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Linking Personal Competencies with Transformational Leadership Style Evidence from the Construction Industry in Thailand

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Abstract: This study explored the linkage between personal competencies and leadership behaviours as well as their influences on leadership outcomes and subordinates' work performance. Personal competencies were measured using the Project Manager Competency Development (PMCD) tool. Leadership behaviours and outcomes were measured using Multifactor Leadership Questionnaire (MLQ). Data was collected from construction projects in Thailand. Findings revealed that leadership outcomes have significant positive relationship with all personal competencies specified in the PMCD framework, every factor in the transformational style and contingent reward factor in the transactional style. Transformational leaders tend to produce high work quality, work quantity, and problem solving creativity from subordinates. Findings further verified that all PMCD personal competencies have significant positive relationship with every factor in the transformational style. It implies that project managers who apply the transformational style and/or have high personal competencies indicated in PMCD framework are likely to generate greater leadership outcomes and work performance on construction projects.

Keywords: Project management, Leadership, Construction project, Work performance, Leadership outcomes

INTRODUCTION

The success of a construction project depends on several factors, one of which is the competencies of project managers. Their personalities, characteristics, skills and leadership styles also have much impact on project outcomes (Sayles and Chandler, 1971; Ashley et al., 1987; Gharehbaghi and McManus, 2003; Nguyen et al., 2004).

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Effective leadership is essential for construction projects. A major task of the project manager is to provide effective leadership throughout the life of a construction project (Gharehbaghi and McManus, 2003). Normally, a project is expected to be completed on time, within budget and meet with technical specification or customer satisfaction (Morris and Hough, 1987; Tukel and Rom, 2001). However, the difficulty and uncertainty of most construction projects normally create daily problems for the professionals who manage them (Nguyen et al., 2004; Chan and Chan, 2004). As such, one important job of project managers is to handle unanticipated problems competently. They should

have essential knowledge and competencies at the adequate level in order to cope with different circumstances along the project life (PMI, 2002; Gharehbaghi and McManus, 2003). In practice, some project managers may have insufficient skills and their personalities may not fit with the demands of the work. They may use inappropriate leadership styles in dealing with subordinates. Effective performance and great work outcomes from subordinates are always desirable, but they do not always happen. People normally respond well only to the appropriate types of leadership. The best style would lead them to work effectively (Likhitwonnawut, 1996).

This study was conducted in order to identify the appropriate leadership style and the effective personal competencies of project managers in construction projects in Thailand. Suitable leadership approach can shape subordinates' performance in a desirable way and facilitate the smooth running of construction projects. In addition, good leadership will create subordinates' satisfaction and consequently, satisfied subordinates are likely to put much effort into their work. The link between project manager's personal competencies and effective leadership style is the focus of this paper.

LEADERSHIP

The word leadership means different things to different scholars. It has been described in terms of position, personality, responsibility, influence process, an instrument to achieve a goal, behaviours, result from the interaction and some other meanings from various scholars (Stogdill, 1950; Rauch and Behling, 1984; Hughes et al., 1993; Robbins, 1993). Most definitions have a common theme of directing a group towards a goal. Therefore, the definition of leadership used in this study is the process (act) of influencing the activities of an organised group in its efforts towards goal setting and goal achievement.

Leaders' Personal Characteristics

Efforts have been made by different scholars in order to understand the relationship between personal characteristics and leadership style. In 1948, Stogdill pointed out that trait was not generally associated with effective leadership. However, in 1974, he reached a new conclusion reversing his previous statement that although personality has limited value in predicting an individual's leadership potential, there are indications that traits work with other factors in the leadership position. He observed that leaders tend to have higher adaptability, alertness to environment, ambition, achievement, assertiveness, cooperation, decisiveness, dominance, energy,

persistence, self confidence, independence, stress tolerance, drive to exercise initiative and willingness to accept responsibility than non-leaders.

A number of scholars had extended the researches on personality and leadership. Their results showed some significant relationship between the qualities. For example, Hogan et al. (1994) suggested that personality traits are important components of effective leadership. By using the Five Factor Model of personality, the value and usefulness of personality trait measurement as a predictor of leadership can be enhanced. They also believe that a leader's personalities have predictable effects on team performance. Taggar et al. (1999) found that leadership emerged with the association of cognitive ability, followed by conscientiousness, extraversion, and emotional stability.

Sarros et al. (2006) summarised earlier researches on leadership and character from several scholars in their research. They wrote:

> Hesselbein (2004) commented that leadership is about how to be, not how to do, it is about character. Kirkpatrick and Locke (1991) pointed out that leadership trait consists of six elements: drive; desire to lead; honesty and integrity; self-confidence; cognitive ability; and knowledge of the business. Gergen (2001) suggested that character, vision, and political capacity are three essential traits of anyone aspiring to a leadership position. The seven virtues from Barker and Coy's (2003) study are humility; courage; integrity; humour; passion; compassion; and wisdom.

Hautala (2006) reported that a relationship between personality and transformational leadership existed in her research. The indications of transformational leadership style from leaders' self-ratings are perceiving, extraversion and intuition while subordinates indicated that the most transformational leaders were sensing leaders. In addition, she referred to earlier personality studies; thus,

> Bass (1985), Tichy and Devanna (1990) and Ross and Offerman (1997) pointed out that creativity, novelty, innovativeness, proneness to risk, courageous, believing in people, value-driven, life-long learners, pragmatism, nurturance, feminine attributes and self-confidence are the personality characteristics regarded of transformational leaders. Most of these qualities can be connected with intuition, feeling and perceiving preferences according to theory of the MBTI (Myers Briggs Type Indicator). Church and Waclawski (1998) added also that extrovert, intuitive, thinking and perceiving are more transformational than their counterparts. This was supported by Roush's (1992) study of subordinates' appraisals that feeling, perceiving, intuition, and extroversion preferences received the most positive transformational ratings. Intuitive and perceiving preferences were more likely

to indicate a transformational leadership style (Van Eron and Burke, 1992). While Roush and Atwater (1992) found sensing and feeling preferences were strongly associated with transformational leadership according to subordinates' ratings.

Another group of scholars examined the relationship between leaders' personality with the Five Factors Model. Judge et al. (2002), and Bono and Judge (2004) revealed that extroversion has strongest correlation with transformational leadership. The study by Judge and Bono (2000) asserted that extroversion and agreeableness were correlated with transformational leadership. In addition, Ployhart et al. (2001) showed that openness and extroversion were predictive of maximum transformational leadership performance.

In this study, the personal characteristics of project managers were measured following the personal competencies framework in the Project Manager Competency Development (PMCD) Framework developed by the PMI (2002). This standard identifies the personal characteristics of effective project managers regardless of the nature, type, size, or complexity of projects they may be engaged in managing. This model was adopted because PMI materials are being used in many countries.

The following discussions on personal competencies are extracted from PMI (2002).

Personal competencies

As stated by Boyatzis (1982), competence means different things to different people. However, it is generally accepted as encompassing knowledge, skills, attitudes and behaviours that are causally related to superior job performance. This understanding of competence has been described as attribute-based inference of competence (Heywood, Gonczi et al., 1992). Alternatively, performance-based approach to competence can be inferred from demonstrated performance at pre-defined acceptable standards in the workplace (Gonczi, Hager et al., 1993).

The PMI's definition of "competency" adopted from Parry's (1998) work is "a cluster of related knowledge, attitudes, skills, and other personal characteristics that affects a major part of one's job, correlates with performance on the job, can be measured against well-accepted standards, can be improved via training and development and can be broken down into dimensions of competencies". The major components of competencies include: abilities, attitudes, behaviour, knowledge, personality and skills.

The PMI's definition of "personal competency" adopted from Finn (1993) and Crawford (1997) is "the core personality characteristics underlying a person's capability to do a project. These are behaviour, motives, traits, attitudes, and self concepts that enable a person to successfully manage a project".

The personal competencies from PMI presented here are those considered to best represent the personal characteristics required of a competent project manager in any type of project. They were derived from the Competency Dictionary (Spencer Model) developed by Lyle and Signe Spencer (1993) and adapted to fit the technical need of the PMCD framework. The six competence units are:

- Achievement and action: This competency consists of achievement orientation; concern for order in quality and accuracy; initiative and information seeking.
- Helping and human service: This competency implies that the manager has customer service orientation and interpersonal understanding.
- Impact and influence: This competency comprises impact and influence capability; organisation awareness and relationship building.
- Managerial competency: This competency includes teamwork and cooperative; capability in developing others; team leadership and directiveness, assertiveness and positional power using.
- Cognitive: This competency implies that the manager has both analytical thinking capability and conceptual thinking ability.
- Personal effectiveness: This competency covers self-control; self-confidence; flexibility and organisational commitment.

Leadership Style

The present study uses charismatic leadership approach to identify leadership style of project managers. In this approach, leadership is conceptualised by the behavioural areas from *laissez-faire* style (non-leadership), through transactional leadership (which hinges on reward system and punishments), to transformational leadership (which is based on inspiration and behavioural charisma) (Bass and Avolio, 1993).

***Laissez-faire* style**

An avoidant leader may not intervene in the work affairs of subordinates or may completely avoid responsibilities as a superior, may exhibit low initiative and participation with their subordinates and is unlikely to put in effort to build a relationship with them. This leadership style is associated with dissatisfaction, unproductiveness and ineffectiveness (Deluga, 1992).

Transactional style

Transactional leaders focus mainly on physical and security needs of their subordinates (Bass, 1985; Bass and Avolio, 1993). The relationship that evolves between the leader and the follower is based on bargaining exchange or reward systems. This contingent reward leadership relates positively to subordinates' outcomes like satisfaction and performance; however, the strength of the association is lower than transformational leadership (Lowe et al., 1996).

Transformational style

Burns (1978) described the transformational leader as one who encourages subordinates to put in extra effort and to go beyond what they (subordinates) expected before. The subordinates of transformational leaders feel trust, admire, loyal and respect towards leaders and are motivated to perform extra-role behaviours (Bass, 1985; Katz and Kahn, 1978; Bass and Avolio, 1993; Conger et al., 2000). Howell and Frost (1989), Clover (1990), Deluga (1992), Kirkpatrick and Locke (1996), Barling et al. (1996) asserted that transformational leadership styles affect higher task performance. While Hater and Bass (1998), Howell and Frost (1989) and Conger et al. (2000) claimed that transformational leadership behaviours are associated with subordinates' satisfaction.

Transformational leaders achieve the greatest performance from subordinates since they are able to inspire their subordinates to raise their capabilities towards success and develop subordinates' innovative problem-solving skills (Bass, 1985; Yammarino and Bass, 1990). Jung et al. (2003) found significant relationships between this style and innovative-supporting organisational climate. Moreover, Shin and Zhou (2003) also reported positive relationship with followers' level of creativity.

Leadership Factors

Leadership factors used for measuring transformational, transactional and *laissez-faire* leadership style in this study are from the Multifactor Leadership Questionnaire (MLQ) developed by Bass (1985) based on the theory of transformational leadership. They are:

***Laissez-faire* factor**

- The non-leadership: Leaders in this type will always avoid getting involved when important issues arise and avoid making decisions. This leadership style has negative impacts on subordinates (Bass and Avolio, 2004).

Transactional leadership factors

- Contingent reward: This factor is based on a bargaining exchange system in which the leader and subordinates agree together to accomplish the organisational goals and the leader will provide rewards to them. Leaders must clarify the expectations and offer recognition when goals are achieved (Bass and Avolio, 2004). The rewards could be for example; praise, pay increase, bonuses and promotion.
- Management-by-exception (active): The leader specifies the standards for compliance, as well as what constitutes ineffective performance, and may punish subordinates for being out of compliance with those standards. This style of leadership implies closely monitoring for deviances, mistakes, and errors and then taking corrective action as quickly as possible when they occur (Bass and Avolio, 2004).
- Management-by-exception (passive): Managers who behave as management-by-exception (passive) leaders take action only when there is evidence of something not going according to plan and the effectiveness of this style does not respond to situations and problems systematically. Passive leaders avoid specifying agreements, clarifying expectations, and providing goals and standards to be achieved by subordinates, but will intervene when specific problems become apparent. This style has a negative effect on desired outcomes – opposite to what is intended by the leader-manager (Bass and Avolio, 2004). Subordinates of this leader are likely to avoid initiating change and taking risk. They prefer maintaining the status quo (Bass, 1985).

Transformational leadership factors

- Idealised influence charisma: This factor consists of (1) idealised influence attributed, and (2) idealised influence behavioural. They are the charismatic elements of transformational leadership in which leaders become role models who are admired, respected, emulated and trusted by subordinates (Avolio and Bass, 2002; Bass, 1998; Bass and Avolio, 1994; Avolio et al., 1991). It also involves integrity in the form of ethical and moral conduct (Tracey and Hinkin, 1998). The leaders show great persistence and determination in the pursuit of objectives, show high standards of ethical, principles and moral conduct, sacrifice self-gain for the gain of others, consider subordinates' needs over their own needs and share successes and risks with subordinates.
- Inspirational motivation: Leaders behave in ways that motivate subordinates by providing meaning and challenge to their work (Avolio and Bass, 2002). The spirit of the team is aroused while enthusiasm and

optimism are displayed (Bass, 1998). The leader encourages subordinates to envision attractive future states while communicating expectations and demonstrating a commitment to goals and a shared vision.

- Intellectual stimulation: Leaders stimulate their subordinates' efforts to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways (Avolio and Bass, 2002). No ridicule or public criticism of individual members' mistakes are made. The intellectually stimulating leader encourages subordinates to try new approaches but emphasises rationality (Bass, 1990). Therefore, new ideas and creative solutions to problems are solicited from followers, who are included in the process of addressing problems and finding solutions.
- Individualised consideration: Leaders build a considerate relationship with each individual, pay attention to each individual's need for achievement and growth by acting as a coach or mentor, developing subordinates in a supportive climate to higher levels of potential (Bass, 1998; Avolio and Bass, 2002). Followers are successively developed to higher levels of potential. New learning opportunities are created along with a supportive climate in which to grow. Individual differences in terms of needs and desires are recognised.

Leadership Outcomes

The outcomes from leadership quality consist of three measurable factors: (1) effectiveness (reflects the leader's efficacy in achieving organisational outcomes, objectives, goals and subordinates' needs in their job); (2) satisfaction (reflects the degrees to which subordinates are satisfied with their leader's behaviour and the leader works with others in a satisfactory way); and (3) extra effort (reflects the degrees to which the leader can increase subordinates' desire to succeed and subordinates exert effort higher than their normal rate) (Bass and Avolio, 2004).

Work Performance

The success of a project is usually stated in terms of meeting three major objectives: completion on time, completion within budget, completion at the desired level of quality (Tukel and Rom, 2001; Xiao and Proverbs, 2003). Atkinson (1999) called these three criteria the "iron triangle" or "golden triangle". While other definitions on project success have been proffered, the iron triangle is ubiquitous.

In this study, the performance levels of subordinates were measured in the direction which would support the success of construction projects as described earlier. Thus, they were measured from (1) work quantity (actual work compared with the planned schedule), (2) work quality (fit

with the desired level of project owner or technical requirement). In addition, working in the construction projects, people have to coordinate and work together as a team, hence, teamwork and work discipline are the important qualities they should occupy (Sanvido et al., 1992; Nguyen et al., 2004). Besides, construction work by nature is a daily operation where unpredictable problems occur regularly, creativity in problem solving is an essential quality that the project staffs should posses (Nguyen et al., 2004; Nitithamyong and Tan, 2007). Thus, the additional performance aspects need to be measured from subordinates including (3) team work level, (4) creativity in problem solving and (5) work discipline. Together, the five aspects are used as measures of work performance.

METHODS

The focus of the research is on the leader's personal competencies, leadership styles and their effects on subordinates' work performance. Data on leadership behaviours, leadership outcomes (effectiveness, satisfaction, extra effort) and personal competencies of project managers in Thai construction projects were gathered from the subordinate group whereas project managers provided data on their subordinates' work performance level based on their (project managers') judgment.

In construction projects in Thailand, normally people designated as project engineers and project architects receive direct instructions from the project manager while at the same time supervising site engineers and site architects. Thus, there is direct contacts and relationships between project engineers and project managers. Therefore, project engineers and/or project architects, as direct subordinates of the project manager were chosen as the respondents to provide data on the leadership behaviours, leadership outcomes and personal competencies of project managers. On the other hand, project managers provided data on the work performance of their direct subordinates.

Most construction projects in Thailand have only one or two project engineer working full time on sites. Some projects have one project architect, whereas others have none. In addition, we attempted to avoid the bias of a single subordinate reporting on the manager. Therefore, the target respondents of this study are two subordinates (project engineers or/and project architect) and one project manager per one project. Thus, it was necessary that a construction project qualified to be selected for data collection should have at least two subordinates (project engineers or/and project architects) working under a single project manager. This reduces the potential bias from rating by a single subordinate.

The top construction companies in Thailand were identified from various sources (mainly the contractors registered with the Thai Contractors Association and The Engineering Institute of Thailand) and they were requested to send a list of their ongoing projects for the purpose of data collection. A full set of questionnaires (one for the project manager and two for subordinates) were then sent to each qualified project with the covering letter explaining the objectives of the study and assuring respondents of confidentiality and urging them to participate in the study. Pre-addressed reply envelope was included for postage.

The Samples

There is no updated list of ongoing construction projects in Thailand. Thus, it is not possible to have an exact sampling frame of construction projects and/or construction project managers in Thailand for use in random sampling. Therefore, non-probability sampling incorporating snowball technique was adopted in selecting qualified projects and respondents.

Data for the subordinate group was collected from 92 engineers and 12 architects (100 male and 4 female), whose average age is 32 years. Among them, 98 respondents had bachelor degrees while 6 had master degrees. The average work experience was 9 years and the average tenure their current organisations was 5.5 years.

Data for leader group was collected from 52 project managers (all male with engineering background). The average age was 39 years. Among them, 47 respondents had bachelor degrees while 4 had master degrees and 1 had a doctorate degree. The average work experience was 16 years and the average tenure with their current organisations was 12.5 years. Thirty of the 52 project managers have had leadership training. The entire data were collected from 52 construction projects in Thailand (21 public owners and 31 private owners). The 52 projects comprised 33 building construction projects and 12 civil engineering projects, whereas 5 projects combined building and civil construction, 1 was a telecommunication project and another a mining project.

Research Instrument

A questionnaire survey was adopted for collecting data because of its advantage in yielding responses in standard format from a large number of respondents and the benefit of collecting data from respondents from geographically dispersed locations.

The measurements adopted in the questionnaires are:

- Leader personal competencies: The competencies of project manager which referred to behaviour, motives, traits, attitudes, and self concepts in this study were measured following the PMCD Framework of PMI (2002). This questionnaire section contains 40 statements for subordinate to evaluate their project manager on a five-point rating scale ranging from "not at all" to "frequently".
- Leadership behaviours: Leadership behaviours in this research were measured by using Bass and Avolio's (2004) MLQ Form 5X. The MLQ comprises 36 statements for measuring nine leadership behaviours of leadership style. Four statements are used to measure each behaviour.
- Leadership outcomes: There are nine additional statements in the MLQ for measuring leadership outcomes resulting from project managers' leadership approach. Three statements are for measuring extra effort level, four statements for measuring effectiveness level and two statements for measuring satisfaction level.
- Work performance: A rating tool was devised for project managers to evaluate their subordinates' work performance. The measurement required project managers to rate each statement on a five-point rating scale ranging from "very poor" to "very good" based on their experience with the subordinates. Statements focussed on five components of subordinates' work performance. Project managers were also requested to give an overall rating indicating overall satisfaction with their subordinates' job performance.

DATA ANALYSIS

Data from respondents were analysed using descriptive statistics. The relationship between leader personal competencies, leadership styles, leadership outcomes and work performance was examined through correlation analysis using SPSS version 11.5. The abbreviation used in this study are described in Appendix.

RESULTS

This study explored the personal competencies and leadership behaviours of Thai project managers and examined influences of these factors on subordinates' work performance and leadership outcomes. The results of data analysis collected from 52 construction projects in Thailand are now presented.

Figure I below shows the actual personal competencies of Thai construction project managers. The highest average personal competencies is cognitive followed by personal effectiveness and, achievement and action in that order whereas the lowest personal competency of Thai project managers is impact and influence.

Data in Table 1 shows that leadership outcomes (effectiveness, satisfaction and extra effort) have significant positive relationships with all PMCD personal competencies (achievement and action, helping and human service, impact and Influence, managerial, cognitive, and personal effectiveness) of project managers. Interestingly, all leadership outcomes have highest positive correlation with personal effectiveness competency.

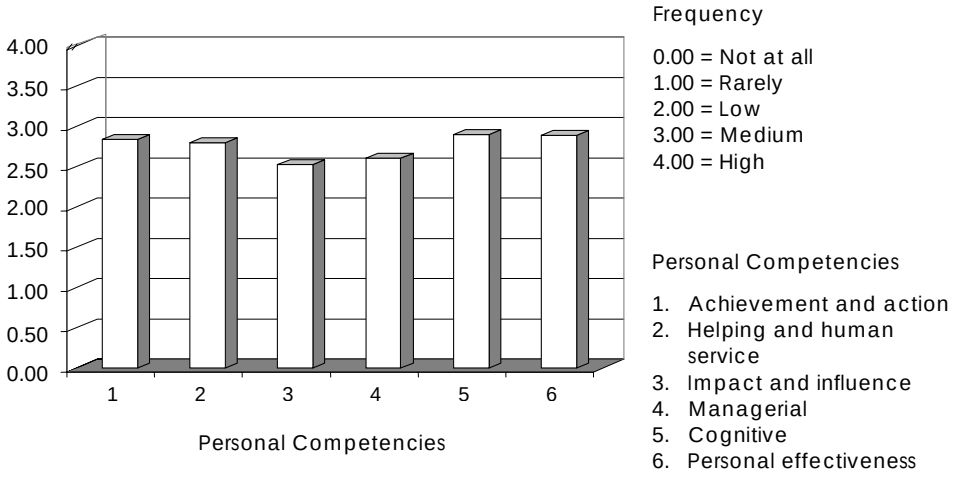

Figure I. Average Personal Competencies of Project Manager in Thai Construction Industry

Table I. Correlation between Personal Competencies and Leadership Outcomes

Competency	Leadership Outcome		
	Effectiveness	Satisfaction	Extra effort
Action	0.663**	0.505**	0.456**
Help	0.644**	0.673**	0.616**
Impact	0.600**	0.578**	0.472**
Manage	0.486**	0.439**	0.375**
Cog	0.623**	0.515**	0.466**
Person	0.670**	0.725**	0.644**

Note: * Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

The correlation between subordinates' work performance and project managers' personal competencies in Table 2 indicates that work quality has significant positive relationship with helping and human service, personal effectiveness, and achievement and action. Among those, the highest correlation occured between work quality and helping and human service competency. Work quantity as well as problem solving creativity has positive significant relationship with helping and human service, cognitive ability and personal effectiveness. However, work quantity has highest correlation with helping and human service competency; whereas problem solving creativity has highest correlation with personal effectiveness. Teamwork and work discipline do not have significant relationship with any personal competencies of project managers.

Table 2 further reveals that the overall satisfaction of project managers on their subordinates' work performance has positive relationship with helping and human service, and personal effectiveness of project managers themselves. Between them, the greatest relationship occured between overall satisfaction and personal effectiveness.

Regarding leadership behaviours of project managers, the results presented in Figure 2 and Figure 3 below show that the most often applied leadership approach in Thailand is transformational and the most frequently exhibited leadership behaviours of project managers is inspirational motivation followed by idealised influence (attributed) and idealised influence (behaviour) in that order while the *laissez-faire* is the least used.

Result from correlation analysis (Table 3) shows that effectiveness, satisfaction and extra effort have significant positive relationships with all factors in transformational leadership style while they have significant positive relationship with only contingent reward factor in transactional leadership style. Moreover, they all have significant negative relationship with

Table 2. Correlation between Personal Competencies and Work Performance

PM Competency	Subordinate Work Performance					
	Qual	Quan	Create	Team	Discip	Overall Sat
Action	0.275 *	0.259	0.255	0.078	0.137	0.220
Help	0.425**	0.350 *	0.297*	0.049	0.129	0.276*
Impact	0.180	0.124	0.172	– 0.077	– 0.067	0.138
Manage	0.179	0.214	0.138	0.130	0.096	0.130
Cog	0.237	0.305 *	0.318*	0.052	0.119	0.239
Person	0.300 *	0.288 *	0.380 **	0.154	0.155	0.292*

Note: * Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

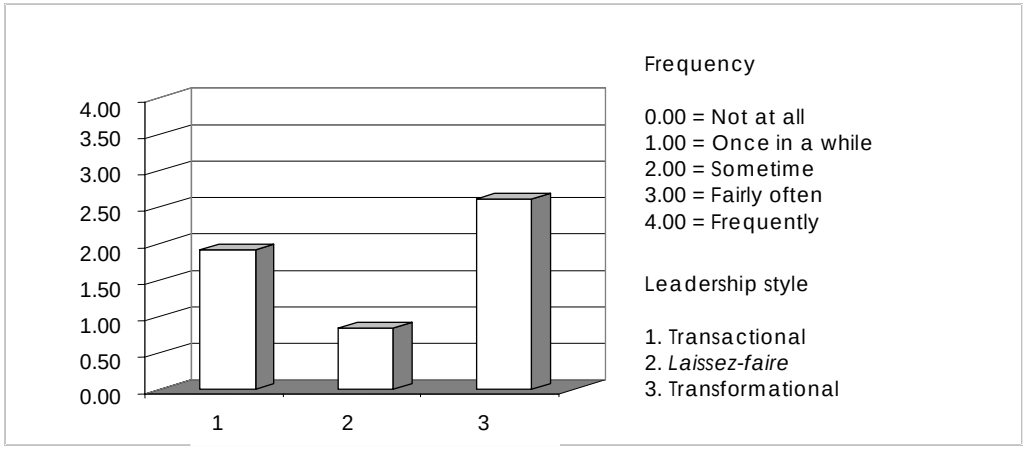

Figure 2. Frequency of Leadership Styles Used in construction Project in Thailand

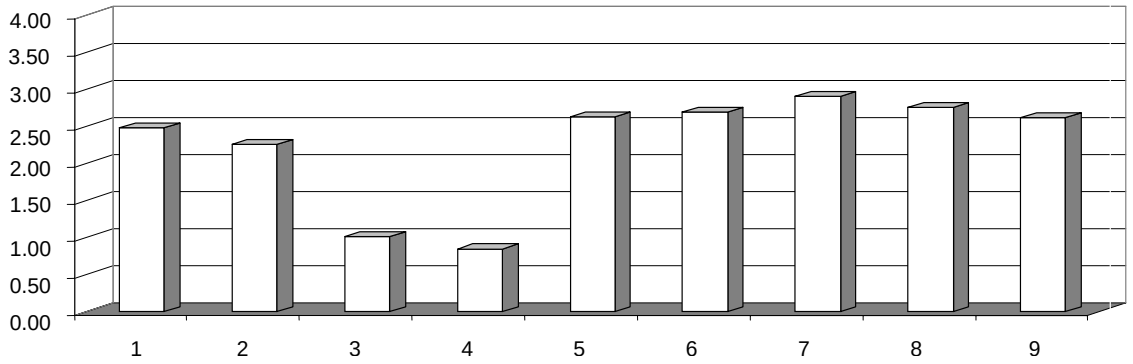

Figure 3. Frequency of Leadership Behaviours

management-by-exception (passive) and *laissez-faire* leadership behaviour whilst no significant relationship with management-by-exception (active).

The correlation between leadership behaviour and subordinates' work performance in Table 4 indicate that work quality has significant positive relationship with inspirational motivation and idealised influence (attributed) in the transformational leadership style while work quantity has significant positive relationship with inspirational motivation, individualised consideration and idealised influence (behavioural). Problem solving creativity of subordinates has significant positive relationship with individualised consideration, inspirational motivation, idealised influence (behavioural) and contingent reward. Teamwork and work discipline of subordinates do not have significant relationship with any factor from the transformational, transactional or *laissez-faire* leadership styles.

Table 4 further reveals that overall satisfaction of project managers with subordinates' work performance has the highest correlation with subordinates' creativity in problem solving followed by work quantity, work quality, teamwork, and work discipline in that order. Moreover, individualised consideration behaviour, inspirational motivation behaviour and contingent reward behaviour of project managers themselves have the effect to create significant positive relationships with their own (managers') overall satisfaction on subordinates' work performance as well.

The association between personal competencies and leadership behaviour of project manager was examined by correlation analysis as well. The outcome in Table 5 shows that all personal competencies of project manager tested in this study have significant positive relationships with every factor in the transformational leadership style while they have significant positive relationship with transactional leadership style in contingent reward factor only. They all have negative relationship with the *laissez-faire* leadership factor.

The correlation analysis in Table 5 demonstrated that achievement and action competency has highest significant correlations with both idealised influence (attributed) factor and individualised consideration factor. Helping and human service, impact and influence, cognitive and personal effectiveness has highest significant correlations with individualised consideration factor whereas managerial competency has highest significant correlations with idealised influence (attributed) factor. All leadership factors shown with highest significant correlations with PMCD personal competencies are from the transformational leadership style.

Table 3. Correlation of Leadership Factors and Leadership Outcomes

Leadership Outcome	Leadership Behaviour								
	Transactional			*Laissez-faire*		Transformational			
	Cont	Active	Passive	Laiss	Insti	Idealbe	Inmo	Idealat	Incon
Effectiveness	0.777**	0.048	0.431 **	0.379**	0.538 **	0.509**	0.617 **	0.761 **	0.818**
Satisfaction	0.595**	– 0.185	– 0.383 **	– 0.185	0.378 **	– 0.275**	0.462**	0.724 **	0.672**
Extra effort	0.636**	– 0.053	– 0.380 **	– 0.053	0.485 **	– 0.364**	0.553**	0.660 **	0.732**

Note: * Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Table 4. Correlation of Leadership Factors and Work Performance

Work Performance	Leadership Behaviour									
	Overall Sat	Transactional			*Laissez-faire*	Transformational				
		Cont	Active	Passiv	Laiss	Insti	Idealbe	Inmo	Idealat	Incon
Qual	0.599**	0.244	– 0.148	– 0.060	0.100	0.022	0.144	0.282*	0.275*	0.250
Quan	0.633**	0.222	0.123	– 0.109	0.052	0.143	0.275 *	0.387**	0.187	0.320*
Create	0.691**	0.295 *	– 0.002	0.088	0.152	0.240	0.281 *	0.388**	0.215	0.419**
Team	0.596**	– 0.003	– 0.042	0.207	0.134	– 0.018	0.053	0.077	0.117	0.141
Discip	0.545**	0.023	– 0.024	0.055	0.150	0.060	0.024	0.198	0.104	0.178
Overall Sat	1	0.276 *	– 0.061	0.075	0.122	0.202	0.176	0.337*	0.243	0.370**

Note: * Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Table 5. Correlation Between Personal Competencies and Leadership Behaviours

PM Competency	Leadership Behaviour								
	Transactional			*Laissez-faire*	Transformational				
	Cont	Active	Passiv	Laiss	Insti	Idealbe	Inmo	Idealat	Incon
Action	0.483**	0.148	– 0.582**	– 0.467 **	0.602 **	0.558**	0.586 **	0.740**	0.740 **
Help	0.566**	0.023	– 0.447**	– 0.331 *	0.520 **	0.426**	0.446 **	0.602**	0.668 **
Impact	0.616**	– 0.052	– 0.369**	– 0.241	0.513 **	0.494**	0.398 **	0.581**	0.672 **
Manage	0.318**	– 0.029	– 0.552**	– 0.442**	0.416 **	0.416**	0.422 **	0.568**	0.560 **
Cog	0.506**	– 0.060	– 0.449**	– 0.355**	0.514 **	0.539**	0.550 **	0.684**	0.720 **
Person	0.481**	– 0.033	– 0.449**	– 0.387**	0.542 **	0.428**	0.614 **	0.675**	0.706 **

Note: * Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

This paper set out to examine the influence of project managers' personal competencies and leadership behaviours on subordinates' work performance and leadership outcomes using data from 52 construction projects in Thailand. The outcomes regarding project managers' personal competencies show that Thai project managers have cognitive competency higher than other competencies tested in this study. Correlation analysis result clarified that project managers with high helping and human service competency and/or personal effectiveness competency are likely to generate high work quality, work quantity and problem solving creativity from their subordinates whereas those with high cognitive competency supported subordinates to produce high work quantity and problem solving creativity while those with high achievement and action competency are likely to derive better work quality from the subordinates.

The association between PMCD personal competencies (achievement and action, helping and human service, impact and influence, managerial, cognitive and personal effectiveness) developed by PMI (2002) and MLQ leadership behaviours developed by Bass

and Avolio's (2004) reveals that the entire personal competencies have significant positive relationship with every factor in the transformational style but they have significant positive relationship with only contingent reward factor in transactional style whereas they all have negative relationship with *laissez-faire* style. It implies that project managers who apply transformational leadership behaviours with their subordinates are assumed to have the essential personal characteristics required of a competent project manager defined by PMI as well.

The results further indicate that all personal competencies units have significant positive relationship with leadership outcomes (effectiveness, satisfaction and extra effort). A possible explanation for this is a project manager with high PMCD personal competencies is likely to produce effectiveness from his/her leadership, by achieving organisational objectives, goals and assisting his/her subordinates to success in their work life, more than one with less. In addition, the stronger the PMCD personal competencies a project manager has the more his/her ability to make the subordinates satisfied and to motivate them to put extra effort into their work. Among all the PMCD personal competencies, personal effectiveness competency has the highest relationship with all leadership outcome aspects. It implies that a project manager with high self-control, self-confidence, flexibility and organisational commitment is likely to produce higher work effectiveness while at the same time generating subordinates' satisfaction and supporting them to put great effort into their work than those with high level in other competencies.

Another finding of this study is that the leadership style mostly adopted and proving to be most suitable for Thai people is the transformational leadership style. Results clearly indicate that transformational leadership style creates leadership outcomes (effectiveness, satisfaction and extra effort) from subordinate more than transactional and *laissez-faire* leadership style. This finding agrees with Katz and Kahn (1978), Bass (1985), Hater and Bass (1988), Howell and Frost (1989), Bass and Avolio (1993) and Conger et al. (2000). It implies that a project manager who adopts the transformational leadership style is supposed to produce effectiveness from his/her leadership, by achieving organisational targets, goals and support his/her subordinates to accomplish the needs in their job more than a project manager who adopts the transactional leadership style or the *laissez-faire* style. Transformational leadership style also yields higher satisfaction from subordinates and spur them to exert more effort to work than the transactional leadership style in construction projects in Thailand.

Regarding the influence of leadership behaviours on subordinates' work performance, a project manager who

adopts the transformational leadership approach can support subordinates to produce better work quality and work quantity. This agrees with Howell and Frost (1989), Clover (1990), Deluga (1992), Kirkpatrick and Locke (1996), Barling et al. (1996) and Sosik et al. (1997). In addition, subordinates tend to have high creativity in problem solving when working with transformational leaders. This finding supports both the study by Jung et al. (2003), and Shin and Zhou (2003).

CONCLUSION

This study focused mainly on the effect of project managers' personal competencies and their leadership style on subordinates' work performance and leadership outcomes. Another issue of concern here is the relationship between project managers' personal competencies and their leadership behaviours. It was intended to identify the most appropriate leadership style and the required personality, attribute and skills of the proficient project managers in the construction industry.

In summary, a project manager with high PMCD personal competencies tend to produce leadership outcomes (effectiveness, satisfaction, extra effort) more than one who has less while a project manager with high personal effectiveness competency is likely to produce higher levels in all leadership outcomes than those with high level in other competencies.

Transformational leadership style is the major leadership style in Thai construction projects. Results also clarified that this leadership style is likely to generate higher leadership outcomes than the transactional style and the *laissez-faire* style. Transformational leadership style tends to produce high work quality, work quantity, and problem solving creativity from subordinates. Besides, leaders who apply transformational behaviours are likely to have the vital project manager personal characteristics as defined by the PMI also.

PRACTICAL IMPLICATIONS AND FUTURE DIRECTIONS

The study adds some additional knowledge in the appropriate leadership style and effective personal competencies of construction project manager for the eastern context in the 21st century. The results clarified that project managers who apply transformational leadership style as well as those with high PMCD personal competencies are likely to generate greater leadership outcomes and work performance from their subordinates in construction projects. It implies that, project managers

can adjust their leadership behaviours in practical ways and develop their own personal competencies to fit with subordinates' preferences and support them to produce high work performance as well as enhance leadership outcomes. In addition, the human resource management function in the construction companies can utilise these results for their leadership development effort.

Emerging from this study is the need for further studies in several directions. First, this study used Bass and Avolio's (2004) MLQ to measure leadership behaviours of project managers whereas personal competencies were measured following PMCD developed by the PMI (2002). It would be interesting to use other instruments to measure leader behaviours and personal competencies or to employ several instruments at the same time and compare the results. Second, this paper examined the current leadership behaviour and its effects on people working in the Thai construction industry. It would inform the research community to gather data from other industries which have different nature of work in order to determine if there is a fit between leadership style and nature of work or personality and nature of work. Third, there are other possible explanations for the result in this study. It is possible that the leadership styles adopted at the professional to professional level is different from those adopted at the professional to technician or worker level. That is, managers may adopt transformational leadership when dealing with other professionals but may choose to adopt transactional leadership when leading technicians or site workers. A study clarifying this would seem to be appropriate.

APPENDIX

Abbreviations List

Leadership behaviour	Idealat	= idealised influence (attributed)
	Idealbe	= idealised influence (behavioural)
	Insti	= intellectual stimulation
	Incon	= individualised consideration
	Inmo	= inspiration motivation
	Cont	= Contigent reward
	Active	= Management-by-election (active)
	Passiv	= Management-by-acception(passive)
	Laiss	= *Laissez-faire* style
	Transa	= Transactional
	Transf	= Transformational
Leadership outcome	Effect	= Effectiveness
	Satis	= Satisfaction
	Extra	= Extra effort
Work performance	Qual	= Quality of work
	Quan	= Quantity of work
	Create	= Creativity in problems solving
	Team	= Teamwork
	Discip	= Discipline
	Overall Sat	= Overall satisfaction
Personal competencies	Action	= Achievement and action
	Help	= Helping and human service
	Impact	= Impact and influence
	Manage	= Managerial
	Cog	= Cognitive
	Person	= Personal effectiveness

REFERENCES

Ashley, D.B., Lurie, C.S. and Jaselskis, E.J. (1987). Determinants of construction project success. *Project Management Journal*, 18(2): 69–79.

Atkinson, R. (1999). Project management: Cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International Journal of Project Management*, 17(6): 337–344.

Avolio, B.J. and Bass, B.M. (2002). *Developing Potential across a Full Range of Leadership Cases on Transactional and Transformational Leadership*. Mahwah, NJ: Lawrence Erlbaum Associates.

Avolio, B.J., Waldman, D.A. and Yammarino, F.J. (1991). Leading in the 1990s: The four Is of transformational leadership. *Journal of European Industrial Training*, 15(4): 9–16.

Barling, J., Weber, T. and Kelloway, E.K. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of Applied Psychology*, 81(6): 827–832.

Bass, B.M. (1985). *Leadership and Performance Beyond Expectations*. New York: Free Press.

_____. (1990). *Bass and Stogdill's Handbook of Leadership: Theory, Research, and Managerial Applications*, (3rd ed.). New York: Free Press.

_____. (1998). *Transformational Leadership: Industrial, Military, and Educational Impact*. Mahwah, NJ: Lawrence Erlbaum Associates.

Bass, B.M. and Avolio, B.J. (1993). Transformational leadership: A response to critiques. In Chemers, M.M. and Ayman, A. (Eds.). *Leadership Theory and Research: Perspectives and Directions*, 49–80, San Diego, CA: Academic Press.

_____. (1994). *Improving Organizational Effectiveness through Transformational Leadership*. Thousands Oaks, CA: Sage Publications.

_____. (2004). *Multifactor Leadership Questionnaire: Manual and Simpler Set*. (3rd ed.). Menlo Park, Ca: Mind Garden.

Bono, J.E. and Judge, T.A. (2004). Personality and transformational and transactional leadership: A meta-analysis. *Journal of Applied Psychology*, 89 (5): 901–910.

Burns, J.M. (1978). *Leadership*. New York: Harper & Row.

Chan, A.P.C. and Chan, A.P.L. (2004). Key performance indicators for measuring construction success. *Benchmarking: An International Journal*, 11(2): 203–222.

Clover, W.H. (1990). Transformational leaders: Team performance, leadership ratings, and firsthand impressions. In Clark, K.E., Clark, M.B. (Eds.). *Measures of Leadership*, 171–183. West Orange, NJ: Leadership Library of America.

Conger, J.A., Kanungo, R.N. and Menon, S.T. (2000). Charismatic leadership and follower effects. *Journal of Organizational Behavior*, 21(7): 747–767.

Deluga, R.J. (1992). The relationship of leader-member exchange with laissez faire, transactional, transformational leadership in naval environments. In Clark, K.E., Clark, M.B. and Campbell, D.P. (Eds.). *Impact of Leadership*, 237–247. Greensboro, NC: Centre of Creative Leadership.

Gharehbaghi, K. and McManus, K. (2003). Effective construction management. *Leadership and Management in Engineering*, 3: 54–55.

Hater, J.J. and Bass, B.M. (1988). Superiors' evaluations and subordinates' perceptions of transformational and transactional leadership. *Journal of Applied Psychology*, 73 (4): 695–702.

Hautala, T.M. (2006). The relationship between personality and transformational leadership. *Journal of Management Development*, 25(8): 777–794.

Hogan, R., Curphy, G.J. and Hogan, J. (1994). What we know about leadership. *American Psychologist*, 49(6): 493–504.

Howell, J.M. and Frost, P.J. (1989). A laboratory study of charismatic leadership. *Organizational Behavior and Human Decision Processes*, 43(2): 243–269.

Hughes, R.L., Ginnett, R.C. and Curphy, G.J. (1993). *Leadership: Enhancing the Lesson of Experience*. Homewood, IL: Irwin.

Judge, T.A. and Bono, J.E. (2000). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology,* 85(5): 51-765.

Judge, T.A., Bono, J.E., Ilies, R. and Gerhardt, M.W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, 87(4): 765-750.

Jung, D.I., Chow, W. and Wu, A. (2003). The role of transformational leadership in enhancing organizational innovative: Hypothesis and some preliminary findings. *Leadership Quarterly*, 14(4&5): 525–544.

Katz, D. and Kahn, R.L. (1978). *The Social Psychology of Organizations. (2*nd ed.). New York: John Wiley and Sons.

Kirkpatrick, S.A. and Locke, E.A (1996). Direct and indirect effects of three core charismatic leadership components on performance and attitudes. *Journal of Applied Psychology*, 81(1): 36–51.

Likhitwonnawut, A. (1996). *Leadership styles of construction managers and their impact on project performance.* Master Thesis NO. ST-96-22, School of Civil Engineering, Asian Institute of Technology, Asian Institute of Technology, Thailand.

Lowe, K.B., Kroeck, K.G. and Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *Leadership Quarterly*, 7(3): 385–425.

Morris, P.W.G. and Hough, G.H. (1987). *The Anatomy of Major Projects – A Study of the Reality of Project Management*. Chichester: John Wiley & Sons.

Nguyen, L.D., Ogunlana, S.O. and Lan, D.T.X. (2004). A study on project success factors in large construction projects in Vietnam. *Engineering, Construction and Architectural Management*, 11(6): 404–413.

Nitithamyong, P. and Tan, Z. (2007). Determinants for effective performance of external project management consultants in Malaysia. *Engineering, Construction and Architectural Management*, 14(5): 463–478.

Ployhart, R.E., Lim, B-C. and Chan, K-Y. (2001). Exploring relations between typical and maximum performance ratings and the five factor model of personality. *Personnel Psychology*, 54(4): 809–843.

Project Management Institute (PMI). (2002). *Project Manager Competency Development Framework.* Pennsylvania: Newton Square.

Rauch, C.F. and Behling O. (1984). Functionalism: Basis for an alternate approach to the study of leadership. In J. G. Hunt, D.M. Hosking, C.A. Schriesheim, and R. Stewart (Eds.). *Leaders and managers: International perspectives on managerial behavior and leadership,* 45–62. New York: Pergamon Press.

Robbins, S.P. (1993). *Organizational Behavior*. (6th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Sanvido, V., Grobler, F., Parfitt, K., Guvenis, M. and Coyle, M. (1992). Critical success factors for construction projects. *Journal of Construction Engineering and Management,* 118(1): 94–111.

Sarros J.C., Cooper B.K. and Hartican, A.M. (2006). Leadership and character. *Leadership & Organization Development Journal*, 27(8): 682–699.

Sayles, L.R. and Chandler, M.K. (1971). *Managing Large Systems: Organizations for the Future*. New York: Harper& Row.

Shin, S.J. and Zhou, J. (2003). Transformational leadership conversation and creativity: Evident from Korea. *Academy of Management Journal*, 46(6): 703–714.

Sosik, J.J., Avolio, B.J. and Kahai, S.S. (1997). Effects of leadership style and anonymity on group potency and effectiveness in a group decision support system. *Environment Journal of Applied Psychology,* 82(1): 89–103.

Stogdill, R.M. (1948). Personal factors associated with leadership: A survey of the literature. *Journal of Psychology*, 25(1)**:** 35–71.

_____. (1950). Leadership, membership and organization. *Psychological Bulletin*, 47(1): 1–14.

_____. (1974). *Handbook of Leadership: A Survey of the Literature*. New York: Free Press.

Taggar, S., Hackett R. and Saha, S. (1999). Leadership emergence in autonomous work teams: Antecedents and outcomes. *Personnel Psychology*, 52(4): 899–926.

Tracey, J.B. and Hinkin, T.R. (1998). Transformational leadership or effective managerial practices? *Group and Organizational Management*, 23(3): 220–236.

Tukel, O. and Rom, W. (2001). An empirical investigation of project evaluation criteria. *International Journal of Operations & Production Management*, 21(3): 400–413.

Xiao, H. and Proverbs, D. (2003). Factors influencing contractor performance: An international investigation. *Engineering, Construction and Architectural Management*, 10(5): 322–332.

Yammarino, F.J. and Bass, B.M. (1990). Transformational leadership at multiple levels of analysis. *Human Relations,* 43(10): 975–995.