LEVERAGING INFORMTAION TECHNOLOGY FOR EFFECTIVE PROJECT MANAGEMENT: A DESIGN-ORIENTED APPROACH

Kalaitharan A/L Palanyvelu\* and Kavivarthan A/L Mannivanan

University Technology Malaysia

\*kalaitharan@graduate,utm,my

# ABSTRACT

In the modern high-speed digital age, Information Technology (IT) is a crucial enabler in the practice of Project Management (PM). In this paper, we explain how IT has revolutionized project management practices through enhanced planning, resource allocation, risk management, and communication processes. Further, we examine the tools and systems used universally in the industry, including cloud-based project management tools, collaboration software, and integrated enterprise systems. Moreover, this paper identifies the advantages of information technology in managing complex projects as well as identifies the issues involved when organizations attempt to implement technology along with traditional project management approaches. Through a review of new research and the latest industry trends, this paper provides a comprehensive analysis of the interface between project management and information technology in today's business environments.

*Keywords:* information technology, project management, impact, advantage, disadvantage

# INTRODUCTION

The growing complexity of modern projects, especially in global and multidisciplinary environments, has led to an increasing reliance on Information Technology (IT) in Project Management (PM). Information technology is not merely a supporting tool but has become an integral component in the management and execution of projects. It enables project managers to monitor progress, allocate resources effectively, and communicate with stakeholders efficiently. This paper shall try to understand the relationship between IT and project management, examine the tools and technologies involved, and provide the benefits, limitations, and future directions of the field.

# LITERATURE REVIEW

# Recent research underscores the critical position of information technology (IT) in enhancing project management results. AlShammari et al. (2020) stress the contribution of IT to operational effectiveness, especially regarding communication and resource allocation within construction operations, while Jolsin and Muller (2016) emphasize IT-supported governance structures facilitating opennesss and elevating chances for project success. Cumulatively, these observations point toward the necessity for an integrative, design-oriented approach, one where the IT tools are aligned with project objectives, business processes and stakeholder requirements. From a system analysis and design viewpoint, IT must be an outcome-based decision support solution that enables decision-Mking, performance measurement and therefore addressing technical and organizationl aspects for greaterand sustainable project results.

# IMPACT OF IT IN PROJECT MANAGEMENT

Previous studies regarding the topic given were looked for and certain impressive and relevant studies were found. A comparison analysis was conducted between two major studies which fit with the topic perfectly. One study was done regarding the impact of information technology on project management performance based from construction projects in Saudi Arabia and the other one revolves around the field of relationship between project governance and project success with involvement of information technology. Figure 1 below portrays a column chart which represents the information gathered from prior studies.

AlShammari et al. (2020)

Joslin & Muller (2016)

Figure 1: Chart regarding the impact of IT in Project Management

From Figure 1, it is evident that the involvement of IT in project management has significantly boosted communication. For instance, tools such as Microsoft Teams ensures in keeping all team members updated on task status while eliminating the need for constant check-ins. Besides, the implementation of IT has also resulted in better resource allocation. The project managers have reported that IT systems helped them to allocate valuable resources such as manpower, materials, and timelines more effectively. This step is critical for industries like construction, where delays or shortages can be costly. (AlShammari et al.(2020))

One of the most important impact provided by IT in the field of project management is yielding higher project success rate. The figure above reflects how structured**,** IT-enabled project governance contributes to success. Furthermore, digital tools help managers track milestones, budgets, and performance indicators, increasing the likelihood of on-time and on-budget completion. From the perspective of System Analysis and Design (SAD), this shows the value of integrating strategic control elements, such as reporting dashboards into system design. Lastly, IT has also improved transparency. The strikingly high number of percentage indicates that IT systems enhance visibility across teams and stakeholders through which progress, problems, and performance are clearly visible through reports and logs, accountability improves and risks are mitigated. Transparency is not just an ethical benefit, it directly supports better project outcomes by revealing issues early. (Joslin & Müller (2016)).

The column chart in Figure 1 clearly illustrates that the study by AlShammari et al. (2020) focused on operational efficiency through team coordination and logistics while the study by Joslin & Müller (2016) examined strategic oversight by showing how IT boosts control, success rates, and transparency. Together, the studies support two major roles of IT in project management, operational layer and strategic layer. This reinforces the importance of designing IT systems that address both layers, which is a core principle inSAD.

# ADVANTAGES AND DISADVANTAGES OF IT IN PROJECT MANAGEMENT

In order to obtain deeper understanding regarding the impact of IT in project management, the analysis between the advantages and disadvantages of IT in project management has been conducted. Based from the previous studies conducted which revolves around the topic and other relevant sources, one of the key advantage is IT helps in enhancing communication and collaboration among teams. Information technology bridges geographical gaps and allows diverse teams to collaborate seamlessly through shared platforms. For example, cloud-based project tools enable multiple users to work on documents, timelines, and budgets simultaneously. This fosters a more inclusive and productive environment. As a result, project tasks are completed more efficiently with input from all relevant stakeholders. Besides, IT enables automation of routine administrative tasks such as scheduling, reporting, and reminders which reduces manual workload for project managers and team members, allowing them to focus on higher-value activities. Automated workflows also reduce human error and ensure consistency. Overall, automation increases productivity and improves time management within projects.

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Another benefit of involving IT in project management is enhanced decision-making. Generally, IT systems provide real-time access to project data. This results in faster and more informative decision-making. To illustrate, Project managers can use dashboards, analytics tools, and forecasting features to identify trends and make proactive adjustments. This minimizes risks associated with delays or unexpected issues. Improved decision-making contributes to better project control and overall success. IT systems also lead towards transparency and accountability. IT systems provide visibility into all aspects of a project through dashboards, logs, and automated reports which helps stakeholders stay informed and promotes trust within the team. When roles, tasks, and timelines are clearly defined and tracked, accountability naturally improves. Transparency also aids in early detection of issues, minimizing conflicts and delays.

Although IT systems provide great benefits to project managers by improving efficiency in project managements, there are certain drawbacks as well. One of the disadvantages includes over reliance on technologies. When teams become too dependent towards using the IT systems, they may struggle to operate effectively during outages or technical failures. This reliance can reduce critical thinking and problem-solving when automated systems are not available. It also poses risks if data is lost or corrupted. Therefore, backup systems and manual skills should be maintained alongside IT use. Besides, IT systems require high cost at the initial point of its use since implementing project management software requires a significant investment in licenses, hardware, and training. For small or short-term projects, these costs may outweigh the benefits. Additionally, some systems are complex and require time to learn and adapt. This can delay early stages of a project and reduce overall efficiency if not managed properly.

Among the most critical issues in the use of information technology in project management is data security and privacy. With increased dependence on electronic media for data storage and management of project, organizations and stakeholders are more vulnerable to cyberattacks, such as data breaches, ransomware and unauthorized intrusions. These threats do not only compromise sensitive project information but also ruin the organization’s reputation and cause financial loss. The danger of accidental ore intentional exposure of data is amplified when various stakeholders and external parties use a mutual system.

A realistic example of this risk can be observed in the 2021 cyberattack on Colonial Pipeline in the United States if America, where ransomware disrupted critical operations and forced the company to halt services. While it is not a project management case per se, it illustrates how operational reliance on digital systems can pose a major risk if security measures are insufficient. (INSURICA, 2021) In project management, such violation could leak financial projections or confidential communications with stakeholders. To avoid these threats, entities involved need to practice holistic cybersecurity policies such as encryption and two-factor authentication and periodic audit system in order to safeguard both project continuity and data integrity.

# 5.0 CONCLUSION

In conclusion, Information Technology (IT) has significantly improved project management practice with enhancement in communication, use of resources, decision-making, and transparency. It has a crucial role to play at both the operational and strategic levels in facilitating improved project control and success.

Yet exorbitant expenses, over-reliance on technology, and cybersecurity risks remain significant concerns. Organizations have to balance the use of technology and human intervention and implement strong security measures. A design-led strategy in which IT tools are mapped to project goals and stakeholder needs is essential. Going forward, emerging technologies like Artificial Intelligence and Blockchain offer further opportunities to improve the efficacy of project management.

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**LOG BOOK**

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| --- | --- |
| DATE | ACTIVITY |
| 8 APRIL 2025 | Research regarding the content of topic and find resources for reference |
| 10 APRIL 2025 | Go through each references and previous studies to understand the topic and studies better – keywords and key findings are noted |
| 11 APRIL 2025 | Started working on the academic writing – abstract and introduction |
| 12 APRIL 2025 | Academic writing – literature review |
| 13 APRIL 2025 | Academic writing – content (impact of IT in project management) |
| 14 APRIL 2025 | Academic writing – content (advantages and disadvantages) |
| 15 APRIL 2025 | Academic writing – conclusion, reference and log book |
| 16 APRIL 2025 | Go through academic writing to minimize errors and submission of the academic writing |

AI PROMPTS USED:

1. “How to cite a resource as reference in APA style”
2. “How to write content in a more formal and academic way”
3. “How to edit a column chart added in Microsoft Word”