Title: A Critical Review of "From Theory to Practice: Toward a Typology of Project-management Styles"

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Abstract: A paper titled "From Theory to Practice: Toward a Typology of Project-management Styles." is critically reviewed in this individual report.

A Critical Review of "From Theory to Practice: Toward a Typology of Project-management Styles"

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Individual research paper evaluation

Research paper

From Theory to Practice: Toward a Typology of Project-Management Styles *by* Aaron J Shenhar. (Paper No R-8 in handout).

Summary of the paper

The key point of this paper is that project management is not universal even though projects are universal. The author contends that different projects require different management styles, depending upon various factors. If an incorrect project management style is chosen for a project, the author says, it can lead to catastrophic results.

The author identifies 3 shortcomings in traditional project management textbooks and literature.

--Most of these texts are general in nature.

-Most of these texts does not distinguish between the nature of the projects and their area of operation.

-Finally, they do not recognize the operational problems specific to a project

To overcome these deficiencies, this paper treats a project as a fundamental unit of analysis and suggests a two dimensional model for classification of projects. The two dimensions being system scope and technological uncertainty. The author studies many projects that lie in the two dimensional spectrum and finds that projects differed considerably in management style, project organization and organizational practice. Thus the author suggests that managerial attitudes, management styles, tools and techniques should be appropriately chosen for each type of project.

Methodology

The projects selected for study in this paper were executed by various firms operating in military or commercial market covering industries such as electronics, aerospace, computers, chemicals etc. Many researchers interviewed the project managers, members of the project team, functional team and the customer's representatives for collecting data. The researchers were trained in organizational research methods and project management analysis. The interview consisted of open questions to interviewees about the project mission, motivation for the project and project objectives. The researchers also obtained data about project organization, managerial procedures, engineering design practices, decision making process and the like. All the data were collected using questionnaires and the responses were collected in a seven-point scale. The data analysis was done using the cross-case comparative analysis.

Project classification

This paper describes a typology for project management styles. What this means is that given a project, what project management methods should one use to succeed in the project? To answer this question, it is essential to understand how to classify a project. This paper suggests a method to classify a project based on two scales or dimensions- technological uncertainty and system scope. A project's technological uncertainty was considered to be of one of the 4 types- low tech, medium tech, high tech and super high tech.

The second dimension relates to the outcome of a project (which is a product). This product complexity is classified as an assembly, system or an array. Thus to identify the suitable management method for a project, we need to know where to place a project in these two dimensions.

Contributions of this paper –some key lessons from this paper

This paper suggests following lessons for project managers that would be very helpful to practicing managers and new managers alike:

1. Management should adopt a project specific approach to the management of projects. This means that classifying a project based on the 2 dimensional scale suggested above and using this classification to determine the management style, select project managers and members, establish proper project organization and select suitable project management tools.
2. Managers should select a more rigorous framework to weigh the risks and opportunities and to have a balanced approach to selecting the portfolio of projects.
3. Managers should use the framework mentioned in this paper to identify the technical skills and managerial development needs of the organization. They should also identify the traits required of senior managers while executing a large and complex project.
4. It is very essential to classify a project properly. For example, if a project is really high tech one and it gets classified as a medium tech, this would result in grave errors. The author cites the example of Challenger space shuttle accident, which he claims was a result of a wrongly classified project.

How does this paper compare with other researchers in this field

Evaluating the research methodology

The typological approach used in this paper has been examined in detail. Initially, I had some doubts about the efficacy of using typologies for deriving the project management strategies. I was doubtful as to how a statistical interpretation (of the interview results) could result in

providing an insight into the thought process of project management. In this context, I reviewed the work of Doty & Glick [3], who argue that typologies are indeed an acceptable method of deriving an organizational structure and strategy. Doty & Glick maintain that typologies are usually effective in providing elegant description of the complex processes that determine the final outcome. In the context of project management strategy, the use of typologies is acceptable as long as there is an equal emphasis on developing the underlying theory. Since the author provides insights into the project management strategies, the basis for analysis of this paper are indeed sound.

The art of high technology management

I reviewed the paper by Maidique & Hayes [4] and compared it with this paper. In their paper, Maidique & Hayes present a paradox of high technology management. They say that a high technology firm undergoes a constant battle between two types of behaviors- conservative and new, order and disorder. The successful high technology companies have mastered the art of managing projects differently at different times in the evolutionary cycle (of the firm). Thus they are focussed and orderly at one time and are adaptable and entrepreneurial at other times. This flexible management style is similar to the description of Type-C (high tech) projects by Shenhar [6]. Thus the description of high technology management by Maidique & Hayes is one of the many types described by Shenhar.

Strengths and weakness of this paper in terms of concepts, methodology and results

The best thing about this paper is that it is based on findings about large and diverse projects contained in a wide spectrum of technology. Therefore the nuggets of wisdom offered from this project are applicable to a wide range of projects and are not specific to any industry.

The other strength of this paper is its methodology of data collection wherein extensive data about various projects were collected. These collected data were later analyzed in the context of the theoretical framework of this paper and were found to be consistent.

Finally, the results of the paper contain key lessons for management and project managers which are very valuable.

However, there are a few weaknesses in this paper. Firstly, this paper treats all the technologies that constitute a project to be alike – be it electronics, mechanical or software. It makes no distinction between the different managerial aspects of various technologies. For example, the management of a highly evolved software technology should be different from the way a highly

evolved mechanical technology is managed. This paper does not address the inherent differences existing among various high technology fields and blankets all under one category. As an example, multiple design cycles in a high tech software functionality is quite common and desirable whereas it may not at all be feasible while dealing with a high tech mechanical or electrical system. The author has infact acknowledged this deficiency (section VIII).

The second weakness of this paper is that it does not address project management from a theoretical framework. Business consultant such as Goldratt, has suggested applying the theory of constraints to project management. This author could have done well to compare some of his conclusions with some leading theories on project management.

Concluding remarks of the paper

The purpose of this paper was to construct a conceptual model of technical projects and use this model as a framework for insights into various managerial practices in different project. The author achieved this objective by presenting the quantitative results and the summary of project trends as below:

1. As the technological uncertainty increased, the extent of development and testing activities increased progressively. Also the technical skills employed on the technologically uncertain projects were also higher. Furthermore, the technological uncertainty caused the management to tolerate longer periods of unresolved specifications, support higher intensity of communication and manage the project with more flexibility.
2. Trends along the system scope dimensions were also consistent wherein increased scope with constant uncertainty resulted in higher administrative workload. Also, the number of milestones increased and so did the bureaucracy.
3. Finally, when dealing with projects with increased technical uncertainty and increased system scope; the managers faced new challenges not usually encountered when ascending (the project) in one dimension only. These types of projects also encompass additional design related concerns such as reliability, maintainability, human factors and the like. These types of projects also required system-engineering skills in addition to the technical and engineering skills.

References and other researchers in this area

The references provided are large and adequate for this paper. But I found a need to review some recent (later than 1996) references. They are as mentioned below.

John Barben [1] addresses the need of IT projects where he addresses the high failure rate of Information Technology (IT) projects. An estimated 22% of projects do not reach completion

and 84% of remaining projects are either over budget or late. The author emphasizes the need to invest in training for employees and project managers.

Gene Bounds [2] talks about the latest trends in project management. She talks about the reader survey conducted by IIE Solutions on project management.

Justin Roe and Jeff Elton [5] review the book "Critical Chain" by Eliyahu Goldratt and explain how the theory of constraint can be applied to project management. They content that project management is a mature area that has systemic problems similar to many found in manufacturing processes and that the theory of constraint works well when dealing with individual projects.

Julia Vowler [7] talks about the importance of using a proper project management software in IT projects. She contents that software management projects are difficult because the design process is not linear (technologically uncertain and higher in system scope) and programmers work on many task simultaneously. Project management tool however, is not a substitute for good project management skills.

Ideas for future research

After going through this paper and other references, I am interested to explore the science of project management from the viewpoint of the theory of constraints. I wish to do further research on this topic during the project management course.

Citations

[1] J.Barben, "How to...avoid project disaster", *Computing*, pp. 52, May 1, 1997.

[2] G.Bounds, "The last word on project management (survey)", *IIE Solutions*, vol. 30, no. 11, pp. 41-43, Nov. 1998.

[3] H.D.Doty and W.H.Glick, "Typologies as a unique form of theory building: Toward improved understanding and modeling", *Academic Management Review,* Vol. 19, no. 2, pp. 230-251, 1994.

[4]M.A.Maidique and R.H.Hayes, "The art of high technology management", *Sloan Management Review,* vol. 26, pp. 17-31, Winter 1984

[5] J.Roe and J. Elton, "Bringing discipline to project management", *Harvard Business Review*, vol. 76, no. 2, pp. 153-157, March- April 1998.

[6] A.J.Shenhar, "From Theory to Practice: Toward a Typology of Project-Management Styles", *IEEE Transactions on Engineering Management*, Vol. 45, No. 1, February 1998.

[7] J. Vowler, "Managing, not just coping (software development and project management software)", *Computer Weekly*, pp. 20-21, Feb. 1, 1996.