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The Significance and the Exigency of Information Management in Project Management

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ABSTRACT

Organizations use projects that are vital to their everyday work and their performance. The organization manages the projects and regarding this, organization plan, organize, choose the project personnel, monitor, control and evaluate the process. The projects of the organization must be on time. The budget and objectives must be met, to succeed. Projects must be well managed in organization to meet their objectives in the performance. The use of information system for management of projects is widely spread in many organizations. Designing, reviewing and implementation of project management information systems in different organization is very crucial issue. We live in the era of knowledge, information and unbelievable changes in the technology and innovation. The organizations must run up more quickly to be better than competitors. Information is one crucial factor in the decision making process. This study aims to investigate the significance and the exigency of these systems. In organizations, a precise, information will accelerate the process of decision making.

Keywords: Project, Management, Information System, information, Decision.

INTRODUCTION

In today's fast-paced and competitive business environment, effective project management is crucial for organizations to achieve their goals and objectives. Information systems play a vital role in project management by providing a centralized platform for real-time data collection, analysis, and dissemination. It should be noted that project management is a critical aspect of organizational success, and effective management of project scope and time is essential for delivering projects on time, within budget, and to the required quality standards (PMI, 2020). Project scope management involves defining, planning, and controlling the project scope to ensure that it meets the stakeholder's expectations (Kerzner, 2017).

Project management information systems will change and will be more integrated when manage project. In this scenario, effective data management plays a crucial role. Organizations employ various methods for data collection, ranging from Excel spreadsheets to traditional paper-based systems. Despite widespread adoption of project management information systems, many project managers remain unaware of the complete benefits, primarily because they lack a comprehensive understanding of the software's capabilities and its impact on project outcomes.

In contemporary organizations, project management has now emerged as multifaceted process of implementing assorted initiatives, all whose planning and control need a simultaneous nerve center (Meredith and Mantel, 2012). The increasingly globalized and competitive landscape of project management has undergone a significant transformation, driven by the integration of real-time information technology, innovation, and complex engineering requirements.

The purpose of this study is to investigate the impact of information systems on project management, discussing their key benefits, limitations, and recommended practices.

Statement of Problem

The absence of effective information management in project management is a pervasive issue that can have far-reaching consequences, including poor decision-making, delayed project timelines, and increased costs, ultimately compromising project success (Kerzner, 2017). Despite its importance, many organizations struggle to implement effective information management practices, resulting in information overload, fragmentation, and loss of critical project data (Alshawi & Ingirige, 2003). This can lead to a range of problems, including: Inadequate data quality and integrity, insufficient data security, poor communication and collaboration among project stakeholders, inefficient use of resources, and inability to capture and retain organizational knowledge and lessons learned, leading to repeated mistakes and lost opportunities.

The consequences of these problems can be severe, including project failure, financial losses, and damage to organizational reputation. Furthermore, the increasing complexity and scope of projects, coupled with the growing reliance on digital technologies, has created a pressing need for effective information

management practices in project management. It is in the light of the above that, this study is carried out to investigate how information can be effectively managed to promote project efficiency.

Aim and Objective of the Study

The main aim of this study is to explore the significance and the exigency of information management in project management. The specific objectives of the study are:

1. To investigate the impact of information systems on project management.
2. To examine the importance of information systems in project management.
3. To explore the role of information systems in project planning and scheduling.
4. To investigate the process of enhancing communication and collaboration with information system.
5. To assess data-driven decision making in project management.
6. To examine the challenges and future trends in information systems for project management.

Research Questions

This study is guided by the following research questions drawn in line with the objectives.

1. How does information system impact on project management?
2. What are the importance of information system on project management?
3. What role does information system play in project planning and scheduling?
4. What is the process of enhancing communication and collaboration with information system?
5. How does data-driven decision making influence project management?
6. What are the challenges and future trends in information systems for project management?

Significance of the Study

This study is significant because effective information management is crucial for project success, and its absence can have far-reaching consequences. The findings of this study will contribute to the development of best practices in project management, enhancing project delivery and organizational performance. The study's significance can be seen in the following areas:

1. Improved decision-making: Effective information management enables project managers to make informed decisions, reducing the risk of project failure.
2. Enhanced collaboration: Information management facilitates communication and collaboration among project stakeholders, promoting a cohesive project team.
3. Increased efficiency: Streamlined information management processes reduce project costs and timelines, improving overall project efficiency.

Scope and Limitations of the Study

Scope

This study is focused on the significance and the exigency of information management in project management. The content of the study is limited to:

1. The impact of information systems on project management.
2. The importance of information systems in project management.
3. The role of information systems in project planning and scheduling.
4. The process of enhancing communication and collaboration with information system.
5. Data-driven decision making in project management.
6. The challenges and future trends in information systems for project management.

Limitations

The study has the following limitations:

1. Limited generalizability: The study's findings may not be generalizable to all industries or sectors.
2. Limited scope: The study focuses on information management in project management, and may not capture other aspects of project management.
3. Time constraint: The study is limited by the time frame, and may not capture long-term effects of information management on project success.

Literature Review

Theoretical and Conceptual Framework

Theoretical Framework

This study is anchored on the Information Management Theory, which is grounded in the principles of organizational theory, management information systems, and project management.

Specifically, the study will draw on the following frameworks:\

1. **Information Management Theory:** This theory posits that effective information management is critical to organizational success, and that it involves the planning, organization, and control of information resources to achieve organizational goals (Earl, 1989).
2. **Project Management Theory:** This theory emphasizes the importance of planning, organizing, and controlling project resources to achieve specific project objectives (Kerzner, 2017).
3. **Knowledge Management Theory:** This theory highlights the importance of creating, sharing, and utilizing knowledge to achieve organizational goals (Nonaka & Takeuchi, 1995).

These frameworks will guide the study's investigation into the significance and exigency of information management in project management, and will provide a theoretical foundation for understanding the relationships between information management, project management, and organizational performance.

Conceptual Framework

Information Management System: An Information Management System (IMS) is a set of processes and technologies used to collect, store, manage, and disseminate information. IMS helps organizations make informed decisions, improve communication, and enhance collaboration. In project management, IMS supports planning, execution, and monitoring by providing timely and accurate information.

Project Management: Project management involves defining project scope, setting timelines, allocating resources, and managing risks. Effective project management ensures projects are completed on time, within budget, and to stakeholders' satisfaction. Project management can also be seen as the application of knowledge, skills, tools, and techniques to project activities to meet project requirements (PMI, 2020). It involves planning, organizing, and controlling resources to achieve specific goals and objectives (Kerzner, 2017). Project management is a temporary endeavor that has a defined beginning and end, and it is undertaken to create a unique product, service, or result (PMI, 2020).

Impact of Information Systems on Project Management

The successful execution of project management relies on planning, organizing, and controlling resources to meet specific objectives, with information systems providing critical support for decision-making, progress tracking and collaboration among team members (Kerzner, 2017). The spectrum of information systems encompasses several key types, including project management information systems (PMIS), enterprise resource planning (ERP) systems, and project portfolio management (PPM) systems. This study addresses two significant gaps in contemporary research: the unclear definition of overall project performance and the limited applicability of empirical findings across different contexts, which highlights the importance of exploring PMIS's effects on project management more comprehensively.

Information systems play a crucial role in project management by providing a structured framework for collecting, processing and disseminating data that supports decision-making, planning and execution of projects. It enables project managers and teams to track project progress, allocate resources efficiently, monitor budgets, manage risks and communicate effectively. Information systems help centralize project-related information, ensuring that all stakeholders have access to up-to-date and accurate data. This facilitates better coordination, reduces the likelihood of errors, and improves the overall success rate of projects. It supports automation of routine tasks, helping teams focus on strategic aspects of project management while maintaining control over timelines and deliverables. According to Kerzner (2009), information systems provide project managers with the tools and techniques needed to manage projects efficiently and effectively. The effective use of information systems in project management enables

project managers to deliver projects on time, within budget, and to the required quality standards, thereby achieving project success.

The key benefits of using information systems in Project Management is improved communication and collaboration among project stakeholders. According to PMI (2013), information systems provide a platform for real-time communication, document sharing and collaboration, which enables project teams to work together more effectively. For example, project management software such as Microsoft Project and Primavera provide features that facilitate communication, collaboration and task management.

Importance of Information Systems in Project Management

Information systems in project management play a vital role in ensuring that all aspects of a project are efficiently managed and monitored. This includes the management of data, resources, tasks and timelines, which are all critical components of a project. Data management involves the collection, storage and dissemination of project-related information, such as project schedules, budgets and resource allocation. Resource management involves the allocation and utilization of resources, such as personnel, materials and equipment, to ensure that they are used efficiently and effectively. Task management involves the creation, assignment and tracking of tasks and activities, to ensure that they are completed on time and to the required quality standards. Timeline management involves the creation and management of project schedules, to ensure that projects are completed on time and within budget. By efficiently managing and monitoring these components, information systems in project management enable Project Managers to make informed decisions, identify potential problems and take corrective action to ensure project success. According to Kerzner (2013), the effective use of information systems in project management can lead to improved project outcomes, increased efficiency and reduced costs. As discussed by Kerzner (2017) in *Project Management: A Systems Approach to Planning, Scheduling, and Controlling*, Information System plays an integral role in modern project management by offering tools for planning, executing, and controlling projects. Kerzner highlights that Project Management relies on the use of computer-based tools to handle the increasing complexity of projects, where manual processes would be inefficient or error-prone. Information Systems, according to Kerzner, integrates various project-related activities and enhances decision-making through real-time data access.

In *Project Management Information Systems, a Study of Their Impact on Project Success* (Baccarini, 2004), the author conducts an empirical investigation into the relationship between Information Systems (IS) and project success. The study aims to explore how Information System directly influences project success, examining the extent to which Information System can impact project outcomes. Baccarini (2004) argues that Information System can play a critical role in supporting project management activities, such as planning, scheduling and control, and that the effective use of Information System can lead to improved project outcomes. The study employs a quantitative research approach, collecting data from a survey of Project Managers and analyzing the results using statistical methods. The findings of the study suggest that Information System has a significant and positive impact on project success, with Information System being found to influence project outcomes such as project efficiency, effectiveness and quality. The study's results have important implications for Project Managers and organizations, highlighting the importance of investing in Information System to support Project Management activities and improve project outcomes.

The study demonstrates that projects that utilize PMIS (Project Management Information Systems) consistently outperform those that do not, especially in managing scope, cost and time. This article suggests that effective information systems are fundamental to tracking key project metrics, offering an essential infrastructure that enhances project outcomes.

The Role of Information Systems in Project Planning and Scheduling

Planning and scheduling are indeed crucial functions of Project Management, as they enable Project Managers to establish a clear roadmap for project execution, allocate resources effectively and ensure timely completion. Information Systems (IS) play a vital role in automating these processes, providing Project Managers with the tools and techniques needed to plan and schedule projects efficiently. Information Systems (IS) can automate tasks such as creating project schedules, allocating resources and

tracking progress, freeing up Project Managers to focus on higher-level tasks such as strategy and decision-making. Information Systems (IS) can provide real-time visibility into project status, enabling project managers to identify potential issues and take corrective action promptly. According to PMI (2013), the use of Information Systems (IS) in Project Management can lead to improved project planning, scheduling and control, ultimately resulting in better project outcomes.

As Schwalbe (2015) outlines in Information Systems for Project Managers, tools like Microsoft Project and Primavera automate and optimize the creation of project schedules, resource allocation and time tracking. These tools allow project managers to visualize project timelines, identify critical paths, allocate resources efficiently and make adjustments based on real-time updates. Schwalbe's work also highlights that such tools enable project managers to predict delays and bottlenecks early in the project lifecycle, thereby providing an opportunity for corrective actions.

In Project Management, A Strategic Approach (Morris & Pinto, 2007), the authors discuss the importance of scheduling and planning software in enhancing the precision and timeliness of project deliverables. The utilization of Information Systems (IS) in project management enables project managers to create and manipulate various scheduling models, such as Gantt charts and PERT diagrams, to optimize the allocation of time and resources. Gantt charts, for instance, provide a visual representation of the project schedule, allowing project managers to easily identify dependencies and allocate tasks to team members. PERT diagrams, on the other hand, enable project managers to analyze the critical path of the project, identifying potential bottlenecks and opportunities for optimization. By using IS to build and manipulate these scheduling models, project managers can make informed decisions about task allocation, resource utilization, and dependency management. This, in turn, enables project managers to optimize the use of available time and resources, ensuring that projects are completed on time, within budget, and to the required quality standards. According to Kerzner (2013), the use of Information Systems in project scheduling can lead to improved project outcomes, including reduced project duration, improved resource utilization and enhanced overall project efficiency. The integration of Information System, they argue, simplifies what is traditionally a complex and error-prone aspect of project management.

Enhancing Communication and Collaboration with Information System

One of the most vital functions that Information Systems (IS) perform in project management is facilitating effective communication and collaboration among project team members and stakeholders. IS enables project teams to share information, coordinate activities, and collaborate on tasks in real-time, regardless of their geographical location. This is achieved through various Information System tools and platforms, such as project management software, collaboration tools, and communication platforms. For instance, project management software like Microsoft Project and Primavera enable team members to assign tasks, track progress and share documents, while collaboration tools like Slack and Microsoft Teams facilitate real-time communication and feedback. By enhancing communication and collaboration, Information System helps to ensure that all Project stakeholders are informed, engaged and working towards a common goal. According to Gray and Larson (2011), effective communication and collaboration are critical success factors in project management and Information System plays a key role in facilitating these processes. In Managing Information Technology Projects (Schwalbe, 2015), it is noted that Information System-based tools like Slack, Microsoft Project and Primavera enable real-time collaboration between geographically dispersed teams. These tools offer features such as task management, file sharing and communication channels that help keep team members aligned and informed about project developments.

A study by Hussein and Al-Kilidar (2009), published in International Journal of Project Management, specifically examines how Information Systems facilitates collaboration across distributed project teams. Their findings suggest that Information Systems tools help reduce the challenges posed by physical distance, allowing project teams to work together seamlessly despite geographical barriers. These systems ensure that all project members are on the same page regarding project objectives, timelines and tasks significantly improving team cohesion and efficiency.

Data-Driven Decision Making in Project Management

Data-driven decision-making has become an indispensable aspect of modern project management. This approach involves making decisions based on accurate and timely data, rather than relying on intuition or anecdotal evidence. By leveraging data-driven decision-making, project managers can minimize risks, optimize resources and drive project success. However, to make informed decisions, project managers require access to accurate and timely data. This is where Information Systems (IS) play a critical role.

Information Systems are essential in providing project managers with the data necessary to make informed decisions. Information Systems can collect, process and analyze large amounts of data from various sources, providing project managers with real-time insights into project performance. This data can include metrics such as project schedule, budget, resource utilization, and quality performance. By leveraging IS, project managers can access accurate and timely data, enabling them to make informed decisions that drive project success. According to Davenport (2013), the use of data-driven decision-making in project management can lead to improved project outcomes, including increased efficiency, reduced costs, and enhanced quality. According to *The Project Management Handbook* (Cleland & Ireland, 2007), one of the primary roles of Information System is to collect and analyze project data, which enables managers to make decisions based on facts rather than intuition. Project management information systems centralize data from different project areas such as cost tracking, scheduling and resource allocation and they present it in a format that is easy to interpret and use.

Henderson-Sellers et al. (2003), in their work published in *Information and Software Technology*, discuss the integration of Information System with Enterprise Resource Planning (ERP) systems. The integration of project management systems with other organizational systems ensures that project data is aligned with other relevant data, such as financial records and human resources. This integration enables project managers to access a single, unified view of project data, which is consistent with other organizational data. Project costs can be aligned with financial records, ensuring that project expenses are accurately reflected in the organization's financial statements. Project resource allocation can as well be aligned with human resources data, ensuring that project team members' skills, availability and workloads are accurately reflected in project plans.

According to Laudon and Laudon (2012), the integration of project management systems with other organizational systems is critical for achieving organizational goals and objectives. By merging these datasets, Information System help project managers to gain a comprehensive view of the project's performance, which is crucial for making strategic decisions, identifying issues and taking corrective actions.

Challenges and Future Trends in Information Systems for Project Management

The implementation of Information Systems (IS) in project management is not without its challenges. Despite the numerous benefits that Information System can bring to project management, such as improved efficiency and productivity, there are several obstacles that must be overcome. According to Morris and Pinto (2007), some of the key challenges associated with implementing Information System in project management include system complexity, integration issues and user resistance. These challenges can arise when organizations attempt to introduce new Information System without adequate planning, training, and support.

The complexity of certain Project Management Information Systems (PMIS) tools can be overwhelming for team members who lack technical expertise. If team members are not provided with adequate training and support, they may struggle to effectively use these systems, which can diminish their effectiveness. The integration of Information Systems with existing systems and processes can also be a challenge. To overcome these challenges, Morris and Pinto (2007) suggest that organizations must commit to training, process standardization and change management. By doing so, organizations can ensure that their Information Systems are successfully implemented and that they achieve the desired benefits.

The future of project management is poised for a significant transformation, driven by the integration of emerging technologies such as Artificial Intelligence (AI), Machine Learning and Big Data. According to Kloppenborg et al. (2020), these technologies will revolutionize the role of Information Systems (IS) in

project management, enabling project managers to make more informed decisions, automate processes and improve risk management. The potential benefits of these technologies are vast and they are expected to have a profound impact on the project management landscape.

One of the key areas where these technologies are expected to make a significant impact is in predictive analytics. AI, can analyze vast amounts of historical data to identify patterns and forecast project success or failure. This enables project managers to take proactive measures to mitigate risks and ensure project success. The integration of emerging technologies such as AI, Machine Learning and Big Data will enable project managers to automate decision-making processes and improve risk management. AI-powered systems can analyze data in real-time and make decisions based on predefined rules and criteria. This can help to reduce the risk of human error and improve the overall efficiency of project management processes.

Summary of the Findings

The following are findings from the study:

1. The study found out that, information systems play a vital role in project management by providing a centralized platform for real-time data collection, analysis, and dissemination.
2. Furthermore, the study established that information system is key and fundamental to project management as it results to improve project outcomes, increase efficiency. According to Kerzner (2013), the effective use of information systems in project management can lead to improved project outcomes, increased efficiency and reduced costs.
3. Conversely, the study found out that, planning and scheduling are indeed crucial functions of Project Management, as they enable Project Managers to establish a clear roadmap for project execution, allocate resources effectively and ensure timely completion. Thus information Systems (IS) play a vital role in automating these processes, providing Project Managers with the tools and techniques needed to plan and schedule projects efficiently.
4. In addition, the study avered that, information system facilitates effective communication and collaboration among project team members and stakeholders thereby enabling project teams to share information, coordinate activities, and collaborate on tasks in real-time, regardless of their geographical location. The study posit that, this is achieved through various Information System tools and platforms, such as project management software, collaboration tools, and communication platforms. For instance, project management software like Microsoft Project and Primavera enable team members to assign tasks, track progress and share documents, while collaboration tools like Slack and Microsoft Teams facilitate real-time communication and feedback.
5. Similarly, the study with regards to data-driving decision making in project management found out that, to make informed decisions, project managers require access to accurate and timely data. This is where Information Systems (IS) play a critical role. Information Systems can collect, process and analyze large amounts of data from various sources, providing project managers with real-time insights into project performance.
6. Conclusively, according to Morris and Pinto (2007), some of the key challenges associated with implementing Information System in project management include system complexity, integration issues and user resistance. To address these challenges, there is need for integration of emerging technologies such as Artificial Intelligence (AI), Machine Learning and Big Data. According to Kloppenborg et al. (2020), these technologies will revolutionize the role of Information Systems (IS) in project management, enabling project managers to make more informed decisions, automate processes and improve risk management.

CONCLUSION

Information Systems (IS) have become an indispensable component of modern project management. They have revolutionized the way projects are planned, executed and monitored, bringing about unprecedented levels of efficiency and effectiveness. Using information System (IS) tools, Project Managers can streamline processes, automate tasks and enhance collaboration among team members.

The benefits of using IS tools in Project Management are numerous and significant. They facilitate collaboration and communication among team members, stakeholders and clients, ensuring that everyone is on the same page. Information System (IS) tools also provide real-time data and analytics, enabling Project Managers to make informed decisions and take corrective action when Information System enables projects to be completed on time, within budget and to the required quality standards. necessary. Information System (IS) tools help to identify and mitigate risks, ensuring that projects are delivered safely and with minimal disruptions. This Information System (IS) tools enable Project Managers to exercise tight control over costs, ensuring that projects are delivered within budget.

While there are some challenges associated with implementing information System (IS) tools, such as upfront costs and resistance to change, the advantages far outweigh the drawbacks. Investing in IS tools, organizations can reap long-term benefits, including improved project outcomes, enhanced collaboration and increased competitiveness. As the Project Management landscape continues to evolve, it is clear that information system tools will play an increasingly critical role in driving success and delivering results.

Organizations that will invest in Information Systems (IS) tools are more likely to achieve successful project outcomes due to the enhanced capabilities and efficiencies these tools provide. Information System (IS) tools enable Project Managers to streamline processes, automate tasks and make data-driven decisions, ultimately leading to improved project planning, execution and monitoring. Through Information System (IS) tools, organizations can also foster collaboration, identify and mitigate risks and exercise tight control over costs, resulting in projects that are delivered on time, within budget and to the required quality standards.

Recommendations

1. Utilize tools like Primavera or MS Project to streamline project planning, execution and monitoring.
2. Leverage platforms like Slack, Microsoft Teams, or Google Workspace to facilitate communication and collaboration among team members.
3. Invest in data analytics tools to gain insights from project data and make datadriven decisions.
4. Utilize risk management tools like Risk Simulator to identify, assess and mitigate project risks.
5. Implement issue tracking systems to track and manage project issues and defects.
6. Use time tracking and resource allocation tools to track time spent on tasks and allocate resources effectively.
7. Develop a knowledge management system to capture, store and share project knowledge and lessons learned.
8. Integrate information systems with existing systems, such as ERP or CRM systems, to ensure seamless data flow.
9. Provide training and support to ensure that project team members can effectively use information systems.
10. Continuously evaluate and improve the effectiveness of information systems and identify areas for improvement.

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