Matching the project manager’s leadership style to project type

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Abstract

We look into the interaction of the project manager’s leadership style with project type, and their combined impact on project success. We aim to show that different leadership styles are more likely to lead to a successful outcome on different types of project. A recently developed integrated model of intellectual, emotional and managerial competence (IQ, EQ, MQ, respectively) is used to identify project managers leadership styles. A web-based questionnaire was used to determine the leadership style of project managers and relate that to the success of their most recent projects. These are related to project types, using a recently developed categorization system for projects. These quantitative results are validated against qualitative results obtained using semi-structured interviews of managers responsible for assigning project manager to projects.

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1. Introduction

Building on the behavioural, contingency and visionary schools of leadership, the emotional intelligence school [19] and the competency school (see for instance: [28,41,24,16] have shown in a general management context that the manager’s leadership style influences the performance of their organization, and that different leadership styles are appropriate in different contexts. On the other hand, the project management literature has almost studiously ignored the contribution of the project manager, and his or her competence to the success of their project [39]. Over the past twenty years, there has been a changing understanding of what constitutes project success [22]. In the 1980s, researchers focused on the application of tools and techniques [29,32]. More recently they have focused on risk management and governance support the project receives from the parent organization [10,5]. Historically, research into project management has emphasized efficiency rather than behavioural or interpersonal factors, [31]. A recent research study suggested different project management approaches are appropriate for different types of project [14]. This would suggest that different project management styles, and thus different competency profiles and leadership styles for the project manager would be appropriate for different types of project. This would be consistent with findings in the general management literature. We have therefore undertaken a research project with the aim of determining whether:

1. the project manager’s leadership style influences project success;
2. different leadership styles are appropriate for different types of project.

We conducted a web-based questionnaire in which we used a recently developed instrument for determining leadership dimensions and styles [16] to determine the leadership styles of 400 project managers. We also asked
the respondents questions about their most recent project
to determine its success and to be able to categorize it
according to the model of Crawford et al. [14]. We were
then able to determine which leadership competencies
were more likely to be correlated with success on different
types of project. We compared the results to results from
semi-structured interviews, where we interviewed people
responsible for appointing project managers, to determine
what factors they took into account when choosing pro-
jector managers to manage different types of project.

2. Leadership style and context

Over the last 75 years six schools of leadership have
evolved, Table 1, five of which have suggested that different
leadership styles are appropriate in different circumstances.
(Also shown in Table 1 are three historical schools going
back 2500 years.) These schools have been reflected in the
Project Management literature, although by and large that
literature has ignored the contribution of the project man-
ger to project success [39].

2.1. Four early schools

The trait school suggests good leaders exhibit certain
traits which they are born with. The behavioural school
assumes effective leaders display given behaviours or styles,
which can be developed. Most authors from the behav-
ioral school assume different behaviours or styles are
appropriate in different circumstances, but that was formal-
ized by the contingency school. Turner [36], from work
he did at Henley Management College, identified seven
traits of effective project managers: problem solving ability;
results orientation; energy and initiative; self-confidence;
perspective; communication; negotiating ability. However,
he did not consider whether different traits would be appro-
priate on different types of project. Based on the work of
Frame [18], he also took the four leadership styles, lais-
sez-faire, democratic, autocratic and bureaucratic, and sug-
gested how each style was appropriate at a different stage
of the project life-cycle: feasibility, design, execution and
close-out, respectively.

The visionary school identifies two types of leaders,
those who focus on relationships and communicate their
values, and those who focus on process, called transfor-
manational and transactional leaders, respectively [2]. Confucius
and Aristotle had similar views on leadership. Keegan and
Den Hartog [23] predicted that transformational leadership
would be more appropriate for project managers. How-
ever, in their study, even though they found a preference
for transformational leadership, they could find no signifi-
cant link. Thus across all projects, that one dimension was
not a significant determinant of success as a project man-
ger. However, based on the work of Dulewicz and Higgs
[16] and our results from our interviews, we would predict
that they would find a transformational leadership style
preferred on complex change projects and a transactional
style preferred on simple, engineering projects.

2.2. Emotional intelligence school

This school assumes all managers have a reasonable
level of intelligence. What differentiates leaders is not their
intelligence, but their emotional response to situations.

<table>
<thead>
<tr>
<th>School</th>
<th>Period</th>
<th>Main idea</th>
<th>Example authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confucius</td>
<td>500BC</td>
<td>Relationships (jen), values (xiao) process (li), moderation (zhang rong)</td>
<td>Chen [8]</td>
</tr>
<tr>
<td>Barnard</td>
<td>1938</td>
<td>Relationships versus process</td>
<td>Barnard [1]</td>
</tr>
<tr>
<td>Trait</td>
<td>1930s–1940s</td>
<td>Effective leaders show common traits, leaders born not made</td>
<td>Kirkpatrick and Locke [25]</td>
</tr>
<tr>
<td>Behaviour or style</td>
<td>1940s–1950s</td>
<td>Effective leaders adopt certain styles or behaviours</td>
<td>Blake and Mouton [4] Tannenbaum and Schmidt [35]</td>
</tr>
<tr>
<td>Contingency</td>
<td>1960s–1970s</td>
<td>What makes an effective leader depends on the situation</td>
<td>Fiedler [17], House [21], Robbins [34]</td>
</tr>
<tr>
<td>Visionary or charismatic</td>
<td>1980s–1990s</td>
<td>Two styles: Transformational: concern for relationships</td>
<td>Bass [2]</td>
</tr>
<tr>
<td>Emotional intelligence</td>
<td>2000s</td>
<td>Emotional intelligence has a greater impact on performance than intellect</td>
<td>Goleman et al. [19]</td>
</tr>
<tr>
<td>Competency</td>
<td>2000s</td>
<td>Effective leaders exhibit certain competencies, including traits,</td>
<td>Dulewicz and Higgs [16]</td>
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<tr>
<td></td>
<td></td>
<td>behaviours and styles Emotions, process, intellect Different profiles of competence better in different situations</td>
<td></td>
</tr>
</tbody>
</table>
Goleman et al. [19] identify nineteen leadership competencies grouped into four dimensions:

1. Personal competencies
   - self-awareness (mainly Confucius’s moderation)
   - self-management (mainly Confucius’s values)
2. Social competencies
   - social awareness (mainly Confucius’s values)
   - relationship management (mainly Confucius’s relationships).

They also suggest six management styles, with different profiles of competencies: visionary; coaching; affiliative; democratic; pacesetting; and commanding. Through a survey of 2000 managers they identified situations in which each style is appropriate. The first four are best in certain situations, but are adequate in most situations medium to long term. They classify the last two styles as toxic. They say they work well in turn-around or recovery situations, but if applied medium to long term they can poison a situation, and demotivate subordinates.

Lee-Kelley and Leong [26] set out to find whether a project manager’s familiarity with the project management knowledge areas was a determinant of their success as a project manager. What they found was a project manager’s self-confidence and self-belief, arising out of their experience as a project manager, influenced their perception of success. Thus the manager’s emotional intelligence affects their perception of success, which can feed through to make success (or failure) a self-fulfilling prophecy. However, this is not related to type of project.

2.3. Competency school

This school says effective leaders exhibit certain competencies. It encompasses all the previous schools because traits and behaviours are competencies, it says certain competency profiles are appropriate in different situations, it can define the competency profile of transformational and transactional leaders, and it suggests emotional intelligence as one of four groups of competencies. After a substantial review of the literature on leadership competencies, Duliewicz and Higgs [16] identified fifteen which influence leadership performance, Table 2. They group the competencies into three competence types, which they call intellectual (IQ), managerial (MQ) and emotional (EQ).

Duliewicz and Higgs also identified three leadership styles, which they called Goal Oriented, Involving and Engaging. Through a study of 250 managers working on organizational change projects they showed goal oriented leaders are best on low complexity projects, involving leaders best on medium complexity projects and engaging leaders best on high complexity projects. Thus, they showed that on organizational change projects:

- different leadership styles are appropriate depending on the complexity of change.

Crawford [12,13] investigated the competence of project managers, and found different profiles appropriate for different types of project. However, she did not investigate leadership style. Dainty et al. [15] identified twelve behavioural competencies for construction project managers. They reduce these to two core competencies, team leadership and self-control.

3. Research model

The six schools of leadership suggest different leadership styles are appropriate in different situations in routine organizational contexts. The project management literature has also suggested in very limited circumstances that different leadership styles are appropriate on different types of projects or project phases. However, the project management literature has largely ignored the contribution of the project manager’s leadership style to project success. Crawford et al. [14] have shown that different project management approaches are appropriate on different types of project, and this would suggest that different leadership styles are also appropriate. We have therefore formulated the following hypotheses:

Hypothesis 1: The project manager’s competency, which includes his or her leadership style, is positively correlated to project success.

Hypothesis 2: Different combinations of project leadership competency are correlated with success on different types of project.

To test these hypotheses we developed the following research model which is shown in Fig. 1.

**Independent variable:** The independent variables are project leadership competencies, particularly leadership style.
The leadership competencies we will use to test Hypothesis 1 and 2 are the fifteen competencies identified by Dulewicz and Higgs [16], listed in Table 2.

Dependent variable: The dependent variable is project success. Many different ways of judging project success, both quantitative and qualitative, have been suggested (for instance see [36,37,22]). We chose initially to use the success criteria suggested by Westerveld and Gaya-Walters [40]; measuring the appreciation of the sponsor, users, suppliers, project team and other stakeholders. In our research we are asking our respondents to make qualitative judgements of these parameters rather than use quantitative criteria.

Moderating variable: Project type is a moderating variable for Hypothesis 2. The most comprehensive work on project categorization has been done by Crawford et al. [14]. They suggest one reason for categorizing projects is to select appropriate competencies for their delivery, which presumably includes appropriate leadership competencies. They suggested many ways of categorizing projects. They do not suggest their list is comprehensive, but they have grouped them into fourteen attribute areas which they suggest are reasonably comprehensive. We were not able to include all their attribute areas in our research model. We initially choose to limit ourselves to five, but based on our interviews subsequently decided to extend to six. The six attribute areas, and an associated nineteen types of project, are listed in Table 3. Our research model is not comprehensive, as it does not include all possible attributes of projects, but if Hypothesis 2 is supported with these attribute areas, the model is supported.

4. Interviews

To test our research model before formulating our web-based questionnaire, we undertook a qualitative study, by conducting semi-structured interviews with line managers responsible for assigning project managers to projects. The objectives of the interviews were to identify factors applied by managers for selecting project managers for different project types, and to test the validity of our research model. We interviewed fourteen people from several companies. To improve the generalizability of the results we interviewed people from eight countries, the USA and Australia and six in Europe. We interviewed people from several industries, including, engineering, information, telecommunications and aerospace, and clients, contractors and consultancy firms. Firms ranged in size from 50 personnel to 35,000, and projects ranged $50,000–$500 million.

4.1. Rating of leadership competencies

We asked the interviewees to rate the leadership competencies in Table 2 in importance, as high, medium and low. We then assigned 3 for high, 2 for medium and 1 for low, and calculated the average for each competence and the average for each group, Table 2. The results are not statistically significant, but suggest that emotional and managerial competencies are more important for project managers than intellectual competencies. Looking at the individual competencies, ones scoring lower are vision and imagination, strategic perspective, developing others and intuitive ness. Ones scoring higher are managing resources, achieving (self-motivation) and motivation of others. These are not surprising.

4.2. Success criteria

We asked the interviewees how they judged project success to ensure our model is relevant. Interviewees mentioned several criteria not included in the list of Westerveld and Gaya-Walters [40]. As a result we...
extended our project success model to include the ten success criteria shown in Table 4. Table 4 also shows how often each was mentioned.

4.3. Types of project

All of the organizations interviewed could identify with at least some of the types of project listed in Table 3, and said that some attributes were important in choosing the leadership style of the project manager. Some interviewees also said they undertook other types from the fourteen attribute areas identified by Crawford et al. [14].

Application area: All firms undertook projects from at least one application area, and some two or all three. Companies undertaking projects from two or more areas said the project manager’s competence was a criterion for assigning him or her to a project. Most considered the project manager’s technical knowledge and experience were important, but some also mentioned leadership style. For example one interviewee from a telecommunications company said her organization undertook information systems and business change projects. Project managers for information systems projects should be technically competent and task focused. But leadership skills are significant for organizational change projects, where the manager must be able to communicate with stakeholders, and deal with their emotions, particularly fear, aggression and conflict. The project manager must be able to deal with ambiguity, and be self-confident, stable and tolerant.

Complexity: Seven interviewees defined what they meant by complexity, and it differed from firm to firm. Criteria included: size of project; number of departments involved; number and type of stakeholders; location; form of contract. Many of the interviewees identifying complexity said the project manager’s leadership style was an issue when choosing the manager for complex projects, but not for simple ones. The managing director of a project management consultancy described one project with a significant environmental impact. He assigned two project managers, one to communicate with the outside world, particularly the environmental lobby, and another to communicate with project resources, mainly academics providing the science. He considered these required two different leadership skills.

Life-cycle stage: All organizations undertook projects from several life-cycle stages, but none said it was a significant factor in choosing the project manager. One interviewee, working on information systems projects in the telecommunication company mentioned above, said the feasibility and execution stages would be managed by somebody from the business, but the design stage by somebody from the information systems department. The reason is design requires technical knowledge, whereas other stages require business knowledge. His colleague (mentioned above) said during implementation the management of stakeholders is important (but not as important as it is in organizational change projects).

Strategic importance: All interviewees recognized strategic importance as a way of classifying projects. None mentioned it as a criterion for selecting project managers per se, but often projects of higher strategic importance were considered more complex, which was then the criterion for choosing the project manager.

Culture: All companies undertook projects in their home country. Some hosted clients or resources from abroad, some conducted projects in external territories. Seldom was leadership style significant when choosing managers for projects involving other cultures. Some firms worked regularly with other cultures and so their project managers were expected to be culturally sensitive, that was an entry ticket to join the pool of project managers. Competencies that were considered were knowledge of the local language and legal system. Two interviewees considered leadership skills when choosing managers for certain geographies, but not others, because projects in those geographies were considered to be more complex. Project managers for those geographies must be self-confident, stable and tolerant.

Contract type: We did not initially include contract type in our research model, but five interviewees mentioned it as being significant, with different contract types requiring different leadership styles. Managers of fixed price contracts must be task focused and determined to have their way. Managers of remeasurement and alliance contracts must be flexible, willing to listen to other people’s ideas and accept their views. Project managers of remeasurement and alliance contracts must be tolerant of others views, they must exhibit moderation.

From our interviews we conclude that the model we have chosen for project types (Table 3), while not comprehensive, is suitable for testing Hypothesis 2.

5. Web-based questionnaire

After analysis of the interviews we developed the first tentative theory about the importance of different leadership styles in different types of project. These findings formed the basis of a worldwide web-based survey on
project type, project success, and leadership style in projects. The data collected were used for statistical tests of the hypotheses.

5.1. Format

The questionnaire had four sets of questions:

1. **Project type:** This was assessed by using the six attributes and nineteen types in Table 3. Respondents were asked to select one or several types within each attribute category.

2. **Project success:** We asked the respondents to use the ten success factors in Table 5 to judge success of their projects. Questions were asked on a five point Likert scale from ‘Disagree’ to ‘Agree’. In addition we asked for the importance of each factor. The five point Likert scale ran from ‘Not at all important’ to ‘Very important’.

3. **Leadership:** This part of the questionnaire contained 189 questions on the fifteen competency dimensions in Table 2. A five point Likert scale from ‘Never’ to ‘Always’ was used to identify respondents’ behaviour in respect to the 15 dimensions, and its organizational context.

4. **Demographic:** Demographics on the respondent’s job function, education, nationality, age, gender and project management certification were captured. Respondents’ email address was asked from those interested in receiving a summary of the research results.

5.2. Data gathering

The questionnaire was piloted over a period of two weeks, using twenty one respondents. A minor change to the wording was made after three days of the pilot. No further changes were made for the official launch of the questionnaire. The five responses collected prior to the changes made on day three of the pilot were not used for the final analysis. All other responses were used in the analysis of the questionnaire.

We aimed to send the questionnaire to professionals in project management, so members of professional organizations in project management were targeted. An introductory email, together with a web-link to the online questionnaire, was sent to Presidents of Chapters and Special Interest Groups of the Project Management Institute (PMI®), to country representatives of the International Project Management Association (IPMA), and the chairman of the Association of Project Management (APM) and the president of the American Society for the Advancement of Project Management (ASAPM). The questionnaire was also distributed to several masters courses in project management with which we are associated, and distributed through our personal networks. The introduction email explained the purpose and timeframe of the research and asked the recipients to forward this email to their organization’s members, for them to answer the questionnaire. The sampling frame consisted therefore of the approximately 300,000 people. The snowball approach to sampling, however, did not allow for us to control how many people received the questionnaire. The questionnaire was held open for a period of four weeks. 400 usable results were obtained.

5.3. Analysis

We analysed the relationship between different leadership styles and project success, and how this is influenced by project type. This was done using quantitative multivariate techniques, such as multivariate regression analysis. We analysed the importance of the three competence types, EQ, MQ and IQ and the fifteen competency dimensions (Table 2) for their contribution to success on different types of project. The results where structured by performance levels of projects. Comparing results from high performing projects with those from all projects and low performing projects allowed for identification of those leadership dimensions that are correlated with success. Through that, those project manager competencies most likely to contribute to project success were identified for different types of project.

5.4. Results

Table 5 shows the results for all projects and for high performing and low performing projects. It also shows similar results for projects by the three application areas, engineering projects, information systems projects and organizational and business projects. Table 7 shows where significant correlations were found with each of the three competence types, EQ, MQ and IQ, and each of the fifteen constituent competency dimensions. For the results to be strictly significant, there should be five data points for each independent variable [20], so there should be 15 projects in any project category for the analysis by the three competence types to be fully significant, and 75 for the analysis by 15 competency dimensions. We have included the analysis for all categories with more than 15 data points, but the analysis against the 15 competency dimensions must be treated accordingly.

We see that on high performing projects from the complete sample, and on high performing projects from each of the three application areas, emotional competencies are significant contributors to project success, but managerial and intellectual ones are not. Looking at the 15 individual competencies, we see that on all high performing projects conscientiousness, sensitivity and communication are correlated to project success, but strategic perspective is negatively correlated to project success. Thus Hypothesis 1 is supported, certain of the project manager’s leadership competencies are correlated with project success.

We look now at high performing projects in the other three application areas. We see that for engineering pro-
Table 5
Results for all projects, high performing and low performing projects, for the entire sample and projects by application area

<table>
<thead>
<tr>
<th>Competencies</th>
<th>All Projects</th>
<th>Engineering projects</th>
<th>Information projects</th>
<th>Organizational projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Lo Perf</td>
<td>Hi Perf</td>
<td>All Lo Perf</td>
<td>Hi Perf</td>
</tr>
<tr>
<td>Number of cases (n)</td>
<td>399   142</td>
<td>257 67 25 42</td>
<td>267 96 171</td>
<td>199 70 129</td>
</tr>
</tbody>
</table>

3 Dimensional model
- Emotional
- Managerial
- Intellectual

Model:
- \( R^2 \) 0.087 0.038 0.137 0.084 No model found 0.232 0.085 0.048 0.144 0.084 No model found 0.089
- Adj. \( R^2 \) 0.082 0.031 0.134 0.070 0.213 0.082 0.038 0.139 0.079 0.079 0.082
- \( p \) 0.000 0.020 0.000 0.017 No model found 0.000 0.033 0.000 No model found 0.001

15 Dimensional model
- Emotional
- Conscientiousness
- Sensitivity
- Influence
- Self-awareness
- Emotional resilience
- Intuitiveness
- Managerial
- Managing resources
- Communication
- Developing
- Empowering
- Achieving
- Intellectual
- Strategic perspective
- Vision
- Critical thinking

Model:
- \( R^2 \) 0.093 0.034 0.168 0.104 No model found 0.430 0.107 0.061 0.206 0.095 No model found 0.171
- Adj. \( R^2 \) 0.089 0.027 0.155 0.090 0.385 0.101 0.051 0.187 0.091 0.091 0.151
- \( p \) 0.000 0.029 0.000 0.008 0.000 0.000 0.015 0.000 0.000 0.000 0.000
jects conscientiousness and sensitivity are positively correlated with success, and vision is negatively correlated. For information systems projects self-awareness, communication and developing are positively correlated, and vision is negatively correlated. Organizational and business projects show a similar profile, but subtly different. Motivation and communication are positively correlated, but vision negatively correlated.

We repeated the analysis for all other project types in Table 3, looking first at all projects of that type, and then projects of that type within each of the three application areas. There is not space to reproduce all the results. Instead, Table 6 shows where each of the three competence types, EQ, MQ and IQ, and each of the 15 constituent dimensions were correlated to project success on high performing projects. Table 7 repeats that for engineering projects, Table 8 for information systems projects and Table 9 for organizational and business projects. Table 10 contains a key for Tables 6–9. The final column in Tables 6–9 shows a count of the number of times each dimension appears for each application area. This is not statistically significant, but gives an indication of differences by project type.

We see that almost always, emotional competence, EQ, significantly contributes to project success. Occasionally managerial competence, MQ, contributes significantly, and on a small number of occasions intellectual competence, IQ, negatively correlated. This is consistent with our interviews, Table 6. Looking at the 15 constituent competencies, on engineering projects, conscientiousness repeatedly appears as being positively correlated with project success. Other competencies appear occasionally, vision being negatively correlated twice. On information systems projects, self-awareness and communication are repeatedly correlated with project success, and vision repeatedly negatively correlated. On organizational and business projects, communication is repeatedly positively correlated and vision repeatedly negatively correlated. In Table 8, communication appears the most often. Motivation, conscientiousness, sensitivity and managing resources also appear several times, and strategic perspective is often negatively correlated to project success. We do not have space here to list all the differences by different types of project. Thus we conclude that Hypothesis 2 is supported, different leadership competencies are appropriate on different types of project.

We can understand why conscientiousness is important on engineering projects but less so on information and organizational projects, and why communication is important on the latter two types, but less so on engineering projects. On information systems and organizational projects it is important to keep the stakeholders committed to the project, and inform them of the nature of the desired results and work of the project, which will often be abstract in nature. On engineering projects, the project deliverables are more concrete, and clearly delineated in the project’s designs. Thoroughness is more important. Many people may be concerned by the conclusion that project managers should lack vision, espe-

<table>
<thead>
<tr>
<th>Competency</th>
<th>Typ</th>
<th>Complexity</th>
<th>Importance</th>
<th>Contract</th>
<th>Phase</th>
<th>Culture</th>
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<td>223</td>
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<td>24</td>
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</tr>
</tbody>
</table>

3 Competences <15 <75 NM <75

- Managerial, MQ P P P P P P P P P P P P P 2
- Intellectual, IQ N P P P P P P P P P P P P P 1

15 Competencies <15 <75 NM <75

- Emotional
  - Sensitivity P P P P P P P P P P P P P 4
  - Influence P P P P P P P P P P P P P 1
  - Self-awareness P P P P P P P P P P P P P 1
  - Emotional resilience P P P P P P P P P P P P P 1
  - Intuitiveness P P P P P P P P P P P P P 0

- Managerial
  - Managing resources P P P P P P P P P P P P P 3
  - Communication P P P P P P P P P P P P P 9
  - Developing P P P P P P P P P P P P P 1
  - Empowering P P P P P P P P P P P P P 1
  - Achieving P P P P P P P P P P P P P 0

- Intellectual
  - Strategic perspective N N N N N N N N N 5
  - Vision N N N N N N N N N 1
  - Critical thinking N N N N N N N N N 0
particularly on organizational and business projects. However, our conclusion is that it is the responsibility of other project roles, such as the sponsor, to link the project’s outputs and outcomes to organizational strategy, while the project manager must remain focused on delivering the project’s results.

Table 7
Results and validation, engineering projects (high performance projects only)

<table>
<thead>
<tr>
<th>Competency</th>
<th>Typ</th>
<th>Complexity</th>
<th>Importance</th>
<th>Contract</th>
<th>Phase</th>
<th>Culture</th>
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<tr>
<td>15 Competencies</td>
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Table 8
Results and validation, information projects (high performance projects only)

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6. Validation

For the development of a final model we compared the results of the quantitative study (questionnaire based), with the results of the qualitative study (interview based) in order to identify overlapping results. Similar results from both studies were considered to be validated results. Validation was done through a reconciliation of the ‘managers view’ which was captured through the interviews, and the reality applied in projects, which was captured through the web-based, global questionnaire.

Validation was done at the levels of project type, project phase, complexity, importance, contract, and culture. For that the rankings from the interviews were grouped by project type (engineering and construction, information technology, and organizational change) and the average ranking of the 15 dimension calculated for each project type. That gave the particular rankings of the importance of each of the 15 competence dimensions (by the interviewees) for all projects and for each project type. These rankings were subsequently compared with the results from the quantitative analysis. A match of interviewer rating being medium or high from the qualitative study, with a dimension that was found to be statistically significantly related with project performance (through the quantitative study) was then considered a validated result, because of its appearance within both studies. Those dimensions that were found negatively related with project results in the quantitative study were checked for being ranked ‘low’ in the qualitative study. Such a match was also considered a validated result.

The outcome of the validation is shown Tables 6–9. Validated results are indicated in bold.

7. Conclusions

From both our qualitative study and quantitative studies, we conclude that:

1. the project manager’s leadership style influences project success;
2. different leadership styles are appropriate for different types of project.

In the qualitative study, managers of project managers, responsible for assigning mangers to projects, told us that they do take account of the manager’s leadership style. That is more likely on complex projects than simple projects. In the qualitative study we found that emotional competence, EQ, is a significant contribution to project
success in most of the project situations we looked at. Managerial competence was sometimes significant, and occasionally intellectual competence was negatively correlated to success. Looking at the 15 individual competencies, on all projects conscientiousness, sensitivity and the ability to communicate were significantly correlated to project success, whereas strategic perspective was not a desirable competency in project managers.

Thus we conclude Hypothesis 1 is supported, certain of the project manager’s leadership competencies are correlated with project success.

Looking at different project types

(a) On medium complexity projects, emotional resilience and communication are important. On high complexity projects sensitivity is important. These competencies are associated more with transformational leadership than transactional leadership. Thus we conclude that if Keegan and den Hartog [23] had limited themselves to medium to high complexity projects they might have found transformational leadership preferred. There were insufficient low complexity projects in our sample for analysis.

(b) On repositioning projects, motivation is important, whereas on renewal projects, self-awareness and communication are important. Thus a more transactional styles seems to be preferred on repositioning projects whereas a more transformational style on renewal projects. We would presume that renewal projects will have a greater impact on stakeholders and therefore require a more transformational approach. Repositioning projects would have a greater need to achieve targets and so a transactional style would be more suitable.

(c) On fixed price contracts, sensitivity and communication are important, whereas on remeasurement contracts influence and communication are important. On both a transformational style seems to be preferred. This is contrary to the interviews where it was suggested that a transactional style would be appropriate for fixed price contracts and a transformational style for remeasurement and alliance contracts.

(d) Throughout the life-cycle, conscientiousness and communication are important. At the design stage managing resources is also important, and motivation and sensitivity at the commissioning stage. Strategic perspective is detrimental to project success, except during feasibility and close-out. It would seem that it is important for the project manager to focus on the task, and leave the linking of the project to corporate business objectives to other project governance roles, such as the sponsor. During feasibility we can understand that strategic perspective may be more important, but it was not positively correlated to project success, just not negatively correlated.

There seems to be little support for the model produced by Turner [36] and Frame [18]. Perhaps if there is any validity to their model, it applies more to project team member roles rather than project leadership style, and so would be more appropriately analysed using instruments for measuring team performance, such as 16PF [7], or those developed by Belbin [3], Margerison and McCann [27] or Briggs-Myers [6].

(e) On home-based, multi-cultural projects, motivation and managing resources are important and strategic perspective detrimental.

(f) Looking at the three application areas, we conclude that with engineering projects conscientiousness is important, though these results may not be significant due to lack of sufficient data points. The two validated results are the importance of motivation and the fact that vision is detrimental. Thus on engineering projects more transactional styles are appropriate. On information systems projects, self-awareness and communication are particularly important, but several other competences also contribute to project success. Vision is detrimental. On organizational and business projects communication is important and motivation is also significant. Vision is detrimental. Thus apart from the fact that vision is detrimental, more transformational styles seem to be appropriate. This again supports the conclusion that if Keegan and den Hartog [23] had looked at different types of projects they might have achieved a different result. But we do see that vision in the project manager can be detrimental to project performance, and vision is a key component of the transformational leadership style.

Thus we conclude that Hypothesis 2 is supported, different leadership competencies are appropriate on different types of project.

We think many people may be surprised by our conclusion that strategic perspective and vision are unimportant and even detrimental in project managers. However, we believe it is understandable. Project managers need to focus on the task to achieve the targets for the project, and leave strategic thinking to other project roles, such as the sponsor. However, other elements of the transformational style such as communication and sensitivity can be important. But the unimportance of vision may also explain why Keegan and den Hartog [23] failed to show that transformational leadership was preferred in a project context.

7.1. Implications for practice

Managers of project managers need to be aware that different leadership styles exhibited by the project manager are appropriate on different types of projects. Managers need to be aware of the needs of projects in their organization, develop individuals for pool of available project
managers with appropriate styles for projects in their organization, and choose managers from that pool with appropriate styles for the projects at hand.

Acknowledgements

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References