Effective and Ineffective Statistical Analysis Tools in Project Management Environments:
A Real Life Study

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ABSTRACT

The study aims to investigate the effectiveness and ineffectiveness of different statistical analysis tools in project management environments. Furthermore, this study focuses on identifying some factors that affect project management by highlighting some commonly used statistical analysis tools and by evaluating ineffective analysis tools. Quantitative data was collected through participant observation, as well as a review of the relevant materials to meet these objectives. Some of the dependent variables that were tested in the study include the project manager's skills, the organization's financial status, and the affordability of the analysis tools. The independent variable is the effectiveness and ineffectiveness of the statistical analysis tools. After collecting and analyzing the data, the study finds that a tool's effectiveness or ineffectiveness depends on the dependent variables, i.e., the project managers' skills, the organization's financial status, etc.

KEYWORDS

Descriptive Statistics, Hypothesis Testing, Project Management, Statistics

INTRODUCTION

It is essential to integrate effective measures and statistical analysis in project management to minimize any chances of project failure. Radical transformations and developments characterize the modern business world, so developing and implementing business strategies from functional analysis and research is necessary. Large multinational organizations have experienced significant failures because of ineffective project analysis. For example, Samsung is among the leading technological and telecommunication companies in the world, but poor project analysis and evaluation of the product lifecycle resulted in a crisis. Such a problem highlights several dangerous aspects: the inadequate top-level support of the project, the failure to highlight project priorities and goals, the inability for stakeholders to realize the extent of the problem, and the uncertainty in managing projects at all stages.

Different scholars have tried to evaluate the leading causes of project failure. Many scholars attribute such failure to poor management practices, such as inadequate analysis and measures. According to Besner and Hobbs (2006); Axson (2007), one of the primary reasons for project failure is because stakeholders do not pay enough attention to the main activities during the conceptual stages of the management plan (i.e., research and data analysis). Axson (2007); Ahern, Leavy, and Byrne (2014); Bidani and Moalla Frikha (2018) argue that not understanding the effectiveness of the project activities is a primary reason for not completing a project. Also, a project without proper consideration of the conceptual stage is similar to manufacturing a tall building without considering a strong foundation to support it. Essentially, there needs to be something to help each decision.

Furthermore, project management is very challenging for most organizations to handle. As noted by Polyaninova (2010); Brown and Eisenhardt (1995); Yahouni, Mebarki, and Sari (2018), project management is applied by most organizations to create unique and competitive products/projects. Also, project management is a multi-dimensional process that makes success uncertain, so most scholars agree that useful analysis tools can predict future failure. While many analysis tools can be used within a project management environment, they are not all effective. The effectiveness of a project analysis tool mostly depends on its ability to deliver quality results in a particular project, the capability of the project managers, and the nature of project uncertainties. Most of the analysis tools discussed in some literature are used to create, identify, analyze, and apply various information regarding the project environments.

While the overall success of project management depends on the selection and application of the right analysis tools, it is good to identify the most useful tools. Martinelli and Milosevic (2016); Sutherland (2004) find that some techniques and tools can foster some ideas within a project management environment. Most of such methods originate in areas outside of project management and have been used for years. However, most project managers fail to distinguish the most effective tools, as previous studies have focused on evaluating and identifying different analysis tools. Since the tools' effectiveness has not been studied, a research gap has been formed. Thus, this study aims to assess the efficacy and ineffectiveness of the analysis tools used in a project management environment.

As a result, there can be a "universal" framework can be formed with the best practices and elements for all forms of project, operations, and performance. This study will also provide evidence to answer any questions from experts on this topic. For instance, this study will address maximizing on the expertise of these variables, their concepts, and models for project management and performance goals. The research findings can act as a platform for future research, and research objectives include:

- To determine some of the factors that affect project management;
- To highlight some of the commonly used statistical analysis tools in a project management environment;
- To investigate the effectiveness or ineffectiveness of the statistical analysis tools in project management;
- To evaluate the impacts of ineffective analysis tools in project management.

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