# Do Project Managers' Leadership Competencies Contribute to Project Success?

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# Do Project Managers' Leadership Competencies Contribute to Project Success?

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## ABSTRACT

This article explores the following hypothesis: *There is a statistically significant relationship between a project manager's leadership competencies and project success.* Two proven questionnaires, the leadership dimensions questionnaire (LDQ) and the project success questionnaire (PSQ), were used to gather data from 52 project managers and project sponsors from a financial services company in the United Kingdom. The results from the LDQ and PSQ are presented in this article. A factor analysis of PSQ revealed three independent factors: usability, project delivery, and value of output to clients. The last factor is not related to project leadership or management, so the article concentrates on correlations between the other two factors and project leadership. Eight separate leadership dimensions were found to be statistically significantly related to performance, so the hypothesis was largely supported. Identifying such relationships provides managers with guidance on possible selection and project improvement models, whereby increased capability in leadership dimensions can lead to increased success in project management.

**KEYWORDS:** project managers; leadership competencies; leadership effectiveness; project success; emotional intelligence

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## INTRODUCTION

There are many schools of thought on leadership and according to Dulewicz and Higgs (2005), leadership has been studied more than any other aspect of human behavior. In a literature review on leadership from the early 20th century to the present, Higgs (2003) identified six major schools: trait, behavior, contingency, visionary, emotional intelligence, and competency schools. These "emerging" schools of thought on leadership see leadership as a combination of personal characteristics and areas of competency. In other words, it is the combination of skills and knowledge, such as empowerment and achievement, with personal characteristics, such as intuitiveness, that makes a leader. The more recent emerging schools relevant to this study will now be reviewed.

Bass (1985) has had a major influence on leadership theory. He researched different types of organizational change, identified different sets of behavior and characteristics required in times of organizational transformation and times of stability, and produced relevant transactional and transformational leadership styles. Bass and Avolio (1995) developed the multifactor leadership questionnaire (MLQ) to assess leadership competencies and, in a series of studies, showed that transformational leadership has significantly greater impact on the organization than transactional leadership. Turning to personal characteristics, Hogan (2002) saw the personality of leaders as being a determinant of effectiveness as he believed skills are built on personality characteristics. It was this combination of personality and competency that potentially produced different leaders suited to different circumstances: transactional leaders for times of low complexity and transformational leaders in time of increased complexity. This is similar to Bass's (1990) assertion that certain leaders are more suited to stable environments and others more suited to a rapidly changing environment.

The combination of personality and competency is unprescribed and very much individual-dependent. Goffee and Jones (2000) captured the essence of this with the statement "being yourself, with skill" (p. 64). To some degree this emerging school of thought on personality and competencies may seem similar to the trait theory—the idea that effective leaders all share the same inherent characteristics. However, competencies can be learned and developed, whereas personality characteristics are more enduring.

This idea that personality characteristics and personal competencies predict long-term managerial advancement was formed by Goleman's (1997) paper on competencies, where he defined emotional intelligence (EI) in competency terms. Goleman's (1996) basic proposition is that EI and intellectual aptitude (IQ) are both important for success. Dulewicz and Higgs

(2005) take this work further by considering the skills that need to be exercised in a way that is congruent with the underlying personality of the leader. Building on this view and Bass's work, they proposed a new model for leadership, which recognized that leadership encompasses competences and personal characteristics, and since organizations' characteristics, such as culture, vary, different competence profiles are appropriate in different circumstances (Dulewicz & Higgs, 2005). This view is similar to the earlier contingent school of thought where the influence of the environment was considered significant in determining leadership success.

Dulewicz and Higgs (2005) discovered through their earlier research (Dulewicz & Herbert, 1999; Dulewicz & Higgs, 2000a, 2000b) into EI that many of the elements in their EI model also appeared in the leadership literature. They found that an increasing number of academics and practitioners were beginning to explore, accept, and promote the importance of EI at the top of the organization. They showed that many authors identified four types of competencies that determined leadership performance: cognitive, emotional, behavioral, and motivational (Gill, 2002; Kets de Vries & Florent-Tracy, 2002; Marshall, 1991; Zaccaro, Rittman, & Marks, 2001).

Dulewicz and Higgs (2000a, 2000b) showed that EI can explain variations in the performance of managers and other staff. They produced a questionnaire to measure emotional intelligence directly. The questionnaire contained seven emotional intelligence dimensions. Statistically, significant correlations were found between EI scores and the job performance of middle management. Dulewicz and Higgs (2000a) showed that IQ accounts for 27% of performance, managerial competency (MQ) accounts for 16%, and EI account for 36%. Their studies highlighted EI as the most significant of the three, although IQ and MQ are also of importance. Through their research and their literature review (Bennis, 1989; Goffee & Jones, 2000; Goleman, Boyatzis, & McKee, 2002; Hogan, 2002; Kotter, 1990; Kouzes & Posner, 1998), Dulewicz and Higgs (2005) developed eight additional leadership dimensions relating to IQ and MQ competencies. IQ consists of intellectual competencies, MQ of management competencies, and EI of both social and emotional competencies. The 15 leadership dimensions can be used to explain performance of managers on different types of change projects.

### *Project Manager Competencies*

A few studies have identified competencies relevant to project managers. Rees, Turner, and Tampoe (1996) identified six traits of effective project managers and assert that effective managers are usually of above-average intelligence and have good problem-solving ability. Such traits are similar to intellectual competencies (IQ) that Dulewicz and Higgs (2005) referred to as part of leadership competencies. Other traits identified by Rees et al. are behavioral or motivational, such as energy, and skills-based traits, for example, communication. However, they do not provide evidence that these traits contribute directly to increased project success. Andersen, Grude, and Haug (1987) recognized the importance of the project manager's personal characteristics, such as initiative, when selecting a project manager. This view is similar to that of Hogan (2002), who saw the personality of the leader as being a determinant of effectiveness. However, they do not directly show the significant contribution of personality characteristics to project success.

Pinto and Trailer (1998) recognized the characteristics of an effective project leader: credibility, creative problem solving, tolerance for ambiguity, flexible management style, and effective communication. They also identified the skills needed for project managers: technical, administrative (planning, budgeting, etc.), and leadership skills (vision, example setting, etc.). Such skills make a good project manager, but again, Pinto and Trailer (1998) did not explicitly link such characteristics and skills to project success.

Crawford (2007) defined project manager competence as a combination of knowledge (qualification), skills (ability to do a task), and core personality characteristics (motives + traits + self concepts) that lead to superior results. Crawford stated that project success and competence of project management personnel are closely interrelated, and the competence of the project manager is in itself a factor in the successful delivery of projects. However, Crawford noted that leadership appears consistently in the highest-ranking category among project manager competence factors, but it did not appear in the highest-ranking category for project success factors.

Based on the literature on project manager competencies, it could be claimed that the competencies required by project managers in today's organizations are not dissimilar to the leadership competencies highlighted earlier. There is recognition that an effective project manager possesses a combination of personal characteristics such as flexibility and competencies such as problem solving—not dissimilar to the emerging schools of thought on leadership discussed earlier. However, the literature so far does not make a direct connection between project manager leadership competencies and project success. Is project leadership not perceived as a significant factor in successful delivery?

### *Project Success and the Project Manager*

There are few topics in the field of project management that are so frequently discussed, and yet so rarely agreed upon, as the construct of project success (Pinto & Slevin, 1988a). Critical success factors (CSFs) are common in projects today as a means of assessing project success.

During the past two decades, there has been a broadening of measurement from simply time, cost (on budget), and functionality improvement measurement in the 1970s to a more quality-based focus in the 1980s and 1990s. Project success today takes stakeholder satisfaction, product success, business and organization benefit, and team development as measures of project success (Atkinson, 1999; Baccarini, 1999).

In the 1980s, research into project success factors intensified. Some authors identified functionality (performance), project management (schedule, on budget), commercial success, termination efficiency, and client satisfaction as success factors (Baker, Murphy, & Fisher, 1988; Morris, 1988; Pinto & Slevin, 1988a). No explicit reference is made to the leadership characteristics of project managers and their influence on success. Andersen et al. (1987) examined the pitfalls that may prevent project success and increase the chances of failure. Such pitfalls include the way the project was planned, organized, and controlled. Baker et al. (1988) defined "perceived" project success as meeting the project's technical specification and/or project's mission and attaining a high level of satisfaction from the client, the users, and the project team. They emphasized planning as opposed to leadership as a key factor in maximizing potential project success.

Pinto and Slevin (1988b) conducted a study of project success and identified 10 factors for success. They found the need for communication channels extremely important, as well as the need for available problem-solving ability. Interestingly, project manager leadership or even management skills are not mentioned as success factors. However, they did mention the absence of project management characteristics such as adequate project manager administration, human skills, and influencing skills as strongly contributing to the failure of projects.

Lee-Kelley and Leong Loong (2003) suggested that there is a significant relationship between the project manager's perception of project success and his or her own personality. Inner confidence and self-belief are likely to play a significant part in the project manager's ability to deliver a project successfully.

Turner (1999) defined a strategy for the successful implementation of projects. This seven forces model (based on the work of Morris, 1988, and Morris & Hough, 1987) contains a "people" force, representing the people on the project and their management, leadership, teamwork, and industrial relations. He recognized the need for leadership as a part of the project strategy or approach, which in turn leads to successful project implementation. In contrast, Cooke-Davies (2001) stated that despite well-known research results and decades of individual and collective experience of managing projects, project results continue to disappoint stakeholders. Cooke-Davies focused on cost, time, and quality when studying project success and identified related success factors. He did not mention the people side of project management or mention overtly the project manager's competence and leadership ability when defining the success factors.

Jugdev and Müller (2005) reviewed the literature on project success and concluded that four conditions are necessary, but not sufficient, for success:

1. Success criteria should be agreed with stakeholders before and during the project.
2. A collaborative working relationship should be maintained between project owner/sponsor and manager.
3. A project manager should be empowered to deal flexibly with unforeseen circumstances.
4. The project owner/sponsors should take an interest in the performance of the project.

Turner and Müller (2005) recently reviewed the contribution of the project manager's competence and leadership style to project success and concluded that "the literature has largely ignored the impact of the project manager, and his/her leadership style and competence, on project success" (p. 59). They found that in the general management literature, it is widely recognized that the functional manager's leadership style contributes to the success of the organization or organizational unit he or she manages; the project manager's leadership style is generally ignored when identifying project success factors. These authors called for more research.

## Method

While much of the literature on project management that was just reviewed has neglected the influence of the project manager's leadership ability in delivering project success, a few studies cited previously have asserted the importance of leadership for project management success and have identified some leadership competencies as being important. Therefore, this study has been designed to test the hypothesis that:

> *There is a statistically significant relationship between a project manager's leadership competencies and project success.*

### *The Organization*

The study was conducted in a leading financial services company based in the United Kingdom. The target population was the company's business transformation community, and the sample frames are a subset of the target population—namely, the project management and project sponsor communities. Business changes in the company are managed by the business transformation division where approximately 80 project managers are employed. The projects in the company range from product changes and technology changes to manpower changes. The company, like all organizations, faces the challenges of leading projects and implementing change. The project managers must be equipped with the right skill set to ensure projects are

implemented as successfully as possible to meet the changing market demands.

***Procedure***

To test the hypothesis, a quantitative study was selected as the most appropriate research method. The research would operate at two levels with data being collected from two different sample groups. The target population was the company's business transformation group, but the sample frames were a subset of the target population—namely, the project management community and the project sponsor community. The primary targets in both samples were related through common projects, but their responsibilities on these projects are significantly different. At the outset, a proposal was submitted to the company detailing the research objectives and its value to the organization and the individuals involved. To maximize response rates, all efforts were made to promote the research, and a short promotional slot was secured at a project management conference in July 2005. During this conference, project managers were encouraged to participate, and afterward, 65 project managers were issued questionnaires.

***Instruments***

The fieldwork utilized two different questionnaires: (1) the leadership dimensions questionnaire (LDQ) (Dulewicz & Higgs, 2005) and (2) the project success questionnaire (PSQ) (Pinto & Slevin, 1986, 1988a, 1988b). These were selected as the most appropriate methods of obtaining data because the primary target groups are likely to be in different locations across the United Kingdom; questionnaires allowed the researcher to contact a reasonably sized sample within the defined time frame. The LDQ and PSQ are proven questionnaires supported by previous research. As noted, Jugdev and Müller (2005) reviewed the literature on project success but did not provide new scales to measure performance.

*Leadership Dimensions Questionnaire*

The LDQ was selected as the instrument on which to base the research because it provides an indication of the respondent's leadership competencies measured on 15 dimensions. Dulewicz and Higgs (2005) provided full details of the LDQ, but essentially the model proposes seven EQ dimensions, five MQ competencies, and three IQ competencies. Titles of the 15 leadership dimensions appear in Table 1. The LDQ has been deployed in a variety of public and commercial organizations, including the Royal Navy, the Royal Air Force, the Home Office, and the Cabinet Office, as well as in private companies such as DHL. The LDQ is a reliable instrument, with each dimension reaching acceptable levels of reliability (Cronbach's alpha $> 0.7$) with some dimensions, such as vision and imagination, engaging communication, managing resources, and developing, even obtaining a higher reliability score (Cronbach's alpha $> 0.8$), according to Dulewicz and Higgs (2005).

*Project Success Questionnaire*

This short questionnaire (PSQ) was used to gather data on project success. It was based on Pinto and Slevin's (1986) project implementation profile (PIF) questionnaire that uses a model of project success composed of two key themes: the project and the client. First, the project must be technically correct and performed in the manner intended. Second, the project team must interface effectively with the client organization to maximize the likelihood of acceptance. The PIF covered the common measures of project success: the schedule, on budget, and the performance. The questionnaire also covered client measures relating to the usage of the project (i.e., results of the project will be used by the intended client), client satisfaction with the performance of the project, and the impact of the project on organizational effectiveness (i.e., the project will directly benefit the intended users). The PIF success measure has been developed and tested as a generalized project manager success measure (Pinto & Slevin, 1986) and has been, for example, used in the measurement of information systems projects (Finch, 2003). To ensure the reliability of the project success questionnaire, the Cronbach's alpha was tested, and a coefficient of 0.81 was found. Hair, Babin, Money, and Samouel (2003) asserted that an alpha coefficient between 0.8 and 0.9 shows a very good strength of association, and so this coefficient represents a very good association between the 12 questions.

***Sample***

The first sample frame comprised 80 project managers. However, only a subgroup of the sample frame was considered suitable for the study (i.e., those who have sufficient project management experience). The subgroup selected had managed projects with budgets of over £350,000 and had served at least 4 years in project management. This group has a significant amount of exposure to both management and leadership activities such as influencing stakeholders, motivating and inspiring staff, and managing the day-to-day running of their projects.

Of the 52 respondents who completed the LDQ, 38 (73%) were male and 14 (27%) were female. Their average age was 39.5 years old with a standard deviation of 6.7, and a 32-year range with a minimum age of 25 and the maximum of 57. Of the eight categories of job functions available on the LDQ, the majority (75%) worked in an IT-related job function, 4% worked in finance and administration, 6% worked in general management, and 16% worked in other functions. In terms of their highest level of education, 15 (29%) were educated to high school level, 18 (35%) to first-degree level, 7 (13%) to a higher degree level, and 12 (23%) have professional qualifications. All respondents were from the private sector. Additionally,

| | LDQ Dimension | | | Test Value = 5.5 | | |
|---|---|---|---|---|---|---|
| | Mean | Mean Differential | Standard Deviation | *t* | *df* | Sig |
| **IQ Dimensions** | | | | | | |
| Critical analysis and judgment | 5.75 | 0.25 | 1.81 | 0.99 | 51 | 0.32 |
| **Vision and Imagination** | **4.37** | **–1.13** | **1.86** | **–4.40** | **51** | **0.00** |
| Strategic perspective | 5.15 | –0.35 | 1.53 | –1.64 | 51 | 0.11 |
| **EQ Dimensions** | | | | | | |
| ***Self-awareness*** | ***5.92*** | ***0.42*** | ***1.47*** | ***2.08*** | ***51*** | ***0.04*** |
| Emotional resilience | 5.54 | 0.04 | 1.65 | 0.17 | 51 | 0.87 |
| Intuitiveness | 5.56 | 0.06 | 1.70 | 0.25 | 51 | 0.81 |
| ***Sensitivity*** | ***5.92*** | ***0.42*** | ***1.41*** | ***2.16*** | ***51*** | ***0.04*** |
| Influencing | 5.56 | 0.06 | 1.51 | 0.27 | 51 | 0.78 |
| Motivation | 5.33 | –0.17 | 1.84 | –0.68 | 51 | 0.50 |
| ***Conscientiousness*** | ***5.98*** | ***0.48*** | ***1.66*** | ***2.09*** | ***51*** | ***0.04*** |
| **MQ Dimensions** | | | | | | |
| Managing resources | 5.88 | 0.38 | 1.97 | 1.41 | 51 | 0.16 |
| Engaging communication | 5.15 | –0.35 | 1.90 | –1.31 | 51 | 0.20 |
| Empowering | 5.27 | –0.23 | 2.01 | –0.83 | 51 | 0.41 |
| Developing | 5.17 | –0.33 | 1.96 | –1.20 | 51 | 0.23 |
| Achieving | 5.06 | –0.44 | 1.69 | –1.89 | 51 | 0.06 |

**Table 1:** Comparisons with LDQ norm group between LDQ sten scores using one-sample *t*-test.

all respondents were U.K. nationals, except one, who was of African/Caribbean origin.

The second sample comprised project sponsors whose sponsored projects ranged from £350,000 upward. In this context, they have had the responsibility of ensuring that the project fits within the overall strategy of the area under change and ensuring that all areas are aware and prepared for the change. The sponsor also had responsibility for funding the project (i.e., seing that it was on budget). It was decided, therefore, that this sample was best placed to gauge project success from both a client and project perspective and, therefore, would be asked to complete the project success survey. Their demographic data showed that, of the 52 PSQs completed, 37 (71%) were from male respondents and 15 (29%) were from female respondents. The average age was 42 years old with a standard deviation of 5.5, and a range of 21 years, with the youngest at 35 and oldest at 56. No other demographic data was collected, as it was considered not relevant for this study.

The final sample of 52 who completed both LDQ and PSQ, while not large, is respectable for an exploratory study of this nature. It constitutes 81% of all project managers in the company (some were not invited) and two-thirds (65%) of the total population of project managers. Therefore, the sample should be representative of the project managers in the company. The study is exploratory in the sense that the results relate to only one company, which is based in the United Kingdom.

## Results

### *Comparison of Project Managers' LDQ Scores With Norm Group*

The mean and standard deviation (SD) of the sten (standardized 10-point scale) data for each of the 15 leadership dimensions are presented in Table 1 together with results of a *t*-test to compare them with equivalent scores from the LDQ standardization sample on which the norms are based. By definition, sten scores have a mean of 5.0 and an SD of 2.0. The conscientiousness leadership dimension had the highest sten mean score at 5.98. The next highest sten mean scores are for sensitivity and self-awareness, both 5.92. All three

sten scores are significantly higher than for the standardization sample. Vision, which has the lowest mean score at 4.37, is the only leadership dimension that is significantly lower than the mean scores for the standardization sample.

### *Factor Analysis of PSQ Items*

Factor analysis was conducted on the PSQ to simplify the process of understanding the data. Factor analysis was performed for the 12 project success factors that form the PSQ using a statistical package for the social sciences (SPSS). Three factors were identified as shown in Table 2. Factor loading of greater than ± 0.50 was identified when relating variables to the factors. Hair et al. (2003) considered this range to be moderately important, and loadings of ± 0.70 are considered very important. Excellent item separation across factors was achieved. The three factors identified were named as follows:

*Factor 1—Usability*

As seen from Table 2, the five success questions with high loadings all relate to the project deliverable being a workable and usable solution. To ensure the statistical reliability of the grouping, Factor 1 was tested for reliability, and the Cronbach's alpha coefficient of 0.805 found represents a very good association between the four success variables. Hair et al. (2003) asserted that an alpha coefficient between 0.8 and 0.9 is a very good strength of association. This coefficient, therefore, shows that the five success variables are measuring a similar construct.

*Factor 2—Value of Project Outcome to Users*

All of the four success questions loading onto this factor in Table 2 relate to how the project deliverable will benefit the user through, for example, improved performance. Factor 2, therefore, relates to value of project outcome to users, and so does not relate to the way in which the project was led and managed. Thus, it does not appear relevant to the hypothesis under investigation, and so results relating to Factor 2 are not directly relevant to this study and will not be reported and discussed here.

| PSQ Items | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Q1 Schedule | 0.167 | 0.157 | **0.890** |
| Q2 On budget | 0.401 | –0.219 | **0.729** |
| Q3 Deliverable works | **0.773** | 0.154 | 0.201 |
| Q4 Solves problem | **0.567** | 0.008 | 0.156 |
| Q5 Improves performance | 0.085 | **0.727** | 0.099 |
| Q6 Used by client | **0.846** | –0.008 | 0.100 |
| Q7 Important clients make use | **0.896** | 0.032 | 0.007 |
| Q8 Ready accepted by users | **0.624** | 0.205 | 0.146 |
| Q9 Good project process | 0.065 | 0.222 | **0.841** |
| Q10 Benefits users | 0.137 | **0.901** | 0.049 |
| Q11 Provides improvements | –0.119 | **0.893** | 0.040 |
| Q12 Positive impact on users | 0.215 | **0.837** | 0.066 |

*Note*. Extraction method: principal component analysis; rotation method: Varimax with Kaiser normalization; rotation converged in five iterations.

**Table 2:** Rotated component matrix of PSQ items.

*Factor 3—Project Delivery*

The three questions loading onto this factor (see Table 2) relate to the project delivery process. To ensure the statistical reliability of the grouping, Factor 3 was tested for reliability using the Cronbach's alpha, and a coefficient score of 0.806 represents a very good association between the three success variables and reflects that they are measuring a similar construct.

### *Correlations Between LDQ and PSQ*

In order to test the hypothesis, a bivariate correlation was performed between the 15 leadership dimensions of the LDQ raw data and the two factors identified in the previous section. It was discovered that Factor 1 was correlated to managing resources at a significance level of 0.05, while Factor 3 shows no significant correlation with any leadership dimensions. In order to explore the data further, each PSQ item loading onto Factors 1 and 3 was correlated with each leadership dimension. Only those correlations represented by the Pearson correlation coefficients were statistically significant at the 0.01 and 0.05 levels and are shown in Table 3. Factor 1 demonstrated significant correlations, some highly significant, between the leadership dimensions managing resources (0.422), empowering (0.421), developing (0.388), motivation (0.357), critical analysis (0.323), and influencing (0.29) and the success variable "solves problem." Significant positive correlations were also found between the leadership dimensions self-awareness (0.270) and sensitivity (0.312) and the success variable "used by client." Factor 3 also demonstrated significant correlations: the item "on budget" shows significant positive correlations with the leadership dimensions managing resources (0.297) and empowering (0.280).

### *IQ, MQ, and EQ Group Scores*

In Table 3, leadership dimensions were grouped into IQ, EQ, and MQ categories, as defined by Dulewicz and

| | Factor 1 (Usability) | | Factor 3 (Project Delivery) On Budget |
|---|---|---|---|
| | Solves Problem | Used by Client | |
| **IQ Dimensions** | | | |
| Critical analysis | **0.323*** | 0.167 | 0.192 |
| **EQ Dimensions** | | | |
| Self-awareness | 0.145 | **0.270*** | 0.052 |
| Sensitivity | 0.252 | **0.312*** | 0.265 |
| Influencing | **0.349*** | 0.132 | 0.127 |
| Motivation | **0.357**** | 0.187 | 0.222 |
| **MQ Dimensions** | | | |
| Manage resources | **0.422**** | 0.252 | **0.297*** |
| Empowering | **0.421**** | 0.181 | **0.280*** |
| Developing | **0.388**** | 0.084 | 0.148 |

* Correlation is significant at the 0.05 level.
** Correlation is significant at the 0.01 level.

**Table 3:** Significant correlations between LDQ dimensions and Factor 1 and 3 items.

Higgs (2000b, 2005). It shows that only one IQ leadership dimension is positively correlated with a project success variable, while five MQ and three EQ dimensions are positively correlated. Of the five MQ leadership dimensions, three correlations are highly significant at a 0.01 level. Of the three EQ leadership dimensions, only one correlation is highly significant at a 0.01 level. These findings will be discussed further in the following section.

## Discussion

### *Leadership Dimensions Findings*

The LDQ descriptive data provide information based on the target sample group's responses to the leadership dimensions questionnaire. The literature review has shown that these dimensions of leadership provide some of the critical determinants of effective leadership and have also shown that the really important aspects of leadership relate broadly to emotional and social competencies, intellectual competencies, and managerial competencies.

Sten data were used to relate the abilities and performance of the target sample against the current LDQ database. Respondents' mean scores on all 15 dimensions of the LDQ were between 4.37 and 5.98. The results were largely in line with previous responses to the LDQ and approximated to a normal distribution. Three leadership dimension scores were significantly higher than for the norm group. This project manager group shows strength on the conscientiousness leadership dimension and has a small standard deviation that highlights a good level of consistency across the group. This group also had significantly higher scores (than the norm group) on sensitivity and self-awareness. All three dimensions are emotional competencies, as defined by Dulewicz and Higgs (2000b, 2005), and the high scores may be a result of the significant amount of exposure the project community receives to leadership activities such as influencing difficult stakeholders and the need to obtain commitment and buy-in from senior management in order to progress projects successfully.

The lowest three leadership dimension scores were found in vision, strategic perspective, and achieving. Vision was the only dimension to have a significantly lower score than the norm group. The low score in vision can be explained by the nature of the work performed by the project management community where project managers do not actively engage in setting the organization's vision but instead focus on implementing projects that fulfill a predefined vision.

### *Relationship Between Leadership and Project Success*

The hypothesis set out to identify the specific dimensions of leadership that contribute to successful projects. Table 3 highlights several dimensions that positively correlate at significant levels of 0.01 and 0.05 with the success variables. Using project success factors as a measure of success, these correlations begin to uncover the specific leadership dimensions that contribute to successful projects. Factor 1 shows the leadership dimensions managing resources, empowering, developing, and motivation as each having highly significant correlation with the "solves problem" success variable. In other words, respondents who are rated highly for "solves problem" are more likely to empower and develop their colleagues, manage resources efficiently and effectively, and be highly motivated. These are findings that are perhaps to be expected. What is surprising is that they do not score highly on critical analysis, but the total group scores highly on this dimension, when compared to the norm group.

Factor 3 showed significant correlation between the leadership dimensions managing resources, empowering, and the "on budget" success variable. This is not surprising, considering the relationship between managing resources and managing the budget.

### *Lessons for Practitioners*

It is possible to develop many aspects of leadership by planned and sustained development activities. Some dimensions can be developed, whereas others are more difficult to develop. This article presents the company with a possible project improvement model whereby increased capability in leadership dimensions can lead to increased results in aspects of project implementation. Therefore, leadership dimensions that are directly linked to successful projects should be the focus of project manager training. Such focused training has the potential to have a direct impact on project success, thereby providing a greater return on investment.

This research shows how leadership dimensions can contribute to the success of projects. It is important that senior management, who directly manage the project management community and who are very much involved in change, are made aware of the impact of leadership competencies on the personnel with whom they work and ultimately on the success of their programs of change. If senior management were to complete the LDQ, they would probably gain an understanding of the range of skills and behaviors that need to be in place to provide effective leadership.

Leaders of projects could be selected or developed on the basis of their leadership profile, as identified by the LDQ, and how that profile links to project success factors, as demonstrated through this research. Leadership competencies measured by a proven questionnaire, such as the LDQ, could be taken into account when appointing new project managers or as part of the appraisal process where feedback from colleagues on performance against selected leadership dimensions could be obtained.

### *Limitations and Areas of Further Work*

Although the research gained the support of senior management prior to conducting the fieldwork, the response rate was lower than desired, although still relatively high. The main difficulties were gathering questionnaires during the summer and the fact that each LDQ required a corresponding PSQ. This pairing limited flexibility and required synchronized lobbying of potential participants who reside in different business units. Greater and broader engagement by the company in supporting a study might have produced a higher response rate. Nevertheless, this should be seen as an exploratory study because it is based on findings from one, albeit large company with respondents working in the United Kingdom.

Notwithstanding, the leadership/project success model developed in this research is likely to be of interest to any organization that is project-based. However, a further, broader study encompassing a cross-section of industries and countries would be required to produce relationships between leadership dimensions and project success factors that could be transferable to any organization. Additionally, a further, broader study might be conducted to include the role of the follower in successful change, ideally involving a 360° appraisal (a 360° version of the LDQ is available). Such work would need to relate to the significance of the follower to the success of the project. If follower commitment proved to be a key component of successful projects, then further work might determine what organizations can do to generate high levels of commitment.

## Summary and Conclusions

To summarize our findings, the significant correlations for both factors and the leadership dimensions are shown in Table 4. Of these 10 leadership dimensions, five are management (MQ), four are social/emotional competencies (EQ), and one is an intellectual competence (IQ), as defined by Dulewicz and Higgs (2000b, 2005). It can be asserted, therefore, that MQ leadership dimensions contribute most to successful projects and therefore are highly significant in supporting the hypothesis. This is perhaps not a surprising result considering the amount of resource development and management involved in project management.

These findings highlight a link between managerial competencies and project success. The MQ leadership dimensions seem to play a significant role in influencing or affecting project success. According to Dulewicz and Higgs (2000a, 2000b), emotional intelligence can explain variations in the performance of managers and other staff. This research found that both managerial and emotional/social competencies could explain variations in project success. Perhaps this is not surprising considering the nature of project management and project implementation and the sample groups involved in the study. Wren and Dulewicz (2005), from research performed on the Royal Air Force, found similar results and concluded that the MQ dimensions of leadership were the most important in RAF officers leading change projects. Furthermore, Porthouse and Dulewicz (2007) found that the 10 significant LDQ dimensions in this study were also significantly related to the leadership performance of agile project managers and concluded that both "MQ and EQ competencies are important for leaders of Agile teams" (p 33).

The research also provides other valuable information on the capability of the project manager community as leaders. The project manager group demonstrated some EQ strengths. Dulewicz and Higgs (2000a, 2000b) showed that EQ accounts for 36% of leader advancement (i.e., success). It can be concluded, therefore, that the company's project managers have demonstrated a level of emotional competencies that should enable them to perform better in leadership. However, along with the strengths, weaknesses have also been identified across the target group in which the

| Factor 1 *(Usability)* | Factor 3 *(Project Delivery)* |
|---|---|
| **Highly significant** | **Significant** |
| • Managing resources (MQ) | Managing resources (MQ) |
| • Empowering (MQ) | Empowering (MQ) |
| • Developing (MQ) | |
| • Motivation (EQ) | |
| **Significant** | |
| • Critical analysis (IQ) | |
| • Influencing (EQ) | |
| • Self-awareness (EQ) | |
| • Sensitivity (EQ) | |

**Table 4:** Summary of significant correlations between LDQ dimensions and Factors 1 and 3.

company will need to build appropriate programs of development. Interestingly, the weakest competency was in an IQ leadership dimension, vision and imagination, which could prove difficult to improve through training, according to Dulewicz and Higgs (2005).

In conclusion, the hypothesis for this research was largely supported, in the sense that certain leadership dimensions demonstrate a positive relationship with certain project success variables. Identifying such relationships provides the company with a possible project improvement model where increased capability in a leadership dimension can lead to increased success in aspects of project implementation. ■

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