Key Risks and Challenges During Modern Building Designs in the Construction Industry

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ABSTRACT

Although the field of project management has undergone significant improvement, new challenges often make it hard for project managers to meet expectations when planning modern building designs. This article traces such challenges that the project manager must face during modern building projects, as modern building designs are complex and much riskier than traditional ones. Project managers can face different challenges throughout a project, such as a project complexity, a lack of communication, and changes in planning. These risks were studied using a risk matrix, and solutions were provided. The most dominated solution was mitigation, which illustrates that avoiding a risk entirely is highly unlikely. There are specific methods of mitigation based on the given risks, and applying these solutions can help to complete a project on time and to stay within the budget.

KEYWORDS

Construction, Design Management, Risk, Risk Management

1. INTRODUCTION

All building construction planning involves three core activities: project work breakdown, modeling and analyzing networks, and scheduling work programs. Project work breakdown entails dividing the scope of the construction work into its constituent’s sub-projects, tasks, work packages, and activities. Modeling, on the other hand, entails the creation of logical diagrams, such as network diagrams that can be used to determine the project completion time.

Lastly, scheduling work programs entail putting the time plan on a calendar basis and using the programmed schedules to forecast inputs and outputs. Work programs are vital to project management, but planning and scheduling the simple construction structures is often very easy. However, most of the modern building designs are evolving clients who regularly compete for the designs. This often puts a lot of pressure on the project managers because the success of modern building designs depends on how well the project managers can incorporate different building elements.

The new challenges associated with the modern building designs often make it hard for project managers to meet expectations when planning modern building designs. Modern buildings are becoming increasingly complex, as they usually require made-to-order designs and fabrications of different systems components that make up the building. These include concrete, walls, steel, timber, and systems such as electrical and plumbing. Each component is operated and managed by different sub-contractors, and different teams have to be incorporated together. Each team is expected to identify other team members whose responsibilities overlap with theirs. Key challenges, such as the

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complexity of modern building designs, communication, and project managers in modern building designs due to ineffective risk management, face plan changes.

The article aims to contribute to the understanding that the plan changes of the modern building designs, complexity, and communication are challenging tasks for the project managers. This knowledge will help the project’s managers to understand, to avoid, or to mitigate the emerging risks during the projects. Also, the risk management plan will be used to analyze the challenges.

The paper is justified in many ways. First, by understanding project management challenges faced by project managers, it will be easier for the client, contractors, and project managers to create and generate a feasible solution earlier. Second, the understanding of challenges will help to propose potential recommendations.

1.1. Motivation

There is plenty of literature on the importance of these variables, their concepts, and models in project management and performance. However, we do not have enough information on how project management and performance are affected by these variables, their concepts, and models. We provide this information by focusing on the aspects of these variables, their concepts, and models that are currently used in these areas. Also, we study how the variables, concepts, and models both relate and differ, so this study provides a framework with the current model’s main elements. Industries can use this as a collective outline, which can also be used for project management, performance, and operations. There are evidence-based answers in this study that respond to main questions from specialists on these variables, their concepts, and models, such as how to apply them to project management and performance goals. Thus, the research results will provide a foundation for future studies to follow.

1.2. Originality

This study contributes to existing literature by assessing the similarities and differences in project and risk management when building design projects. Data is collected from other studies and is compiled in a well-mannered approach to test this study’s hypotheses. Other research perspectives are also utilized to suggest new resolutions for building project managers regarding risk and project management.

The study employs a design-science-investigate strategy to test the hypotheses and to identify solutions for project managers. The study features identified risks that building project managers face, as well as how to tackle them. Discoveries and suggestions are found in the conclusion, which not only shows investigative limitations, but also gives ideas for future research.

By contributing to the limited amount of literature on this particular subject, this study plays a crucial role in the profession. The findings emphasize the importance of project management being alongside risk management in the building design profession and many others. Understanding these forms of management may benefit many professions and provide more general research to understand how to apply them in theory and practice.

1.3. Organizational and Managerial Contribution and Relevance

While researching for this study, it was found that risk management and project management about building design projects is not a heavily explored topic. Thus, this research fills the void of understanding how the two management practices can work hand-in-hand to benefit building design projects. The study’s results further contribute to different areas of this business, which may teach professionals and practitioners how to apply both forms of management for improved efficiency.

1.4. Contribution to the Field and Profession of Industrial Engineering

This study benefits the industrial engineering (IE) profession and research field. Based on such research, professions can economize on time, materials, money, energy, and other resources that
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