An examination of the decision styles of project managers: Evidence of significant diversity

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Abstract

It has been suggested that the manner in which a project manager makes decisions can significantly influence his or her effectiveness and ultimately the design of systems under his or her direction. Arguments for a structured, systematic approach, as well as arguments for a more well-rounded, ‘whole-brained’ approach have been made. However, it is perhaps more important to examine what project managers actually are. We surveyed a group of over 200 project managers from across the United States, attempting to measure their decision making styles, especially as they relate to project management activity. The survey not only identifies a person’s propensity towards a particular style of decision making, but also his or her propensity towards brain dominance, an idea or action orientation, and a preferred management level of decision making. The results of this study indicate that though each project manager is unique, as a group project managers are well-rounded and tend to solve problems utilizing a ‘whole-brained’ approach. © 1999 Elsevier Science B.V. All rights reserved.

Keywords: Project managers; Decision style; Decision making

1. Introduction

Many professions have been stereotyped as possessing specific characteristics. For example, accountants are generally depicted as being very detailed and analytical, while artists are typically considered open and creative. Certainly stereotypes do not hold true for every member of a profession, but it is often assumed that, by possessing certain qualities or characteristics inherent to the field, an individual should be more effective as a professional.

Within the information systems field, relatively few studies have focused on groups of IS professionals in attempts to examine what non-stereotypical differences exist among those individuals and what influence these differences yield. One such study of systems analysts, for example, found that individual differences do exist and that these differences can affect behavior during the development process and thus could influence the outcome of a project [2].

Given that a key factor in successful software development is effective project management...
[6,11], it is necessary to examine if, in fact, individual differences do exist among project managers, and the potential influence of these differences. It has been suggested that a good project manager is a structured, systematic individual. On the other hand, it has been suggested that an effective project manager is one who adopts a ‘whole-brained’ approach, and that relying on a singularly structured, analytical perspective is not enough [10]. Legitimate arguments can be made for both positions. However, regardless of what mold a project manager should fit, discussion has been limited, particularly with respect to the manner in which project managers choose to make decisions and solve problems.

In this paper, we present the findings of a survey of US project managers who were evaluated to identify their propensity toward a particular style of decision making.

2. An overview of the literature

Managers, including software development project managers, are required to assess situations continuously and make decisions regarding production, development, and resource allocation. A study describing the various functions performed by project managers indicates that the most important of these functions is decision making. The manner in which a manager makes decisions is important in understanding how effective he or she will be in a given situation. It has been stated that decision style captures those key aspects of a manager’s belief system that are applied in decision making, often unconsciously. It is the individual preferences that make up a style that determine the types of experiences and information that are stored and later used in decision making [5].

Rowe’s approach to examining decision style evolved through the development of his cognitive contingency decision style model and, subsequently, his Decision Style Inventory (DSI) [7], both of which are based on what he termed the ‘four force’ model [8]. The forces of interest are personal needs, environmental pressures, group demands, and task requirements. Together, these influence the way a decision maker responds to a situation. Rowe’s Model further focuses on two dimensions, cognitive complexity and value orientation; together these are used to describe an individual’s preferred decision style. Cognitive complexity is reflected in an individual’s tolerance, either high or low, for ambiguity (or conversely, structure). It also determines whether an individual prefers a thinking orientation (high cognitive complexity), or an action orientation (low cognitive complexity). The value orientation is manifest in a focus either on task and technical concerns (task orientation) or on human and social concerns (people orientation).

Using the two dimensions of cognitive complexity and value orientation, four primary decision styles can be identified: directive, analytical, conceptual, and behavioral. Very briefly, an individual possessing a dominant directive style tends to be systematic, efficient, decisive, and structured. Individuals possessing a dominant analytical style would focus on analysis, forecasting, and detailed planning. A dominant conceptual style characterizes individuals who are more complex, creative, adopt a broad outlook, tend to take more risks and who dislike following rules. Lastly, an individual possessing a dominant behavioral style is people-oriented, adopts loose control, and prefers oral to written communication. For a more detailed description, see Rowe and Mason’s work. The DSI also measures an individual’s brain dominance—either right-brained or left-brained oriented. Brain dominance (variously also known as hemispheric asymmetry, cerebral laterality, etc.) has been the subject of study for well over a century. Studies show that each brain hemisphere provides the primary mental support for certain specialized functions [1]: it has been posited that a person’s left hemisphere is more analytic, rational, sequential, and propositional, while the right hemisphere is more holistic, intuitive, parallel, and appositional.

More recent work in the information systems domain seems to be generally centered on the ‘analytic’ versus ‘intuitive’ dichotomy [4] based on Jungian topology. Within this dichotomy, analytic individuals are viewed as being more attentive to detail and define solutions in terms of the methodology employed, whereas intuitive individuals focus more on patterns and define solutions in terms of ‘fit.’

The DSI also provides a measure of a person’s propensity towards either an action orientation or an idea orientation. Idea-oriented people are described as more concerned with analysis, perspective, judgment, visualizing, innovation, creativity, music, art, writing,
and new approaches, while action-oriented individuals tend to work well with others, are concerned with achieving results, and choose occupations that require direct involvement and interacting with the public.

Lastly, the DSI measures an individual’s propensity towards a specific level of decision making, classified as either executive, middle-management, or staff. By combining the basic decision style scores, the degree of this propensity can be identified.

Slevin and Pinto contend that ‘successful project management is greatly affected by the information and power in the system;’ information in and about a system can be obtained from many sources, but power is manifest in the self-selected decision style of the project manager [9]. The focus of this study is on identifying, via several measures, the various decision styles possessed by software development project managers.

### 3. The methodology

A survey made of slightly more than 1000 project managers in the USA, the vast majority of whom are members of the Project Management Institute, was conducted for the purpose of gathering insight into the various decision-making styles employed by project managers. As a portion of the study, subjects were asked to complete Rowe’s Decision Style Inventory (DSI).

The DSI was designed to measure the degree of dominance of an individual towards each of four decision styles—directive, analytical, conceptual, and behavioral. It further identifies an individual’s propensity towards each style as either ‘very dominant,’ ‘dominant,’ ‘backup,’ or ‘least.’ The instrument consists of 20 sentence-beginnings and four possible sentence-endings, as demonstrated in Appendix A. For each sentence beginning, the subject is asked to rank each of the sentence endings, identifying which one is most like them, next most like them, etc. From these rankings, the propensity towards each decision style is computed. Using the individual decision-style scores, the DSI can be reconstituted to measure brain dominance, an orientation towards ideas versus actions, and an orientation towards executive, middle-management, or staff level decision making.

### 4. The results of the study

A total of 201 surveys were completed and returned, representing a response rate of 19.8%. Prior to completing the DSI, the subjects were asked to provide additional demographic information. The subjects indicated that they had an average of 8.6 years of experience in the field of information systems and 9 years of project management experience. The companies in which the majority of the subjects worked were described as focusing either on engineering or software development. The types of projects managed or developed by the subjects within the past 3 years were primarily for in-house use, to satisfy a commercial contract, or directly developed for sale to external customers. A much larger number of projects worked on in the past 3 years were completed within 6 months or less, but more time was expended in managing projects having a duration of greater than 6 months.

#### 4.1. Decision style

The initial evaluation provided by the DSI identifies the propensity of the project manager to each of the four decision styles. Table 1 presents the results of this analysis, showing a matrix comparing decision style with measured propensity.

Most project managers expressed a propensity towards the analytical and behavioral styles much more frequently than those expressing a propensity towards either the directive or conceptual styles. These subjects also show the highest percentage of the ‘least’ propensity towards the directive and conceptual styles. However, it is interesting to note that the percentage of decision styles at the ‘backup’ level is much closer across decision styles. This indicates that the subjects, while distinctly preferring either an analytical or behavioral approach to decision making, can comfortably adapt to another style as a backup. Thus, project managers tend to adopt a type of ‘contingency’ style as the project management situation dictates.

Table 2 presents the data from the perspective of propensity levels for each decision style. Looking at the directive style, for example, a ‘very dominant’ level of propensity was reported least often with the ‘least’ level of propensity reported most often for this style.
In fact, the project managers responding to the survey actually possess a tendency toward adopting several backup decision styles as opposed to one dominant decision style. In all but the analytical case, the highest percentage of propensity is at the ‘least’ level. This is an obvious result—when one or two styles are found to be dominant, and particularly very dominant, the other styles, by default, have to have lower levels of propensity.

4.2. Brain dominance

The DSI can also be used to determine brain dominance, or the tendency for one side of the brain to be more dominant than the other; an individual found to be ‘left-brain’ dominant would tend to have a strong technical focus and be inclined towards logical thinking, while the ‘right-brain’ dominant would tend to have a strong concern for individuals and prefer broad thinking and creative approaches. By adding the analytical and directive scores from the DSI, individuals’ ‘left brain’ score can be derived, and by adding the conceptual and behavioral scores the ‘right-brain’ score is determined. Of the 201 subjects, 104 were found to be left-brain dominant, 92 were found to be right-brain dominant, and 5 were found to have ‘mixed’ dominance. These results are consistent with the subject breakdown by decision styles. Combining the number of individuals with either a very dominant or dominant propensity towards the directive and analytical styles, and comparing this with like measures for the conceptual and behavioral styles, results in an almost even match.

4.3. Idea versus action orientation

In a further analysis, an individual’s inclination towards either an idea orientation or an action orientation was extracted. Combining an individual’s analytical and conceptual scores provides an indication of their inclination toward an idea orientation, while combining their directive and behavioral scores indi-

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Table 1
Propensity toward decision style

<table>
<thead>
<tr>
<th>Decision style level</th>
<th>Directive</th>
<th>Analytical</th>
<th>Conceptual</th>
<th>Behavioral</th>
<th>Totala</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very dominant</td>
<td>23</td>
<td>39</td>
<td>22</td>
<td>49</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>17.3%</td>
<td>29.3%</td>
<td>16.5%</td>
<td>36.8%</td>
<td>100%</td>
</tr>
<tr>
<td>Dominant</td>
<td>28</td>
<td>35</td>
<td>29</td>
<td>34</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td>22.2%</td>
<td>27.8%</td>
<td>23.0%</td>
<td>27.0%</td>
<td>100%</td>
</tr>
<tr>
<td>Backup</td>
<td>74</td>
<td>73</td>
<td>65</td>
<td>58</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>27.4%</td>
<td>27.0%</td>
<td>24.1%</td>
<td>21.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Least</td>
<td>76</td>
<td>54</td>
<td>85</td>
<td>60</td>
<td>275</td>
</tr>
<tr>
<td></td>
<td>27.6%</td>
<td>19.6%</td>
<td>30.9%</td>
<td>21.8%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>201</td>
<td>201</td>
<td>201</td>
<td>201</td>
<td>100%</td>
</tr>
</tbody>
</table>

aTotal number of subject per row add to more than 100% of the subjects due to the possibility of multiple decision styles, per subject, at each level.

Table 2
Decision style percentage by propensity

<table>
<thead>
<tr>
<th>Decision style level</th>
<th>Directive (%)</th>
<th>Analytical (%)</th>
<th>Conceptual (%)</th>
<th>Behavioral (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very dominant</td>
<td>11.4</td>
<td>19.4</td>
<td>11.0</td>
<td>24.4</td>
</tr>
<tr>
<td>Dominant</td>
<td>13.9</td>
<td>17.4</td>
<td>14.4</td>
<td>16.9</td>
</tr>
<tr>
<td>Backup</td>
<td>36.8</td>
<td>36.3</td>
<td>32.3</td>
<td>28.9</td>
</tr>
<tr>
<td>Least</td>
<td>37.8</td>
<td>26.9</td>
<td>42.3</td>
<td>29.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
cates their tendency towards an action orientation. Again, two very definite groups were identified: 89 individuals possessed an idea orientation, 104 individuals possessed an action orientation, and eight had an inclination towards a dual (both idea and action) orientation.

4.4. Level of decision-making orientation

The final analysis identified an individual’s propensity toward executive, middle-management, or staff-level decision-making orientation. The measure of the inclination towards executive-level decision making is determined by adding an individual’s conceptual and directive style scores. An individual’s inclination towards middle-management decision making is established by combining the directive, analytical, and conceptual decision styles. The measure of an individual’s inclination towards staff-level decision making is designated by the combination of analytical and behavioral decision-style scores.

The subjects of this study exhibited the following distribution: 71 subjects indicated an executive decision making orientation, 92 indicated a middle management decision making orientation, and 135 indicated a staff level decision making orientation. The sum of this distribution (298) indicates that several project managers had a tendency towards more than one decision-level orientation. For those individuals possessing this multiple-level tendency, most were split between adjoining levels (e.g. executive and middle management, or middle management and staff). Once again, this group of project managers is clearly spread across each aspect of decision-making style.

5. Discussion of the results

The results confirm that project managers are a relatively diverse group and cannot be placed into any one category or represented by a single stereotype. With respect to decision making, a substantial proportion of project managers tend to prefer the analytical and behavioral styles. Yet, a significant number preferred either a directive or conceptual decision style. Furthermore, project managers appeared capable of shifting to other decision styles as a backup, when the situation warrants, regardless of their predominant style. This result confirms findings by Driver, Svensson, Amato and Pate [3], that managers change their preferred decision style over time, and when faced with more complex problems, they tended to migrate toward an ‘integrated’ decision style.

Project managers are almost evenly split between left- and right-brain dominant individuals. Very few were found to be mixed-dominant. On an individual basis, the vast majority of project managers favor either a left- or right-brain approach. In addition, there is no clear tendency among project managers with regard to idea/action orientation. Similar to brain-dominance, relatively few individuals possess a tendency towards a dual orientation, preferring either an idea or action orientation. Thus, whether examined on either a brain dominance or an idea/action orientation basis, project managers do not exhibit ‘whole-brain’ tendencies.

Although more project managers fell into the staff-level decision-making category, middle-management and executive-level decision-making categories were well represented in the sample. We also found that many project managers may be classified as preferring more than one decision-level orientation.

A cross-tabulation of the various project manager characteristics and their interrelationships is summarized in Table 3. The values along the diagonal represent the number of project managers in a particular category. For example, 35 of the project managers indicated their most dominant decision style to be directive, 109 were left-brain dominant, etc. Since the method of calculating brain dominance is directly related to the individual’s decision style measures, the vast majority of left-brain dominant managers were classified as either a directive or analytical decision style. Right-brain dominant managers preferred either a conceptual or behavioral decision style. Similarly, idea-oriented managers tended to prefer either an analytical or conceptual decision style, and for action-oriented managers, either a directive or behavioral style.

Project managers that demonstrated either a dominant directive or conceptual decision style were split between a preference for either an executive or middle management level of decision making. Project managers with a dominant analytical decision style are also split, but between middle management and staff levels. Where the behavioral decision style was dominant, managers were almost exclusively focused towards a staff level of decision making.
## Table 3
A crosstabulation of style characteristics

<table>
<thead>
<tr>
<th>Most dominant decision style</th>
<th>Brain dominance</th>
<th>Action/idea orientation</th>
<th>Decision making level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directive</td>
<td>Analytical</td>
<td>Conceptual</td>
<td>Behavioral</td>
</tr>
<tr>
<td>Directive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directive</td>
<td>35</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>Analytical</td>
<td></td>
<td>56</td>
<td>53</td>
</tr>
<tr>
<td>Conceptual</td>
<td></td>
<td>33</td>
<td>5</td>
</tr>
<tr>
<td>Behavioral</td>
<td></td>
<td>71</td>
<td>14</td>
</tr>
<tr>
<td>Left Brain</td>
<td></td>
<td>109</td>
<td>5</td>
</tr>
<tr>
<td>Right Brain</td>
<td></td>
<td>97</td>
<td>59</td>
</tr>
<tr>
<td>Action</td>
<td></td>
<td>112</td>
<td>8</td>
</tr>
<tr>
<td>Idea</td>
<td></td>
<td>97</td>
<td>97</td>
</tr>
<tr>
<td>Executive</td>
<td></td>
<td></td>
<td>71</td>
</tr>
<tr>
<td>Middle management</td>
<td></td>
<td></td>
<td>92</td>
</tr>
<tr>
<td>Staff</td>
<td></td>
<td></td>
<td>135</td>
</tr>
</tbody>
</table>
When compared on a brain dominance to idea/action orientation basis, a sizable number of left-brain dominant individuals prefer an orientation towards action; however, a near equal number of project managers preferred an idea orientation. Although not as evenly distributed, right-brain dominant project managers are also split between idea- and action orientation. This grouping helps illustrate that as a whole, this group of project managers does use the ‘whole-brain’ concept.

With respect to brain dominance and decision-making level, the executive and staff levels are almost evenly distributed between left- and right-brain dominance, but for those individuals preferring a middle management approach to decision making, the left-brain dominant managers outnumber the right brain dominant by a 2.5 to 1 ratio.

Finally, with respect to the relation of idea/action orientation and executive/middle management/staff decision making levels, those project managers preferring a middle management approach prefer an idea orientation almost four times more than those preferring an action orientation. A further observation shows that, while the ratio is essentially the same factor (1.5 : 1) for executive level and staff-level decision making, the relationship is reversed, with the executive level preferring an idea orientation and the staff level preferring an action orientation.

6. Conclusions

Considering the nature of project management, the results of this study are not surprising. Depending on the current phase of project development, and depending on the nature of the project as a whole, a project manager needs to assume several different roles and utilize a variety of problem-solving approaches. The progression of a project, from initial planning and idea generation towards analysis, design, and development, requires the role of the project manager to change. The dynamic nature of project management requires a project manager to adapt to changes and situations as they occur. While a project manager may show a propensity towards a particular decision style, for example a behavioral style, he or she generally is quite capable of calling upon one or more backup styles as the need arises. Consequently, as a shift occurs in the use of a particular decision style, a corresponding shift can occur in ‘situational’ brain dominance, idea- versus action-orientation, and decision level orientation.

Project managers, on an individual basis, have very clearly defined differences in their preferred style of decision making. However, taken as a group, project managers do tend to support the suggested need for a ‘whole-brain’ approach to project management.

Appendix A. An example of a sentence-beginning and four alternative sentence-endings from the Decision Style Inventory is as follows:

My prime objective is to...

have a position with status
be the best in my field
achieve recognition for my work
feel secure in my job [7].

References

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