

An Investigation of the Moderating Impact of the Project Complexity on the Effect of Leadership Style on the Internal Success of Construction Organization in Jordan

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Abstract: One of the most important facets of managing a construction company is leadership. Although, the issue of leadership has been widely covered in management or business school, a lack of attention has been given in the field of the reconstruction industry. This study explores the effect of the project complexity on the relationship between the leadership and internal success of construction projects. Hypothesis testing in this study includes collection data of 172 operational and middle management managers from construction organization in Jordan. Then interpretation of with SEM-PLS for data analysis. Quantitative data were collected with distributing the questionnaires with hard copy and soft copy among the sample of analysis. Data were analyzed using descriptive statistics, reliability, correlation and structural equation modelling. The finding of the study demonstrates that there is a relationship between project management leadership style and the internal success of project, except the transactional leadership style. According to the study, transformational leadership has the most influence on internal project success. As well, it reveals that the project complexity as moderator does not have impact on internal project success.

Key words: Leadership, testing, projects, industry, data analysis, moderator

INTRODUCTION

In organizations, day-to-day operations include project management to achieve organizational success. Recently, the project management researches has grown towards identifying factors that affect the project success (Ofori, 2013). Leadership style includes team building, establishing clear relations and roles between project members, openness, self-confidence, organization and clearly defining project successes, re-evaluation when necessary (CML, 2013). As well, it is critical to the facilitation of project success factors that contributes to the project performance and has been recognized at the organizational level as a critical success factor (Muller and Turner, 2007; Gebert *et al.*, 2016). Leadership style has been recognized as one of the essential skills of project managers which is also the case for construction projects. Construction projects has a greater need for leadership than arguably any other industry because their teams are large and multi-disciplinary and the members are from several different construction disciplines and this makes good leadership style vital in this industry (Takim and Adnan, 2009). Also a construction project manager can be deemed a leader because he/she has the authority to delegate work tasks to his/her project team and to make important decisions on site. Construction projects are

large, technically complex and involve a combination of specialized skills. Complexity in project management is also a term often used when discussing construction projects. In general, construction projects are made up of many interconnecting parts, hence, in that dimension, they fit the dictionary definition of complexity well. construction project leaders are responsible for all that happens in a construction project (Liphadzi *et al.*, 2015). Regardless of the issues project managers face, they must possess leadership style and focus on project goals to ultimately obtain project success. Leadership style is critical to the facilitation of project success factors that contributes to project performance and has been recognized at the organizational level as a critical success factor (Muller and Turner, 2007). Increasing the success of project needs understanding of what critical success factors are as well as how these factors can be influenced. Project management efforts in identifying the critical success factors that contribute to project success have not yet yielded a consensus of opinion as to the nature or weight of these factors (Zhao *et al.*, 2016). Other researchers have used these internal and external categories to broadly identify project success factors. In this study we use the internal factors include cost, scope, schedule and project quality that satisfy stakeholders to assess the internal success. Besides, in the construction

industry, project and construction management were developed in construction and engineering fields in order to improve planning and cost controls (Yong and Mustafa, 2012). This is because leadership is considered to be good if it is designed to accomplish the goal or mission of an organization which is done through project team leading and project time managing, within budget to a high quality and with a satisfied customer. Moreover, the simplest model of leadership works with three dimensions: vision, values and execution (Ibrahim *et al.*, 2010). Nonetheless, in the midst of this vision lie other leadership dimensions such as execution, deeds, tangible results, operational efficiency, project management within budget and on time, expertise to actually do the job and whatever other words one can use to say: "Make it happen!". In the construction industry in Jordan, planning and money concerns are a considerable issue but leadership is the actual problem. Thus, leadership values such as morality and honesty are required from the project leaders, who may need to employ different leadership styles with the intent of driving their projects towards success. Previous studies inquired about the opinions of project managers that lead to not seeing their personal contributions or their leadership style as a contributing factor to project internal success. This study investigates these dimensions while incorporating project internal success through all project complexity (Yong and Mustafa, 2012). In addition, the project management literature has ignored the integration of project manager leadership styles impact and competence on project success. Although, leadership is one of the most important subjects in the management literature, however few studies articulate the role of project complexity in the impact of leadership style on the internal success of construction industry. According to O'Donnell, the importance of project leadership to project success may be related to the type of project. Specifically, project complexity has been offered in the literature as having a possible moderating impact on the relationship between project management leadership practices and success rates (Wood and Gidado, 2008). Again, few studies have attempted to explore the potential moderating impact of project complexity on the relationship between leadership and success. Therefore, Understanding of project complexity and how such complexity affects the relationship of project leadership style and project success is the main contribution of this study (Muller and Turner, 2007). The construction sector is one of most important industries through the substantial success achieved in Jordan in terms of economic growth, its contribution to the local output, employment and meeting

partially the local needs of the local society, although, it is significantly affected by changes in the political environment. This study aimed to fill the knowledge gap in project management research in construction projects in Jordan of which project manager leadership style contributes more to internal and external project success, and organization success advance the knowledge of project management. In addition, the project management literature has ignored the integration of project manager leadership styles impact and competence on project success (Watfa *et al.*, 2016).

Leadership styles and theory: Over the recent decade 6 leadership schools have developed. Five of which have suggested that leadership style affected by the situation. Situational leadership provides the basis for understanding the potential impact of the leader's power based on specific circumstances. This allows the leader to fluctuate their leadership style from employee to employee as needed. Situational leaders focus on the readiness of the followers. Managerial leadership style of the construction projects is not based on one specific leadership approach (Panthi *et al.*, 2008). It utilizes the necessary leadership approach to achieve the job. To accomplish the task, leadership applies the appropriate direction and support to the followers. However, the situational leadership approach had multiple issues within the theory. In the 1982 Version, Hersey and Blanchard attempted to reduce the ambiguity of the 1977 normative model. Unfortunately, the new 1982 model suffered internal inconsistency that lacked a true contribution to leadership literature. Blank *et al.* further explained that version was limited by mixed empirical validation. Currently, management textbooks discuss situational leadership; yet, they rarely critically assess the lack of empirical support for the theory. Management leadership theory has a very long and well developed history of study and authorship. Mose and Kleiner (2008) have documented the evolution of leadership models including the trait era, behavioural models and contingency theory to more recent focus areas such as transformational and servant leaders. It was not the objective of this research to elaborate or even summarize the large body of evolving literature on leadership. Leadership research and proposed theories specifically focused within the construct of project management are much less robust (Mose and Kleiner, 2008). Despite being underserved in the literature studies of project leadership have become more common in recent years. A number of important works have provided insights on specific leader traits and behaviors and their impacts on success. In an early study

of project leadership, Frame described different leadership styles that correspond to various stages of the project life-cycle. His research was supported and expanded by others (Mose and Kleiner, 2008). Effective use of organizational power and conflict management were positively correlated to team performance. This led to a structural equations model of leadership involving leadership behaviors related to performance-contingent reward systems, ongoing learning and problem-solving approaches to conflict management (Muller and Turner, 2007). The hypothesis of this study is developed based on theoretical background and literature review (Muller and Turner, 2007).

Transformational leadership: Transformational leadership involves many behavioral elements, these include 'idealized influence in which leaders demonstrate vision and mission and serve as role models to followers, 'inspirational motivation', characterized by the inspiration of a shared vision and team spirit directed toward achievement of group goals; 'intellectual stimulation' which reflects the processes through which leaders rouse followers toward creativity, innovation and careful problem solving and 'individualized consideration' which is manifested when leaders establish a supportive environment in which they attend carefully to the individual and unique needs of followers (Rowold and Heinitz, 2007). In times of uncertainty and different project complexity (Gundersen and Hellesoy, 2011). Thus, with the dynamic and complex environments like construction industry, transformational leadership improve teamwork (Akhavan Tabassi *et al.*, 2014). Transformational leadership inspires and empowers followers to transform and implement changes. Transformational leaders create a linkage between the roles of leaders and followers. Cultural values and job satisfaction are high in transformational leadership. The process of nurturing followers to change builds consciousness that creates a culture where followers feel the empowerment and encouragement. Research studies found a link between transformational leadership and organizational effectiveness while certain emerging cultures are conducive to performance. The skill of transformational leaders reduces uncertainty and continues to reinforce values with positivity and fairness. According to Judge and Piccolo, transformational leadership has proven to be a most popular research topic in leadership literature, given that more studies have been conducted on transformational leadership than on all other popular leadership theories combined. The most widely researched version of transformational leadership theory was developed by Bass, who stated that transformational

leadership occurs when leaders broaden and elevate the interests of their employees, when they generate awareness and acceptance of the purposes and mission of the group and when they stir their employees to look beyond their self-interest for the good of the group.

Transactional leadership: In contrast to transformational leadership underlies most leadership models in effectively managing performance in organizations, transactional leadership focuses on interactions between leaders and followers through, contingent reward and management by exception (Liphadzi *et al.*, 2015). Contingent reward focuses on rewards as contingent upon actions while management by exception embodies negative reinforcement and criticism. The use of rewards is to ensure compliance for followers to strive for goal attainment and alignment with organizational goals and vision. Transactional leaders lack interest in their follower's inspirations; nonetheless, they ensure the followers align with the organizational vision. The alignment of expectations and rewards should lead to increased performance (Popper and Zakkai, 1994). Rigid-cultures performance management is achieved through fear and incentives. In transactional leadership, reward or punishment are dependent on performance as well as contingent on exceeding expectations. Any deviation from established performance expectations results in punishment. Transactional leaders use punishment and incentives as performance management to align their followers with organizational goals. The ability to strengthen organizational performance is lacking in transactional leaders that become hidden and unseen within the attributes of transactional leadership (Michel *et al.*, 2013). On the leadership continuum, transactional leadership is located on the end opposite of transformational leadership. Viewed as more commonplace than transformational leadership, transactional leadership is described as an exchange process in which leaders recognize follower's needs and then define appropriate exchange processes to meet both the needs of the followers and leader's expectations. Such leadership is characterized by risk avoidance and relies on hierarchical authority, task completion and rewards and punishments. Transactional leadership can result in follower compliance, however, since, the transactional leader primarily emphasizes giving followers something they want in return for something the leader wants, transactional leadership is not likely to generate great enthusiasm and commitment among followers. Transactional leaders who practice management by

exception focus on follower's mistakes and intervene only after work standards have not been met. Active management-by-exception involves leaders actively monitoring follower performance in order to anticipate deviations from standards prior to their becoming problems. On the other hand, leaders who practice passive management-by-exception wait until follower's behaviours have created problems before they take corrective action against obvious deviations from performance standards. In either of the two cases of management-by-exception, leaders emphasize the use of tactics such as discipline, punishment and negative feedback to foster desirable performance. Transactional leadership management is particularly effective in conflict situations or emergency when all parties are able to see a tangible benefit.

Laissez-faire leadership: The Laissez-faire leadership style is where all the rights and power to make decisions is fully given to the worker. This was first described by along with the autocratic leadership and the democratic leadership styles. The Merriam-Webster Dictionary defines Laissez-Faire leadership, "A philosophy or practice characterized by a usually deliberate abstention from direction or interference, especially with individual freedom of choice and action." Self-rule style empowers individuals, groups or teams to make far-reaching strategic decisions because Laissez-faire leaders allow individuals or teams to decide how they will complete their research. Laissez-faire leadership allows followers to have complete freedom to make decisions concerning the completion of their research. It allows followers a high degree of autonomy and self-rule while at the same time offering guidance and support when requested. Successful Laissez-Faire leaders typically work with people who have strong skills, extensive education or experience are self-motivated and driven to succeed on their own have proven records of achievement on specific projects and are comfortable working without close supervision. A non-authoritarian leadership style, laissez faire leaders try to give the least possible guidance to subordinates and try to achieve control through less obvious means. They believe that people excel when they are left alone to respond to their responsibilities and obligations in their own ways. From a Laissez-Faire leader's perspective, the key to success is to build a strong team and then stay out of the way. The short version of Laissez-Faire leadership is doing what you want as long as you get the job done right. In practice, it means leaders leave it up to their subordinates to complete responsibilities in a manner they choose,

without requiring strict policies or procedures. Construction, architectural and specialized engineering organizations are examples of businesses where Laissez-Faire leadership works well.

Charismatic leadership: Charismatic leaders are not true group facilitators but are more active innovators. Their strategy is to achieve change and personal risks involving heroism. Charisma is defined as the relationship between a follower and a leader's behaviors. According to charismatic leadership theory, House and Aditya explained that an emergence and effectiveness of charismatic leaders are associated with a leader's sense of social responsibility rather than self-interest. Theories of charismatic leadership highlight such effects as emotional attachment to the leader on the part of the followers; emotional and motivational arousal of the followers; enhancement of follower valences with respect to the mission articulated by the leader; follower self-esteem, trust and confidence in the leader; follower values and follower intrinsic motivation. Charismatic leadership behaviors are identified as among the most critical leadership behaviors in terms of satisfaction. First introduced the term charisma and described it as a somewhat super human attribute or "an endowment with the gift of divine grace (Rehacek, 2017). A charismatic leader is viewed as a mystical, narcissistic and personally magnetic savior. Attributed personality traits that others consider extraordinary define one characteristic of charisma. Some researchers argue that charismatic leaders fuse each member's personal goals with the team or organizational mission. Team members identify at a personal level with the purposes and goals of the collective as a whole and therefore, feel more team commitment and cohesiveness which improves subsequent performance (Liphadzi *et al.*, 2015).

Project complexity in construction model: Project complexity relates to the many and varied interrelated parts that can be operationalized in terms of differentiation and interdependency. This definition can be applied to any project dimension relevant to the project management process such as organization, technology, environment, information, decision making, and systems, therefore, when referring to project complexity, it is important to state clearly the type of complexity being dealt with. It presents the results of a number of interviews to gauge what experts in the building industry consider project complexity to be. The construction process may be considered as one of the most complex undertaking in any industry, however the construction industry has developed great difficulty in coping with the increasing

complexity of major construction projects. Therefore, an understanding of project complexity and how it might be managed is of significant importance. In addition, the construction projects are initiated in complex and dynamic environments resulting in circumstances of high uncertainty and risk which are compounded by demanding time constraints (Rowold and Heinitz, 2007).

Research hypothesis: The hypothesis developed based on the literature background are as follows:

- H₁: there is a significant and positive relationship between transformational leadership project management style and internal project success
- H₂: there is a significant and positive relationship between transactional leadership project management style and internal project success
- H₃: there is a significant and positive relationship between laissez-faire project management leadership style and internal project success

- H₄: there is a significant and positive relationship between charismatic leadership project management style and internal project success
- H₅: project complexity moderate the relationship between project management leadership style and internal project success

Theoretical framework: The theoretical framework is developed to study the effect of the project complexity as a moderator on the relationship between the leadership style and the internal success of the construction project. Independent Variables (IVs) of this study include the project complexity and the leadership style with four dimensions: transformational, transactional, laissez-fair and charismatic. The Dependent Variable (DV) is the internal success as illustrated in Fig. 1.

MATERIALS AND METHODS

The current population of construction companies included project management employees in construction companies in Jordan. The sample size of this study is calculated using free available Software G*Power for data analysis as in Fig. 2. The sample size is calculated as a function of user specified values for the required significance level α , the desired statistical power $1-\beta$ using the free available Software G*Power based on the calculation details introduced by Faul *et al.* (2007) as in Fig. 2. Considering 6 predictor for the current study, shown in Table 1, the total sample size has to be a minimum of 146 individuals. A survey methods is used to

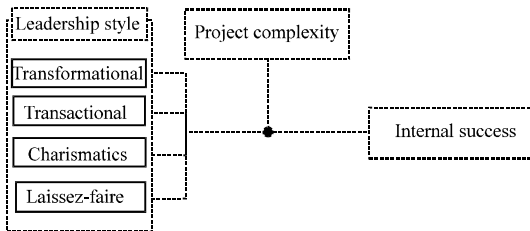


Fig. 1: Research framework

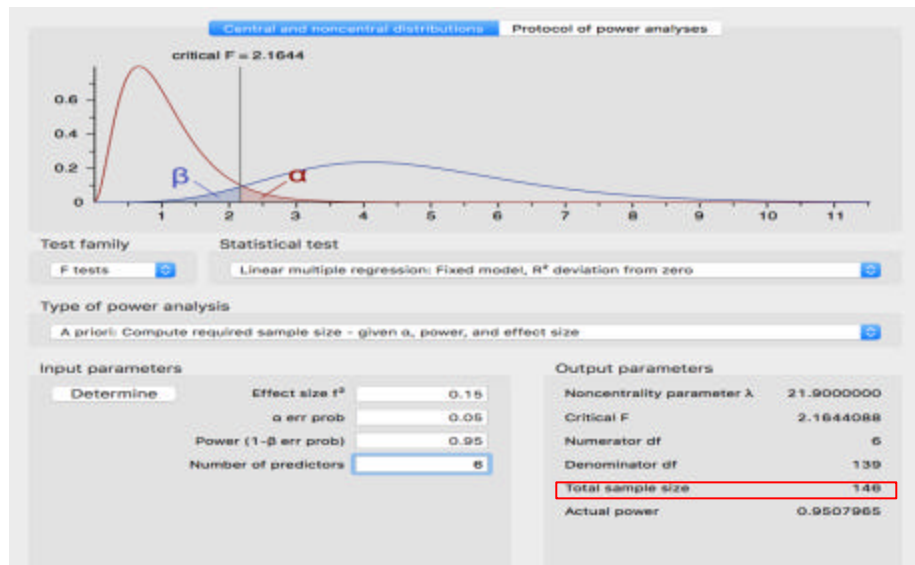


Fig. 2: Power of data analyses

Table 1: Work experience of the respondents

Working (years)	Frequency	Percent	Valid	Cumulative
<3	25	14.5	14.5	14.5
3-5	61	35.5	35.5	50
6-10	71	41.3	41.3	91.3
More than 10	15	8.7	8.7	100
Total	172	100	100	

Table 2: the results of Construct reliability and validity

Variables	AVE	Composite	R ²	Cronbach alpha	Communality	Redundancy
Charismatic	0.73	0.93	0.00	0.91	0.73	0.00
Laissez faire leadership	0.68	0.91	0.00	0.88	0.68	0.00
Transactional leadership	0.65	0.93	0.00	0.91	0.65	0.00
Transformational leadership	0.61	0.92	0.00	0.91	0.61	0.00
Internal project success	0.73	0.92	0.55	0.88	0.73	0.22

Table 3: Path coefficients of the variables of the research

Variables	Charismatic leadership	Internal faire leadership	Laissez faire leadership	Transactional leadership	Transformational leadership
Charismatic leadership	0.00	0.32	0.00	0.00	0.00
Internal project success	0.00	0.00	0.00	0.00	0.00
Laissez faire leadership	0.00	0.19	0.00	0.00	0.00
Transactional leadership	0.00	0.01	0.00	0.00	0.00
Transformational leadership	0.00	0.31	0.00	0.00	0.00

Table 4: Hypothesis testing

Variables	Original sample (O)	Sample Mean (M)	SD (STDEV)	SE (STERR)	T-Statistics
Transformational internal	0.37	0.37	0.11	0.11	3.38
Transactional internal	0.04	0.04	0.09	0.09	0.47
Charismatic internal	0.29	0.29	0.11	0.11	2.57
Laissez internal	0.13	0.13	0.06	0.06	2.14

Bold values are significant values

Table 5: Moderating analysis

Variables	Original Sample (O)	Sample Mean (M)	SD (STDEV)	SE (STERR)	t-Statistics (O/STERR)
Leadership internal	0.55	0.53	0.09	0.09	6.11
Complexity internal	0.25	0.24	0.08	0.08	3.15
Leadership and complexity internal	0.0505	0.0492	0.1064	0.1064	0.4743

collect the data through questionnaire distribution for a sample of 172, 59.3% male and 40.7 female. With different education levels from high school up to PhD degree. The working experience of the respondents explained in Table 1-5. Social media and internet application are used to conduct the questionnaire. Likert scale of 5 measurement scale is used for ranking. Questionnaires were mailed directly to the population of the study who reside in Jordan. It contained no respondent identification data. Respondents returned the anonymous questionnaires in an enclosed postage-paid envelope for coding and analysis.

RESULTS AND DISCUSSION

Structure Equation Modelling (SEM): In order to evaluate the construct's validity, dimensionality and reliability. For each construct, the Average Variance Extracted (AVE), the AVE square root, composite reliability, R², Cronbach's alpha and communality were computed. Construct validity

was acquired by first evaluating Cronbach's alpha for individual construct. The results are shown in Table 2 self-reference. All constructs achieved a higher Cronbach's alpha than recommended 0.7. After that, all constructs were evaluated and processed within the model by using PLS evaluation to get each construct's AVE, composite reliability and communality. All the constructs acquired greater than the minimum required for each parameter.

Hypothesis testing: Table 3 illustrate path coefficients and table reveal the t-statistics and standards error for the regression output. The statistical objective of PLS is to show significant t-values, thus, rejecting the null hypothesis of no effect. As recommended by a bootstrap was performed to test the statistical significance of each path coefficient. The t-values need to be significant to support the hypothesized paths, therefore, the t-values need to be above 1.96 or <-1.96 for an alpha level of 0.05.

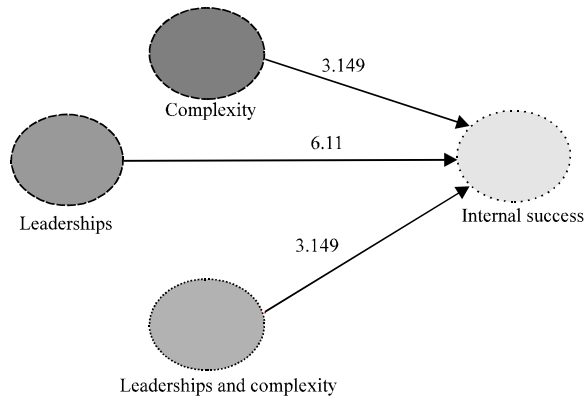


Fig. 3: Diagram of moderating analysis

The hypothesis for this study were tested using structural equation modelling Software Smart PLS 2.0.

According to table:

- Transformational leadership style has significant positive impact on internal success factor ($\beta = 0.37$, $p < 0.05$)
- Transactional leadership does not have significant impact on internal success of projects ($\beta = 0.04$)
- Charismatic leadership has significant positive impact on internal success factor ($\beta = 0.29$, $p < 0.05$)
- Laissez-faire leadership style has significant positive impact on internal success factor ($\beta = 0.013$, $p < 0.05$)

A moderator analysis is used to determine whether the relationship between leadership style and internal success factor is moderated by project complexity. The results in table shows that there is significant effect of the project complexity as moderator as in Fig. 3.

CONCLUSION

The aim of this study has been to investigate the impact of the project complexity as a moderator on the relationship between the leadership style and the internal success of the construction projects in Jordan. This has been accomplished through quantitative analysis for the survey of a sample from different fields of construction projects. The finding of this study demonstrate that there is significant relationship between project management leadership style and internal project success. The effect of four types of leadership style on the internal success of project are tested individually. Transformational leadership has the most effect on internal project success. Charismatic leadership style and Laissez-faire leadership, also have impact on internal project success. The only leadership style which do not affect internal project

success is transactional leadership style. This result did not stray from the literature (Schutte, 2009). Whereas, the results shows that the project complexity does not affect the relation between the leadership style and the internal project success.

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