



MODERATING EFFECTS OF PROJECT MANAGEMENT EXPERIENCE, PROJECT TEAM SIZE, PROJECT DURATION AND PROJECT VALUE SIZE ON THE RELATIONSHIP BETWEEN PROJECT MANAGER'S LEADERSHIP ROLES AND PROJECT TEAM EFFECTIVENESS IN MALAYSIA

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ABSTRACT

Many organizations are using project teams to achieve their organizational goals because they believe the importance and benefits of project teams. Project managers are advised to learn and demonstrate the leadership roles as proposed by Quinn (1988) because these roles can improve the project team effectiveness. Moreover, it is important to select an experienced project manager leading an effective team at the same time negotiating for ample time to execute the project. The current study developed a research model underpinned on models related to Quinn (1988) leadership roles and Hoevemeyer (1993) five criteria of project team effectiveness as well as four demographic moderators i.e. project management experience, project team size, project duration and project value size. Based on a sample of 201 project managers, this empirical study had confirmed that a project manager's leadership roles are positively influencing project team effectiveness. At the same time, only project management experience and project duration are positively moderating the relationship between leadership roles and project team effectiveness.

Keywords: Leadership roles, Project team effectiveness, Project management experience, Project duration.

Contribution/ Originality

This study contributes to the existing literature of project management in Malaysia whereby longer the project duration as well as the more experience a project manager is, the relationship between his or her leadership roles and project team effectiveness will grow stronger.

1. INTRODUCTION

Today, organizations are deploying project teams to deliver services and implement products. Reason being the group performance through project team is exceeding the sum of individual outputs (Belbin, 1993). Many organizations are also seeking to achieve project team effectiveness. However, project team effectiveness is not achieved easily without putting in a lot

of efforts. According to [Hoevemeyer \(1993\)](#), there are four reasons why studies are performed on project team effectiveness. These include: (1) project team effectiveness can increase job productivity and morale of the team members, (2) effective project team helps the project manager to focus more on the important works by avoiding the need to micro-manage the team's day to day work details, (3) project team effectiveness promotes team work within and across the teams to help the entire organization to perform more effectively, and (4) effective project team can increase service quality and customer satisfaction. According to [Pinto \(2007\)](#), a project manager's leadership should focus on effectiveness of outcomes which include team effectiveness as compared only to efficiency of operations. There were research conducted indicating leadership generally has impact on team effectiveness and team performance ([Chang, 2005](#); [Chen et al., 2008](#); [Duygulu and Ciraklar, 2008](#); [Kearney, 2008](#); [Yang et al., 2010](#); [Rowold, 2011](#); [Mehembe and Engelbrecht, 2013](#); [Ullah and Park, 2013](#); [Fung, 2014](#); [Hoch, 2014](#); [Wu, 2014](#)). However, project management literature is generally silent on whether project management experience, project team size, project duration and project value size can moderate the relationship between a project manager's leadership roles and project team effectiveness. According to [Quinn \(1988\)](#), leadership roles are classified into eight roles which include: (1) mentor, (2) facilitator, (3) innovator, (4) broker, (5) monitor, (6) coordinator, (7) producer and (8) director. On the other hand, project team effectiveness encompasses five measurement criteria which cover: (1) team mission, (2) goal achievement, (3) empowerment, (4) open and honest communication, and (5) positive roles and norms. Problem statement of this study is the lack of theoretical understanding and empirical finding on how project management experience, team size, duration and project value can moderate the relationship between a project manager's leadership roles and project team effectiveness. Moderating factors or moderators contributing to project team effectiveness are deemed important to be examined especially in a multi-racial and multi-cultural Malaysia. Malaysia is also the location of the study due to the availability of respondents or project managers that the author can have access. Research objective of this study is to evaluate whether project management experience, project team size, project duration and project value size can moderate the relationship between a project manager's leadership roles and project team effectiveness in Malaysia. Research questions for this study include: (1) Can a project manager's leadership roles positively influence project team effectiveness? (2) Can the four moderators i.e. project management experience, project team size, project duration and project value size moderate the relationship between a project manager's leadership roles and project team effectiveness?

2. LITERATURE REVIEW

2.1. Leadership Roles in Project Manager

From literature on project manager's leadership styles, studies have shown that a project manager's leadership style did impact his or her perception of success in different situations instead of directly impacting project success itself ([Turner and Muller, 2005](#)). Project managers

have eight leadership dimensions significantly related to project success but not related to project team effectiveness (Geoghegan and Dulewicz, 2008). According to Turner and Muller (2005), task-oriented project management is the preferred leadership style compared to people-oriented project management. Moreover, different project leadership styles should be adopted throughout different stages of the project life-cycle and for different countries with different cultural values (Turner and Muller, 2005). Even though Turner and Muller (2005) had conducted a very thorough literature review on project manager's leadership theories and styles which include: Trait School, Behavioral or Style School, Contingency School, Visionary or Charismatic School, Emotional Intelligence School, Competency School, Behavioral of Team Members and others, there was no review on Behavioral Complexity in Leadership (BCL). From literature reviewed, there is lack of research on BCL in project management. However, research on transactional and transformational leaderships in project management are prevalent in which they have been tested to influence project success (Prabhakar, 2005; Neuhauser, 2007). Project success is the superset of project team effectiveness in which project success includes the overall evaluation provided by project stakeholders like customers and sponsors on the extent of how project deliverables are achieving each of its objectives (Project Management Institute, 2013). Project team effectiveness will be operationally defined in the subsequent section.

According to Denison *et al.* (1995), Behavioral Complexity in Leadership (BCL) theory describes that effective leaders will demonstrate various leadership roles and opposing behaviors concurrently when facing with complex and rapidly changing environments. Opposing behaviors are the contrasting or competing behaviors like strict and lenient, routine and creative or others. These opposing behaviors and leadership roles are derived from a repertoire of roles and behaviors that have been accumulated over times and are influenced by the experiences of the leaders. A leader is considered more effective when he or she can display more leadership roles during a particular situation. Effective leaders can identify his or her followers' needs during a particular situation, then he or she will respond by adjusting, behaving or performing the leadership roles that best meet those needs. BCL theory is not new but it is still evolving in which recently it has become a new approach to understand leadership (Yukl, 2010).

In this study, BCL theory is adopted instead of other leadership theories because only BCL theory focuses on the complexity and contradiction of a leader's behaviors whereby the simultaneous and various opposing roles and behaviors of the leader enable him or her to deal with different complex situations more effectively (Denison *et al.*, 1995). On the contrary, the presented situation or displayed leadership style in traditional leadership theories are labeled as an absolute "either or" manner e.g. either Theory X or Theory Y, autocratic or democratic, task oriented or relationship oriented, transactional or transformational subject to a particular situation (Denison *et al.*, 1995). Effective leadership is demonstrated when the right leadership style is displayed at the right situation. Traditional leadership theories might not be as effective as BCL theory when they are deployed in today's rather complex and rapidly changing environment. For example, a project needs to be implemented at higher quality, shorter duration

and lower cost than previously agreed. For such situations, BCL leaders who can demonstrate the various leadership roles are capable to handle these situations more effectively. From literature reviewed, there are several theories related to leadership roles. Some researchers had suggested what should be the leadership roles and complex behaviors from the repertoire of a leader. According to Mintzberg (1973), there are ten leadership / managerial roles which can be classified into (1) information processing related, (2) decision making related; and (3) interpersonal contact related. Jessup (1990) suggested that leadership roles should include (1) administrator, (2) advisor and (3) coach. According to Stephen (1998), leadership roles consist of 13 sub-dimensions which include: (1) forecast thinking, (2) establishing high standards, (3) effective communication, (4) coaching, (5) encouraging teamwork, (6) effective delegation, (7) building consensus, (8) supporting reasonable risk taking, (9) rewarding performance, (10) developing and releasing employees, (11) managing diversity, (12) improving the organization; and (13) overall effectiveness. Gunnar and Torodd (1999) also suggested that various leadership roles can be categorized into four main roles i.e. (1) administrator, (2) producer, (3) integration; and (4) entrepreneur. However, Quinn (1988) model is selected and used in this study because its leadership roles are well-received, well-balanced (i.e. covering flexibility, control, internal and external dimensions) and attracted the most citations (Quinn, 1988; Denison et al., 1995; Chen et al., 2008; Wakefield et al., 2008; Zafft et al., 2009).

Quinn (1988) suggested a model of leadership roles that spanned across eight roles namely, mentor, facilitator, innovator, broker, monitor, coordinator, producer and director. These eight roles are spread over 4 quadrants (or sometimes also called profiles) in which each quadrant consists of two roles that are very close in terms of role's attributes versus roles in other quadrants (see Figure 1 below). The four quadrants include: (1) Relating to People, (2) Leading Change, (3) Producing Results and (4) Managing Processes. These four quadrants are separated by both x- and y-axis whereby x-axis continuum covering two extreme dimensions i.e. focus on internal or external environment. Y-axis continuum covering highly flexible or highly controlled / stable environment. Each role is the opposing attributes against the role that is located on the opposite side e.g. director role attributes are opposite against the mentor role attributes; likewise producer role is opposite against the facilitator role. All the eight roles are operationally defined as per Table 1 below.

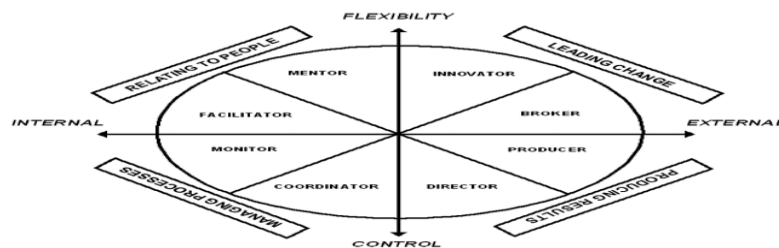


Figure-1. Quinn Model's Leadership Roles (Quinn, 1988)

Table-1. Leadership Quadrants and Role Descriptions (Quinn, 1988)

Quadrant	Leadership Role
Relating to People (RP)	<ul style="list-style-type: none"> • Mentor: Acknowledges personal needs, develops people, caring, empathetic. • Facilitator: Acknowledges personal needs, develops people, practices participation and teambuilding, focuses on consensus building, manages conflict and encourages participative decision-making.
Leading Change (LC)	<ul style="list-style-type: none"> • Innovator: Inspires, anticipates customer needs, initiates significant changes, new ideas, experiments, problem solves, adaptable. • Broker: Same functions as innovator including, sells ideas, influences decisions at higher levels, acquires needed resources, strong negotiator.
Managing Processes (MP)	<ul style="list-style-type: none"> • Monitor: Clarifies policies, expects accurate work, control projects, monitors progress, develops measures and checkpoints. • Coordinator: Same functions as the monitor including brings order, plans schedules, provides stability, control and continuity.
Producing Results (PR)	<ul style="list-style-type: none"> • Producer: Focuses on outside competition, emphasizes, speed, hard work ethic, motivates, people, initiates action. • Director: Same functions as producer including providing clear direction, clarifies priorities, communicates the vision, plans and prioritizes.

Quinn's Model of Leadership Roles suggests that a more effective leader will cover more roles e.g. three to four quadrants of roles from his or her repertoire compares to a less effective leader who can only cover one to two quadrants of roles. All the roles covered by a leader co-exist concurrently within the leader. However, when facing different situations, some roles will be demonstrated highly while certain opposite roles will be retracted to a minimum level. In this study, Leadership Roles are operationally defined as *the collection of eight roles that includes mentor, facilitator, innovator, broker, monitor, coordinator, producer and director which an effective project manager will demonstrate appropriately in a complex and rapidly changing environment* (Denison et al., 1995). There were studies conducted on how BCL theory had influenced Team Conflict and Team Trust (Chen et al., 2008; Wakefield et al., 2008). However, there is still lack of research whether BCL theory will also influence Team Effectiveness. In the Malaysian context, despite studies have been performed on leadership, there is no conclusive evidence indicating which is the more widely practiced leadership styles (Lo et al., 2010). Furthermore, limited study is conducted to evaluate how BCL theory is impacting construct such as Team Effectiveness in a project team setting.

2.2. Project Team Effectiveness

There are differences among the terms teamwork, team effectiveness and team performance although sometimes they are being used interchangeably. According to Andrews (2012), teamwork is the result yield from a set of competencies (e.g. team orientation, adaptability) demonstrated by team members who worked together to achieve a common goal. Team effectiveness covers external factors (e.g. quantity, quality) and internal factors (e.g. team viability) that measure how well the team works as a unit (Andrews, 2012). Finally, team performance focuses on the results achieved by the team regardless whether there is any mitigating factor (Andrews, 2012). From literature reviewed, team effectiveness is defined

differently by different scholars. According to Hoevemeyer (1993), Bourgault *et al.* (2008), criteria of team effectiveness include goal achievement, team mission, open and honest communication, empowerment and lastly positive roles and norms. Other scholars define team effectiveness criteria that cover: productivity, satisfaction and manager judgements (Campion *et al.*, 1996); performance outcomes e.g. productivity, quality of work, attitudinal outcomes and behavioral outcomes (Cohen and Bailey, 1997); user interaction effectiveness, efficiency of team operations, quality of work, adherence to budget and schedule, and amount of work the team had produced (Jiang *et al.*, 1997); attitude and team performance (Kuo, 2004); individual wellbeing, team social processes and team productivity (Wageman *et al.*, 2005); team satisfaction and performance (Chen *et al.*, 2008); team member satisfaction, team performance and viability of the team to continue (Kozlowski and Ilgen, 2006); leadership effectiveness, team organization, team learning, team behaviors and team results (Andrews, 2012). Majority of the criteria of team effectiveness cover team performance which includes quality of work, productivity and team results. However, team performance is different from team effectiveness (Andrews, 2012). Only team effectiveness criteria based on Hoevemeyer (1993) and Bourgault *et al.* (2008) are excluding team performance. Moreover, their team effectiveness criteria are encompassing the higher and wider spectrum of team mission and goal achievement. Team effectiveness criteria are different from key factors for team effectiveness. The former refer to what are the measurement criteria in defining team effectiveness whereas the latter refer to what are the key factors contributing to team effectiveness. From literature reviewed, some team effectiveness models illustrate the key factors contributing to team effectiveness. These include Campion *et al.* (1996), Cohen and Bailey (1997), Kuo (2004), Kozlowski and Ilgen (2006), Chen *et al.* (2008) and Andrews (2012) models. Among these models, only Cohen and Bailey (1997) team effectiveness framework explains the possible direct relationship between supervision or leadership roles and team effectiveness whereas other team effectiveness models are rather silent on this relationship. In order to research how leadership roles are influencing project team effectiveness, a research model is developed from Cohen and Bailey (1997) Team Effectiveness Framework as described in Figure 2. The framework depicted that design factors are directly influencing team effectiveness outcomes as well as indirectly influencing the team effectiveness outcomes via group processes and psychosocial traits. Moreover, both group processes and psychosocial traits are also correlated with each other.

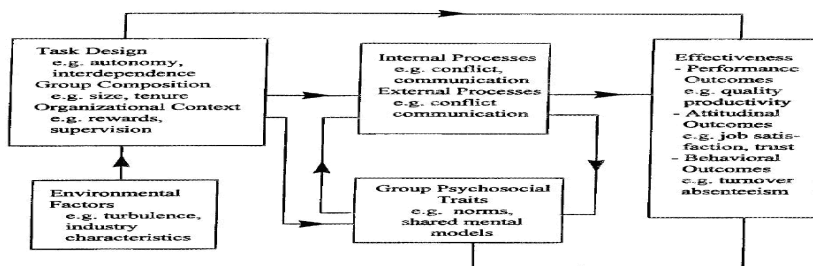


Figure-2. Team Effectiveness Framework (Cohen and Bailey, 1997)

At the same time, environmental factors are directly impacting the design factors. Together, environmental factors, design factors, group processes and group psychosocial traits can influence team effectiveness outcomes. Within the organizational context from the design factors, supervision is one of the items that can affect both group processes and group psychological traits. In project management, supervision is part of leadership duties that a project manager performs to ensure that the project is progressing towards the desired direction (Pinto, 2007). Based on the study conducted by Cohen and Bailey (1997), supervision was not being discussed in silo but rather was used to compare and contrast with leadership theory as well as leader's supervisory moods, behaviors and expectations. Hence, instead of using supervision in this study, supervision is expanded and replaced with leadership roles to measure how leadership roles are influencing project team effectiveness. In this study, Project Team Effectiveness is defined as *the project manager's perception on team members' performance in task completion, goal achievement, empowerment, information sharing and team's ability to create and sustain a good working environment* (Hoevermeyer, 1993; Bourgault et al., 2008). Despite Cohen and Bailey (1997) had described the three dimensions of team effectiveness and their examples of measurement, there is no questionnaire derived from that study to measure those dimensions. However according to Hoevermeyer (1993), project team effectiveness can be measured based on the following five criteria of effectiveness: (1) team mission, (2) goal achievement, (3) open and honest communication, (4) empowerment, and (5) positive roles and norms. The positive roles refer to team members' project roles and not the project manager's leadership roles. Moreover, specific survey questionnaire is developed by Hoevermeyer (1993) to measure the above five criteria of project team effectiveness. These five measurement criteria are also related to Cohen and Bailey (1997) factors that are directly predicting effectiveness. For example, team mission and goal achievement are related to design factors. Empowerment, open and honest communications are related to group processes. Lastly, positive roles and norms are related to group psychosocial traits. According to Pinto (2007), characteristics of effective project teams include: (1) clear sense of mission, (2) productive interdependency, (3) trust, (4) cohesiveness, (5) enthusiasm and (6) results orientation. These characteristics are in synchronous with Hoevermeyer (1993) five measurement criteria of project team effectiveness. Pinto's clear sense of mission is similar to Hoevermeyer's team mission. Pinto's results orientation proposed that a project team is committed to achieving the project's goals and this is similar to Hoevermeyer's goal achievement. Pinto's trust is related to Hoevermeyer's empowerment whereby when team members are entrusted by a project manager, they will be empowered to perform their work well. Moreover, trust is also related to Hoevermeyer's open and honest communication in which the existence of the latter will trigger trust among the team members. Likewise, the more trust the team has can promote more open and honest communication. Lastly, Pinto's three characteristics i.e. a productive interdependency, cohesiveness and enthusiasm are similar to Hoevermeyer's positive roles and norms. Based on the relationship between a project manager's leadership roles and project team effectiveness, the following first hypothesis is proposed:

H1: A project manager's leadership roles will positively influence project team effectiveness.

2.3. The Four Moderators in the Study

Moderators within this study includes: (1) Project Management Experience, (2) Project Team Size, (3) Project Duration and (4) Project Value Size. Operational definition for **Project Management Experience** in this study is the *number of years a project manager has been involved in managing projects assigned to him or her*. According to [Project Management Institute \(2013\)](#), most of the experienced project managers know there are multiple ways to manage a project. They can apply the acquired project management knowledge, skills and processes in a preferred manner to achieve the desired project outcome. This is plausible due to years of experience that they have involved in managing various projects. Hence, longer the tenure or years of project management experience, it might moderate the relationship between project managers' leadership roles and project team effectiveness. Thus, the second hypothesis for this study is:

H2: The relationship between a project manager's leadership roles and project team effectiveness can be moderated by project management experience, such that the relationship is stronger with longer project management experience and weaker with shorter project management experience.

In this study, Project Team Size is defined as the *number of project team members working as a team that was leading by a project manager*. Project Duration is defined as the *number of months taken to complete the project*. According to [Cohen and Bailey \(1997\)](#) in a non-project setting, group composition like group size and tenure can directly and indirectly influencing team effectiveness through internal and external processes as well as group psychosocial traits. Internal and external processes include examples like conflict resolution and communication whereas group psychosocial traits include norms, shared mental models and others. Based on literature reviewed, project team size and project duration normally include as control variables in order to prevent their interferences on research pertaining to project team effectiveness ([Wu, 2006](#)). However from project management literature, it is unclear whether both project team size and project duration moderate the relationship between a project manager's leadership roles and project team effectiveness. Hence, the third and fourth hypothesis are:

H3: The relationship between a project manager's leadership roles and project team effectiveness can be moderated by project team size, such that the relationship is stronger with smaller project team size and weaker with larger project team size.

H4: The relationship between a project manager's leadership roles and project team effectiveness can be moderated by project duration, such that the relationship is stronger with longer project duration and weaker with shorter project duration.

Lastly, operational definition for a Project Value Size is the *monetary value amount committed to complete the project*. According to [Belassi and Tukel \(1996\)](#), project value size influencing project success indirectly through factors related to project manager, project team members, organizational structure, client consultation and acceptance, project preliminary estimates, availability of resources as well as factors related to external environments. However, it is not

clear whether project value size can moderate the relationship between a project manager's leadership roles and project team effectiveness. Thus, the last hypothesis is:

H5: The relationship between a project manager's leadership roles and project team effectiveness can be moderated by project value size, such that the relationship is stronger with lower project value size and weaker with higher project value size.

3. RESEARCH MODEL

The following Figure 3 illustrated the research model and its five hypotheses developed for this study:

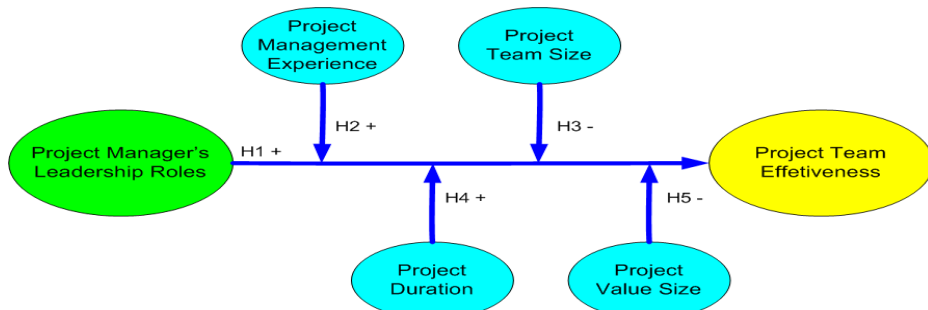


Figure-3. Research Model for this Study

4. METHODOLOGY

4.1. Sample and Procedure

Since the research questions of this study are deductive in nature, cross-sectional quantitative research with online survey method was adopted. Emails embedded with questionnaire's hyperlink were sent out to all the 420 target respondents (project managers) from PMI Malaysia Chapter. PMI Malaysia Chapter is an association related to project managers' membership in Malaysia and it has the entire country's e-mailing list of experienced and certified project managers. PMI is a global not-for-profit organization for project management professionals that have presence in many countries including Malaysia. PMI has over 350,000 members worldwide and it was established in 1969 with headquarter outside Philadelphia, USA (Project Management Institute, 2013). There are reasons to obtain responses from project managers and not from project team members. Firstly, there is a bias view from team members in which team members usually attribute negative project outcome to external factors while attributing positive project outcome to themselves (Standing *et al.*, 2006). Secondly, individual team members usually do not have vested interest in team effectiveness as compare to project manager (Standing *et al.*, 2006). Project manager normally adopt a more balanced view whereby he or she attributes most of the positive project outcome to external factors and only partially to themselves. At the same time, he or she also assume significant personal responsibility for project team failure or any negative outcome. Thirdly, unlike concentrated project manager's community whereby collecting data from previous project team members is challenging as more tedious efforts are required to track

and contact them. Furthermore, this is not feasible as they have been disbanded from their previous projects, not contactable or too busy being involved in other projects (Webber, 2002).

4.2. Constructs' Measurement

The following Table 2 describes the measurement for all the constructs adopted in this study:

Table-2. Constructs' Measurement Information and Sources

No.	Construct	Item Quantity	Scale	Measuring Instruments
1.	Leadership Roles	16	7 pt-Likert	Adapted from Denison <i>et al.</i> (1995)
2.	Project Team Effectiveness	20	7 pt-Likert	Adapted from Hoevemeyer (1993)
3.	Project Management Experience	1	6 pt-Likert	Developed by Author
4.	Project Team Size	1	6 pt-Likert	Developed by Author
5.	Project Duration	1	5 pt-Likert	Developed by Author
6.	Project Value Size	1	8 pt-Likert	Developed by Author

In order to measure leadership roles, Likert scales (1 to 7) with anchors ranging from "Almost Never" to "Almost Always" were used. The five criteria on project team effectiveness were measured based on Likert scales (1 to 7) with anchors ranging from "Strongly Disagree" to "Strongly Agree". Project management experience was measured using Likert scales (from 1 to 6) with anchors ranging "0-2 years" to "30 years and above". For project team size, it was also measured using Likert scales (1 to 6) with anchors ranging "Below 5 members" to "100 members and above". Project duration was measured using Likert scales (1 to 5) with anchors ranging from "< 6 months" to "> 60 months". For project value size, it was measured using Likert scales (1 to 8) with anchors ranging "Below Ringgit Malaysia 100,000" to "Ringgit Malaysia 100,000,000 and above".

5. RESULTS

5.1. Demographic Findings

From the total 420 respondents, only 48% had responded with 201 useable sample. Sample's margin of error at 95% confidence is low i.e. 6.9% based on the formula $0.98/\sqrt{n}$ whereby "n" is the sample size i.e. 201. Among the 201 respondents, 79% i.e. 159 of them were male and 81% i.e. 162 of them aged between 30 and 49 years. 62% of the respondents had more than 10 years project management experience and 93% of them hold a Bachelor degree or higher. 61% of the respondents were in firms with more than 500 employees. 96% of the respondents were project managers, the balance 4% consisted of project sponsor, quality manager, purchasing director and support manager who were involved in project management. During the online survey, respondents were asked to fill up the questionnaire based on a completed project that they had experienced recently, regardless whether the project outcome was positive or negative. More than 50% of the completed projects were in the industries of construction, chemical / petroleum,

information communication technology (ICT) and financial that cost more than Ringgit Malaysia 5,000,000 each. 82% of the projects took less than 2 years to complete and each project has an average of 10 team members.

5.2. Reliability and Validity Analysis

Albeit Cronbach's Alpha is widely used as an estimator for reliability tests, it has been criticized for its lower bound value which underestimates the true reliability (Peterson and Kim, 2013). Composite Reliability can be used as an alternative as its composite reliability value is slightly higher than Cronbach's Alpha whereby the difference is relatively inconsequential (Peterson and Kim, 2013). In this study, Cronbach's Alpha for all constructs were above 0.7 which indicated that there was high reliability (see Table 3). Convergent validity was assured in the study because the Average Variance Extracted (AVE) for each construct was larger than 0.5.

Table-3. Reliability and Average Variance Extracted (AVE)

No.	Construct	Composite Reliability	Cronbach's Alpha	AVE
1	Leadership Roles (LR)	0.88	0.80	0.71
2	Project Team Effectiveness (PTE)	0.90	0.86	0.64
3	Project Management Experience (PME)	1.00	1.00	1.00
4	Project Team Size (PTS)	1.00	1.00	1.00
5	Project Duration (PD)	1.00	1.00	1.00
6	Project Value Size (PVS)	1.00	1.00	1.00
7	LR x PME	0.91	0.85	0.76
8	LR x PTS	0.88	0.85	0.70
9	LR x PD	0.80	0.73	0.59
10	LR x PVS	0.87	0.84	0.69

In Table 4, correlation between pairs of constructs was below 0.9 and the squared roots of AVEs (highlighted in bold) were listed in the diagonal row of the table. Correlation between pairs of constructs below 0.9 indicated there was no common method bias (Bagozzi *et al.*, 1991). Common method bias happens when there is a variance contributed by the measurement method instead of from the constructs that the measures supposed to represent (Podsakoff *et al.*, 2003). Highly correlated constructs are evidence of common method bias in which correlations are more than 0.9 (Bagozzi *et al.*, 1991). All squared roots of AVEs were higher than the correlations between constructs indicated there is evidence of discriminant validity.

Table-4. Correlations and Squared Roots of AVEs (bold numbers in diagonal line)

Construct	LR	LR x PME	LR x PD	LR x PTS	LR x PVS	PME	PD	PTS	PVS	PTE
Leadership Roles (LR)	0.84									
LR x PME	-0.25	0.87								
LR x PD	-0.21	0.20	0.77							
LR x PTS	0.14	0.30	0.17	0.84						
LR x PVS	0.16	-0.08	-0.06	0.38	0.83					
Project Management Experience (PME)	-0.17	0.31	0.08	-0.11	-0.25	1.00				
Project Duration (PD)	-0.06	0.08	0.18	0.01	-0.10	0.27	1.00			
Project Team Size (PTS)	0.27	-0.09	0.02	0.17	0.13	0.13	0.50	1.00		
Project Value Size (PVS)	0.18	-0.22	-0.08	0.13	0.16	0.17	0.36	0.45	1.00	
Project Team Effectiveness (PTE)	0.32	0.16	0.24	0.04	-0.11	-0.05	-0.08	0.06	-0.03	0.80

5.3. Hypotheses Testing

Partial least squares’ path analysis (Hair *et al.*, 2013) was conducted using Smart PLS v2. According to Kearney (2008), Hoch (2014), Ullah and Park (2013), demographics like age, gender and education can influence team effectiveness and team performance. In order to prevent any possible interference from demographic factors, age, gender and education were incorporated as control variables. Path analysis was used instead of a series of multiple regression analyses because path analysis can be simulated for all the paths simultaneously mimic the actual environment (Hair *et al.*, 2010). Figure 4 describes the path analysis results in a diagrammatic-form. Despite all three control variables i.e. age, gender and education were incorporated in the research model for testing, none of them significantly influencing project team effectiveness. Hypothesis H1 is supported i.e. leadership roles are positively influencing project team effectiveness ($b = .443, p < .001$). Hypothesis H2 is also supported i.e. project management experience is positively moderating the relationship between leadership roles and project team effectiveness ($b = .358, p < .01$). This finding indicates that leadership roles are more strongly associated with project team effectiveness when a project manager is more experience.

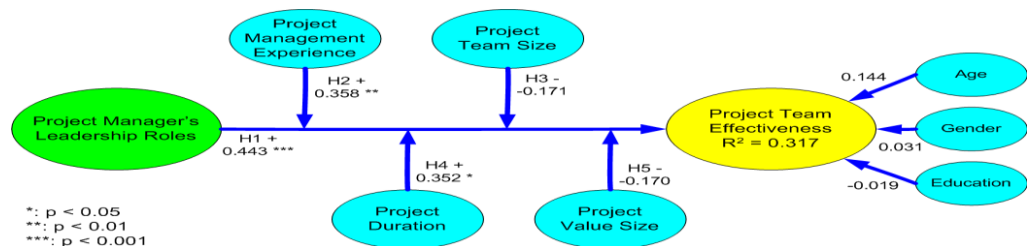


Figure-4. Structural Model's Path Analysis Results

However, project team size is not moderating the relationship ($b = -.171, p > .05$), hence hypothesis H3 is not supported. On the contrary, hypothesis H4 is supported i.e. project duration is positively moderating the relationship between leadership roles and project team effectiveness ($b = .352, p < .05$). This finding also demonstrates that leadership roles are more strongly associated with project team effectiveness when the project duration is longer. Lastly, hypothesis H5 is not supported which indicates that project value size is not moderating the relationship ($b = -.170, p > .05$). Variance explained R^2 value is not strong in this study i.e. lower than 50%. 31.7% of the variance in project team effectiveness is explained by the influence of variables within this research model.

6. DISCUSSION

This study provided some lessons learnt for project managers. Firstly, this study has indicated that in order to achieve project team effectiveness, a project manager must demonstrate his or her leadership roles. Through the leadership roles, team members are capable to coordinate and collaborate effectively in unison to achieve the aspired project goals set by the project manager. Secondly, project managers with multiple years of experience are capable to demonstrate various leadership roles that they have acquired throughout the years. As a result, this will further improve the project team effectiveness. The highest level of project team effectiveness is achieved when both project management experience and leadership roles are at high level. Moreover, experienced project managers know there is no single way to manage a project (Project Management Institute, 2013). Multiple ways to manage a project is only feasible when a project manager has assumed the role of project manager for some years. Hence, they will apply their project management know how, skillset and processes that they have accumulated throughout the years to achieve the desired project team outcomes. On the other hand, fresh or new project managers can face many challenges while leading a project team for the first time. This is plausible as they might not have the experience to demonstrate their leadership roles to promote team effectiveness. Thirdly, longer the project duration, project managers have more time to socialize, interact and lead the project team. At the same time, project managers are capable to demonstrate their various leadership roles toward the project team. As a result, this will improve the project team effectiveness. The highest level of project team effectiveness is achieved when both project duration and the project manager's leadership roles are at high level. On the contrary, if the project duration is too short, the project manager might "fire-fighting" all the way in which he or she might not have the time allocated to demonstrate his or her leadership roles to lead the team members. Hence, project team effectiveness is difficult to form. If the project team is ineffective, this might negatively impact the team productivity or even the entire project performance. If this problem is not resolved immediately, the project manager might face the conundrum of "doing the things right" rather than "doing the right things".

Lastly, both project team size and project value size have no moderating effect on the relationship between a project manager's leadership roles and project team effectiveness. Albeit

both the project team size and project value size were negatively moderating the relationship as hypothesized, however they are not significant. This might be due to the fact that when project managers are demonstrating their leadership roles, their focus is to ensure the team is effective in achieving the project goals. How large or how small the project team size or project value size may not be their immediate concern or priority when leading the team. Hence, project team size and project value size are not significantly moderating the relationship between leadership roles and team effectiveness. Even though these two hypotheses i.e. H3 and H5 were not supported, but they had sent a clear message that the way a project manager is leading an effective team is not influenced by how large or how small the project team size or the project value size.

In order to answer the first research question, it is evidenced from this study that project manager's leadership roles can positively influence project team effectiveness. As for the second research question, this study indicates that both project management experience and project duration can positively moderate the relationship between leadership roles and project team effectiveness. However, both project team size and project value size do not moderate the relationship between the project manager's leadership roles and project team effectiveness.

7. CONCLUSION

Today, more and more project teams are formed to achieve organizational objectives as organizations generally recognized the importance and benefits of project teams. However, in order to ensure project teams perform effectively, project managers need to learn and exhibit some of the leadership roles proposed by [Quinn \(1988\)](#) as they can impact the project team effectiveness. Beside the capability to demonstrate the leadership roles, a project manager should earn some years of working experience in project management. This is especially true for someone or leader switching his or her career to become a project manager. Nothing can beat the actual experience when a person wants to become a project manager. Moreover, before a project is kick-started or before the project manager is accepting the offer, he or she should review the project schedule to ensure there is ample time to complete the project. If project duration is shorter than expected, he or she should negotiate and collaborate with stakeholders to extend the project duration. Based on the empirical evidence of this study, longer the project duration can help the project manager to lead a more effective team.

This study inherited some limitations. Firstly, only quantitative research is conducted in this study. In future, qualitative interview and data analysis can be conducted with project managers to understand how and why project management experience and project duration positively moderate the relationship as this will provide deeper insight for knowledge contribution. At the same time, qualitative study also can be performed to understand how and why project team size and project value size do not moderate the relationship. Secondly, this study only solicited the view points from project managers. Future study can include project team members as part of the respondents to survey their view points as well. Thirdly, project team members' experience can be included as new moderator in future study. The rationale is team members' experience might

influence team effectiveness as well as how the project manager should lead. A project manager might lead or behave differently when dealing with experienced team members. This is because team members might be led easily due to their knowledge of understanding or they might be trouble-makers due to in-depth experience acquired in their own domains. Last but not least, future study can include project team leader as moderator since this study empirically indicated that project team size is not moderating the relationship between the project manager's leadership roles and project team effectiveness. Logically, larger the project team size, more effort is expected from the project manager to demonstrate his or her leadership roles. However, since project team size is not moderating the relationship in this study, future study can investigate whether the project manager's leadership roles have been delegated or learned by the project team leaders so that they can lead their sub-teams accordingly without the need to involve the project manager. In conclusion, this study had contributed a small step into deeper understanding on the moderator roles of project management experience and project duration in moderating the relationship between a project manager's leadership roles and project team effectiveness.

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