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Introduction

A software development project is frequently a challenging undertaking. Managing and coordinating software development efforts can be critical to successful project completion. The literature is replete with examples of software development projects gone awry, many times as a direct result of an inability to manage the project. Effective project management is crucial to successful software development and key to effective project management is management's ability to track and control the progress of the project (Rook, 1986; Zmud, 1980). Furthermore, detailed information is required to effectively track and control the potential thousands of tasks and interdependencies of a project. What this implies is the need for, and reliance upon, computerized tools to aid in the project manager's tasks.

A recent survey by the authors indicates that there are dozens of computerized project management tools currently being used. However, the question is whether the available tools are appropriately designed to support project managers. A model of the various tasks performed by a project manager indicates that the most important aspect of project management is decision making (Rook, 1986). Thus, if it can be determined that a particular tool is designed to effectively support the project manager's decision making, one would wonder why more projects are not successfully completed. However, if it can be determined that not all project managers come from the same mold and not all project managers make decisions in the same way, then more effectively designed project management tools would be warranted. The purpose of this study was to examine the various styles of decision making possessed by project managers and what influence these styles have on the use made of a computerized project management tool.

As a result of the survey, it was determined that the most popular project management tool used today (by a substantial margin) is *Microsoft Project*. Therefore, a follow-on laboratory experiment, in a field setting, was undertaken to examine the research question of whether decision style influences a project manager's use of the project management tool, *Microsoft Project*.

Methodology

The methodology began by identifying a total of 52 project managers from seven organizations throughout Kansas, Missouri, and Oklahoma. These project managers volunteered to participate in the laboratory experiment that was conducted at their place of business, using their computers. The project managers were first asked to complete the Decision Style Inventory (DSI) (Rowe, 1981), an instrument designed to measure an individual's preferred style of decision making. The DSI has undergone extensive tests for validity, including split-half reliability testing, test-retest reliability, item analysis, correlation with other test instruments, face validity based on over 1,000 personal interviews and observations in longitudinal studies that yielded over 90 percent subject agreement with the findings (Rowe and Mason, 1987). The DSI identifies four decision styles and a subject's relative propensity towards each style. The four styles are directive, analytical, conceptual, and behavioral. The relative propensity is stated as either very dominant, dominant, backup, or least. Very briefly, a directive individual is said to focus on the "here and now", prefers specific, detailed facts, and strives toward speed, efficiency, and results in a systematic manner. An analytical individual is described as having a tendency to overanalyze a situation while searching for the best solution, and is good at detail planning. An individual possessing a propensity towards a conceptual decision style prefers more ambiguity and a broad perspective, and is said to be independent and creative. A person said to possess a behavioral decision style is much more people-oriented, prefers oral to written reports, and focuses on short-term problems (Rowe and Mason, 1987).

Following the completion of the DSI, the subjects were then asked to complete four individual activities relating to a realistic case situation (Wysocki, Beck, and Crane, 1995), each of which required the use of *Microsoft Project*. These activities, typical of situations encountered on a daily basis by project managers, are described as follows. The first activity involved the creation of an initial project plan for the case scenario, given selected information about tasks, dependencies, and resources. The second activity involved examining a project plan, further into the same case scenario, and answering questions regarding variances that had occurred. The third activity involved examining another project plan, for the same case scenario, and answering questions regarding a scope change that had occurred. Lastly, the fourth activity involved examining yet another project plan, again for the same case scenario, and again answering questions regarding the effect of a change in the end date of the project.

Using data from the experiment, the following hypotheses, stated in the null form were evaluated:

- $H1_0$: Decision style has no impact on a project manager's performance in the use of a computerized project management tool.
- $H1a_0$: Decision style has no impact on the *time required* to complete a project plan using a computer project management tool.

$H1b_0$: Decision style has no impact on the level of completeness in establishing a project plan using a computerized project management tool.

$H1c_0$: Decision style has no impact on the accuracy of responses to questions about variances as presented by a computerized project management tool.

$H1d_0$: Decision style has no impact on the accuracy of responses to questions about a change of scope as presented by a computerized project management tool.

$H1e_0$: Decision style has no impact on the accuracy of responses to questions about a change of end date as presented by a computerized project management tool.

Results

The DSI provides an indication of an individual's preferred style of decision making. Four possible decision styles are identified, along with a measure of the degree of dominance of each. The four styles are directive, conceptual, analytical, and behavioral. The degree of dominance of each of these styles for each subject is labeled as very dominant, dominant, backup, or least. This research focused primarily on the dominant or very dominant decision styles, as these are obviously the most influential. Of the 52 project managers, decision styles were established to be either dominant or very dominant in the following distribution: directive--10, analytical--16, conceptual--10, and behavioral--16. Thus, each style was clearly represented.

Referring to the descriptions above of the various decision styles, it was posited that project managers preferring either a directive or analytical style would out-perform those with conceptual and behavioral styles. The selected tasks required analytical, detailed planning and task management—characteristics of the directive and analytical decision styles.

With respect to the time required to complete an initial project plan ($H1a_0$), ANOVA indicated a significant difference among the decision styles using an alpha of .05, and thus the null hypothesis was rejected. Further examination using Bonferroni and Tukey-B tests indicated that the difference was only among the behavioral style and other three styles, with the project managers possessing a behavioral style taking considerably longer to complete the task.

With respect to the completeness of this initial project plan ($H1b_0$), ANOVA indicated a statistically significant difference among decision styles using an alpha of .10, and thus $H1b_0$ was also rejected. However, with respect to the accuracy of responses to questions about variances ($H1c_0$), scope change ($H1d_0$), and change of end date ($H1e_0$), ANOVA revealed no significant differences, and thus these subsequent null hypotheses failed to be rejected.

While it is true that there is a statistically significant difference only with respect to the time required to complete an initial project plan using a computerized project management tool, the remaining results of the experiment need to be examined more closely in order to identify any recurring pattern. In fact, when comparing the relative scores of the project managers, by decision style, for each task, and in particular plotting the results against the mean score, a very interesting pattern results, as depicted in Figure 1.

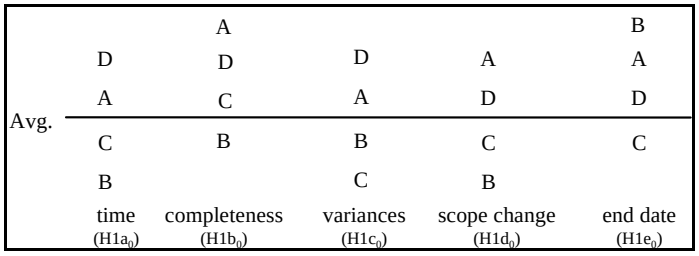

Figure 1

By examining this figure, it is clear that, based on mean performance scores, the directive (D) and analytical (A) styles consistently outperformed both the mean score and the conceptual (C) and behavioral (B) styles in all but the final task. The conceptual style did outperform the mean with regard to the completeness of the initial project plan task, but again remained behind both the analytical and directive styles. For the change of end date task, the directive and analytical styles again outperformed the conceptual style, however, the behavioral style outperformed all styles.

Conclusion

The results of this experiment indicate that there are, indeed, differences among project managers possessing varying dominant decision styles in regard to their performance in using a computerized project management tool. The results indicate statistically significant differences with respect to the time required to complete an initial project plan, and the completeness of this plan. Further research should focus on the use of a larger number of subjects in each decision style category in an attempt to gain further statistical significance in the other task areas. The recurring pattern indicated in this research, particularly if supported by additional statistical significance, implies that in order to obtain the highest levels of productivity from project managers, an appropriate collection of tools that support their preferred style of decision making is needed. Because project management depends on effective project management tools, and because it pervades the entire systems development effort, it is imperative to successful systems design to provide project managers with the tools most suited to their needs.

References

Rook, Paul. "Controlling Software Projects," Software Engineering Journal, January, 1986, 7-16.

Rowe, Alan J. The Decision Style Inventory, June 6, 1981.

Rowe, Alan J. and Mason, Richard O. Managing with Style, San Francisco: Jossey-Bass, 1987.

Wysocki, Robert K., Beck, Robert Jr., and Crane, David B. Effective Project Management: How to Plan, Manage, and Deliver Projects on Time and Within Budget, New York: John Wiley and Sons, 1995.

Zmud, Robert W. "Management of Large Sofware Development Efforts," MIS Quarterly, June, 1980, 45-55