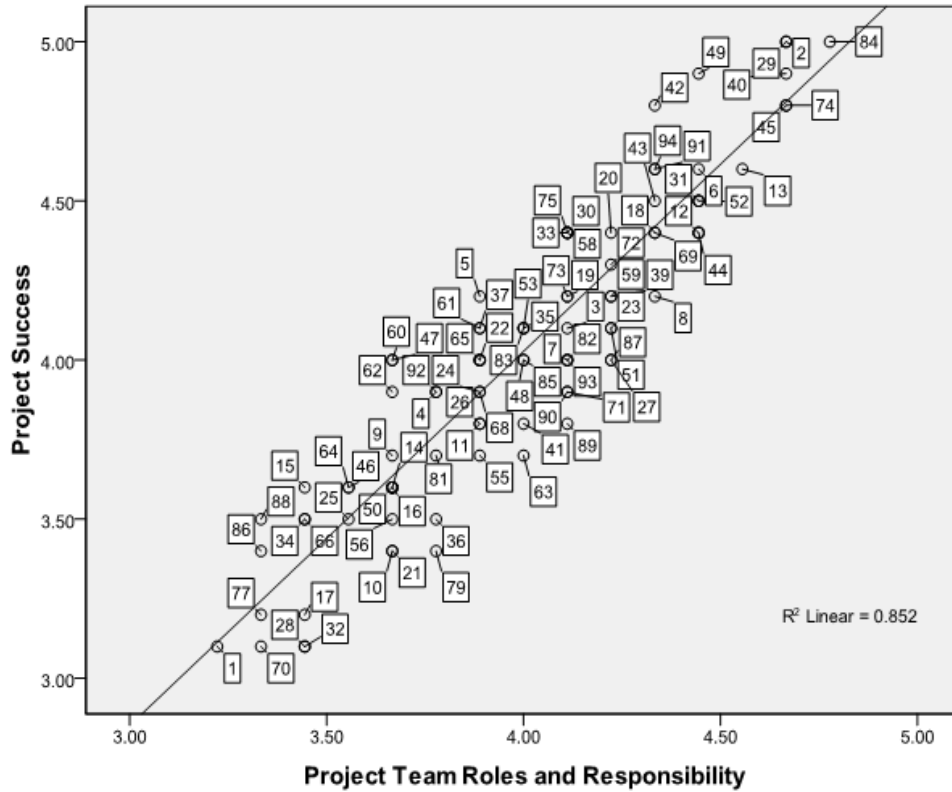


Fig. 4: Scatter plot (project success and project team roles and responsibility)

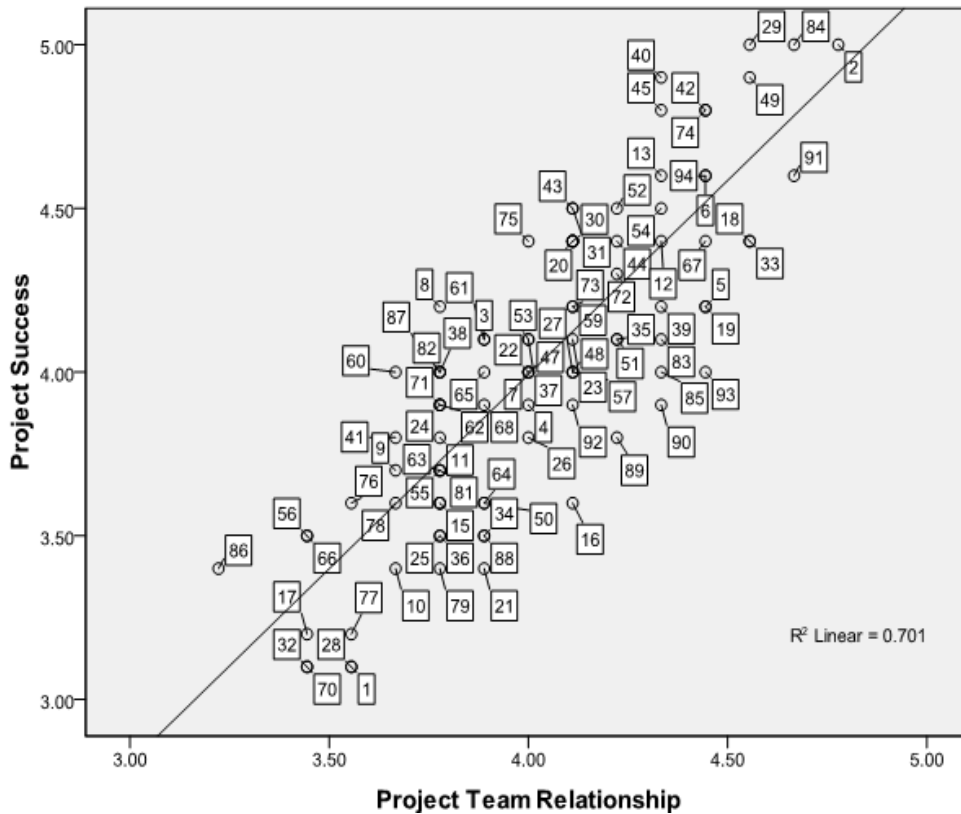


Fig. 5: Scatter plot (project success and project team relationship)

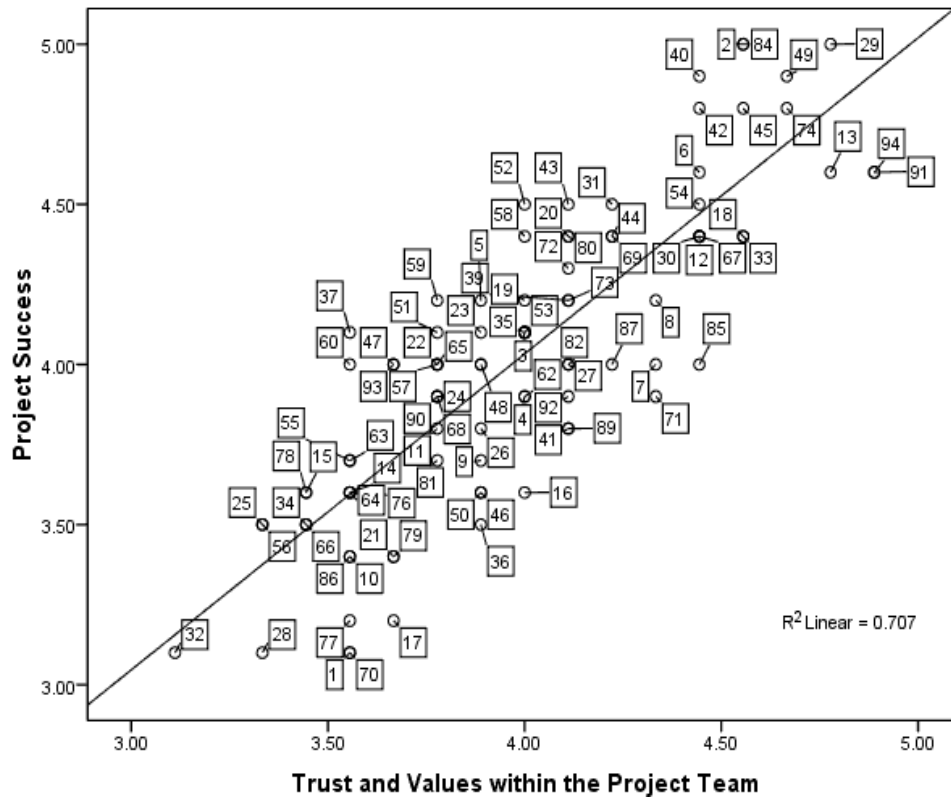


Fig. 6: Scatter plot (project success and trust and values within project team)

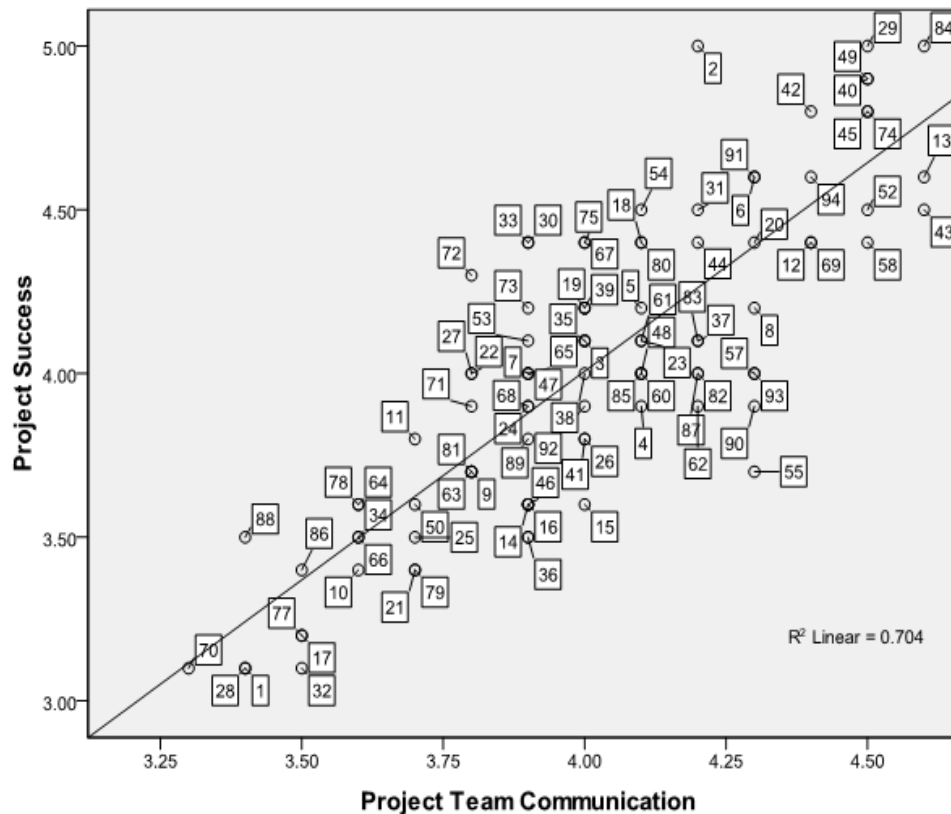


Fig. 7: Scatter plot (project success and project team communication)

In order to test the hypotheses, the study examined the relationships among different components of effective teamwork with the success of 13 projects in Saudi Arabia. All of the projects were commercial high rise buildings. The correlation results provided statistical evidence of positive and strong correlation of all constructs of effective teamwork with the project success.

The results revealed high correlations with a score of r above 0.8 between constructs of team effectiveness and overall project success, in addition to indicating that these projects are successful. All components of effective teamwork were found to be strongly and positively correlated with project success. Three out of the six components of effective team work were identified to be having very positive and strong correlation with the overall success of the project. They are project team roles and responsibility; project team goals and objectives; and project team leadership.

Project team roles and responsibility: The results confirmed that high performing teams have clear and understandable roles. The teams act cohesively with high level of cooperation. This in turns positively affect the overall team performance. This line of findings is also in consistent with many other scholars who remarked clarity of roles as one of the requirements for teams to be successful (Bernold and AbouRizk, 2010; Hoigaard *et al.*, 2006; Stevens and Campion, 1994). Pfeiffer and Bellew (1991) further expressed that competency of members to execute their roles affect productivity greatly. All these past study determinations affirm the significance of clarity of roles and responsibilities towards the project success as reasoned from the empirical analysis of this study.

Project team goals and objectives: It is indicated by many researchers that common team goals are the cause of team motivation to attain these goals with less number of internal conflicts and issues (Larson and LaFasto, 1989). Goals that are agreeable by all team members (Pearson, 1987; Stevens and Campion, 1994) would result in the improvement of team performance. Bettenhausen (1991) stated that productivity of tasks significantly improves when everybody agrees on the goals of the team. In addition, there is an important and positive relationship between team performance and commitment of members towards team goals (Evans and Dion, 1991). Guzzo and Dickson (1996) confirmed that when members of the team agree on team goals, it leads to positive team performance.

Project team leadership: Participative leadership provides for early detection of problems, which ultimately leads to project success (Levin and Moreland, 1990; Stevens and Campion, 1994; Daft, 2011). A good leader always strives to make the

members of the team to work as a unit through motivation and high team spirit (Choi, 2002). If the team members are strongly dependent upon each other, they will adapt different roles and responsibilities to yield more contributions as a team (Molleman *et al.*, 2004). Katzenbach (1997) suggested that when members in team undertake roles and responsibilities of leader at various points of time in various directions, they make team perform more effectively. When members are empowered to make decisions, their dependency on shared leadership is increased despite the presence of designated team leader and all these findings has been confirmed by the results of this study (Guzzo and Dickson, 1996; Neubert, 1999).

CONCLUSION

Teamwork is increasingly applied in many organizations in an effort to improve performance, yet empirical evidence demonstrating the relationship between team effectiveness and project success is scarce. Consequently, this study has undertaken an empirical assessment of the linkages between team effectiveness and project success in Saudi construction industry. This study has provided an insight into the various factors that affect teamwork and project success. The key conclusions of the study are: clear objectives mean that the right projects are selected; clear processes and roles ensure that projects are done right; and leadership competences correlate directly with project success. Without these factors, it is highly likely that an application of teamwork will be counterproductive. From the results of the questionnaires, it was broadly perceived among the sample that potential impacts of teamwork were significantly greater on the success of the project and that is why complex projects today utilize teams as part of the project management.

RECOMMENDATIONS

Based on the results of the survey and the testing of the hypotheses, the authors recommend the following:

- It is recommended that having well defined and realistic goals, roles and responsibilities and appropriate leadership are necessary for successful construction projects.
- It is recommended that leadership of the team should be suitable and competent enough to assist team members in effective decision making.
- It is advisable that roles and responsibilities should be well defined and assigned to qualified members.
- The objectives and goals should be clearly defined at the onset of a project.
- For the success of the project, the team should handle all its conflicts constructively and respectfully.

- Team members should treat and support each other honestly, sincerely and with respect.
- Communication is a very important aspect for effective teamwork that leads to project success.

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