The Implementation of Information Technology to Improve Organizational Managerial Efficiency

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A R T I C L E I N F O

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A B S T R A C T

The role of Information Technology (IT) to improve managerial efficiency in organizations is very important, but several challenges arise in its implementation. The high cost of IT procurement and maintenance, lack of integration between IT systems, and limited technical capabilities of employees are the main obstacles in maximizing IT potential. High costs can limit an organization's ability to update technology, while the inability to integrate various IT systems hinders efficient information flow and worsens the quality of decision-making. Limited technical skills of employees to operate existing technologies lead to suboptimal use of existing systems, increasing dependency on the IT department and slowing down the adoption of new technologies. To overcome these challenges, organizations need to allocate resources wisely in IT investments, ensure better integration between systems, and provide adequate training to improve employees' technical skills. With these measures, organizations can improve operational efficiency and data-driven decision-making. This research provides insights into the importance of effective IT management to improve an organization's managerial performance and suggests approaches that can be taken to overcome the existing problems.

INTRODUCTION

In today's digital era, the development of Information Technology (IT) has brought significant changes in various sectors, including organizational management. The use of IT in business and organizational management is growing rapidly, along with rapid advances in hardware, software, and communication networks. Information technology enables companies to access, process and disseminate information more quickly and efficiently. This leads to increased productivity, reduced costs, and improved accuracy in decision-making. In many organizations, IT becomes a support tool, and has become an essential element to optimize various managerial processes, from planning to evaluation.

In particular, information technology has a major impact on managerial efficiency through Management Information Systems (MIS), which enable real-time monitoring and control of organizational performance. With MIS, managers can obtain relevant and accurate data to support strategic decision-making more quickly. IT-based tools such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) systems help companies to integrate various operational functions, accelerate internal processes, and improve response to customer needs. This phenomenon shows that IT accelerates the flow of communication and information flow, and enables managers to make more time and data-driven decisions, which in turn improves the organization's overall operational efficiency.

While information technology offers various advantages, there are major challenges in its application in the managerial world. One of the major problems faced by many organizations is the high cost of procuring and maintaining effective IT systems. Many companies, especially small and medium-sized ones, find it difficult to invest in the latest technology, as the cost of hardware, software, as well as training costs for employees is huge. Organizations should also consider long-term operational costs, such as system updates, data security protection, and regular IT infrastructure maintenance. This prevents them from utilizing the full potential of information technology to improve managerial efficiency (Laudon & Laudon, 2018).

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There are also problems in the integration of IT systems with existing processes and systems in the organization. Many companies use various IT platforms that are not well integrated, hindering the flow of fast and accurate information (Kache & Seuring, 2017). The absence of effective integration between information systems hampers decision-making, as the required information is often scattered across different departments or systems, and it takes time and great effort to merge them (Turban et al., 2018). This process also increases the risk of data errors and inconsistencies. This makes it difficult to respond to rapid market dynamics and reduces the potential for data-driven decision-making.

Another problem is related to the readiness and ability of human resources to deal with changes brought by information technology. Although many organizations have implemented IT systems, not all employees are ready to adapt to the changes. Lack of technical skills or sufficient understanding of how to utilize IT systems in daily work can lead to low effectiveness in using the technology. This problem often causes confusion for users to utilize the technology optimally, which leads to not maximizing efficiency even though the technology has been implemented (Davenport, 2013).

The effect of information technology on managerial efficiency is a very important topic to observe as IT has become the main pillar for doing business in almost all sectors (Sinambela et al., 2021). With increasing global competition and the need to act quickly in decision-making, organizations that are unable to make the most of IT can be left behind. Effective use of IT can affect various aspects of operations, from human resource management to marketing strategies. To ensure competitiveness and long-term survival, it is crucial for organizations to understand how IT can improve efficiency in managerial management, as well as the challenges that may arise in its implementation (Laudon & Laudon, 2018).

Understanding the problems faced in IT implementation is also very important to prevent greater losses. Many organizations rush into adopting IT systems without first identifying the challenges that may arise. Without an understanding of these challenges, organizations risk investing large resources in IT systems that are not well integrated or that cannot be optimally utilized. In the long-term, this can lead to wasted budgets, reduced productivity, and even failure to achieve managerial goals. By observing and analyzing existing problems, organizations can design more effective IT implementation strategies, and reduce the risk of failure and inefficiency in managerial processes (Davenport, 2013).

The purpose of this study is to analyze the impact of information technology procurement and maintenance costs on managerial efficiency in organizations. This research also aims to identify the challenges faced by organizations to integrate various IT systems, as well as their impact on information flow and decision-making. This study aims to explore the influence of employees limited technical skills to utilize information technology, and how it affects the effectiveness of using IT to improve managerial efficiency.

RESEARCH METHOD

The research method used in this research is a literature study approach, which aims to explore a deeper understanding of the role of information technology to improve managerial efficiency. This approach is considered appropriate because it allows researchers to explore various theories, concepts, and previous research findings that have been produced by experts in the fields of management and information technology (Darmawan, 2015). This approach is carried out by collecting, analyzing, and reviewing various relevant literature, both in the form of books, scientific articles, journals, and previous research reports that discuss related topics. Harrison and Rainer (2018) explain this literature study will cover various perspectives, both in terms of management theory, information technology, and relevant case studies, to provide a comprehensive overview of the issues raised.

The data collection process in this research will focus on sources that provide information on how information technology is implemented in relation to managerial, as well as the challenges that arise in its implementation. Some of the topics that will be studied are the cost of IT procurement and maintenance, the integration of IT systems in the organization, and the technical skills required by employees to utilize the technology. For this reason, this research will refer to various journal articles and previous studies that discuss IT implementation in various types of organizations, both in the public and private sectors (Brynjolfsson & McAfee, 2014).

By analyzing the existing literature, this study aims to provide insight into the factors that influence managerial efficiency through the use of information technology, as well as identify the various barriers faced by organizations in its implementation. This literature study will help formulate a clearer picture of the gap between existing theory and practice, and provide recommendations based on the findings found in the literature review (Sharma & Gupta, 2020).

RESULT AND DISCUSSION

Impact of IT Procurement and Maintenance Costs on Managerial Efficiency

The high cost of procuring and maintaining Information Technology (IT) is a significant challenge facing many organizations, especially small and medium-sized ones. Procuring the latest hardware and software, as well as licensing fees and ongoing maintenance of IT systems, can be a drain on an organization's budget. These costs are often a major obstacle that hinders effective IT implementation to improve managerial efficiency. Although technology can improve productivity and effectiveness, high costs sometimes make it difficult for organizations to allocate resources to IT, which in turn can affect their strategic decisions (Laudon & Laudon, 2018).

One of the direct impacts of the high cost of IT procurement and maintenance is the limitation of an organization's ability to invest in the latest technology. Organizations with limited budgets may not be able to update their systems according to the latest technological developments. As a result, they may be using outdated or sub-optimal systems, which can lead to inefficient managerial processes. Non-updated systems often operate more slowly and cannot handle increasingly large volumes of data, which slows down decision-making and reduces organizational competitiveness (Porter & Heppelmann, 2014).

High maintenance costs can also affect an organization's operational efficiency. Complex IT systems require ongoing maintenance and technical support to ensure that the system keeps running properly. Organizations need to allocate resources to internal IT teams or hire external consultants to handle technical issues that arise. This adds costs, and can distract managers and staff from their primary focus, which is achieving organizational goals. Reliance on external IT teams can also lead to delays in resolving issues, further hampering the rapid decision-making process (Westerman et al., 2014).

The high cost of IT affects managers in terms of budget and resource management. When organizations spend a large portion of their budget on IT procurement and maintenance, they may lack funds for other investments that are also important for organizational sustainability, such as human resource training or product development. Organizations whose budgets are locked into IT infrastructure are at risk of adaptation difficulties. This risk reducing the organization's flexibility to deal with external challenges. Brynjolfsson and McAfee (2014) explain that in the long-term, a high reliance on technology without careful financial planning can reduce an organization's competitiveness in an increasingly dynamic market.

The inability to tailor IT to the specific needs of the organization also contributes to the waste of resources. In many cases, organizations adopt generic IT systems or follow certain technology trends without conducting an in-depth analysis of the suitability of these systems to the existing structure, business processes, and work culture. While such technologies may improve efficiency in some areas, if they are not properly integrated with existing systems, they can add unnecessary complexity and cost. IT systems that are not tailored to the specific needs of the organization can lead to a failure to leverage the full potential of IT to improve managerial efficiency (Kappelman et al., 2016).

The high cost of IT procurement and maintenance can exacerbate the gap between large and small companies. Large organizations have greater resources to invest in advanced IT and update their systems quickly, while small companies may not be able to compete on the same level. This creates inequality in terms of access to technology that can improve efficiency and competitiveness. Large companies can optimize their managerial processes through the use of advanced technology, while small companies are hampered by budget limitations for investment in appropriate IT (Mithas et al., 2011).

However, while IT procurement and maintenance costs can hinder managerial efficiency, organizations can still maximize the benefits of technology with proper planning and management. A wise approach to selecting the right technology according to the organization's needs, as well as careful budget management, can reduce the negative impact of high IT costs. Training employees to improve their skills to make the most of technology can also help organizations maximize their IT investments and improve overall efficiency (Vargas et al., 2017).

Challenges of IT System Integration in Decision Making

Lack of integration of Information Technology (IT) systems in an organization can have a significant impact on information flow and decision making. When the various IT systems in an organization are not connected or function separately, the information needed to support managerial processes is often scattered across different systems. This hinders quick and efficient access to accurate and relevant data, slowing down the flow of information needed to make timely decisions. Isolated systems can lead to data duplication, information inconsistencies, and errors in analysis, which ultimately affect the quality of decisions taken by managers (Hitt et al., 2017).

Poor integration between IT systems also causes difficulties in communication between departments (Banaeianjahromi & Smolander, 2019). Each department in the organization may use different IT devices and applications, which do not communicate well with each other. This slows down the process of information exchange between departments, which is crucial to support effective coordination. In the decision-making process, managers need integrated and real-time data to respond to rapid business dynamics. Turban et al. (2018) emphasized that without good integration, managers tend to rely on incomplete or outdated information, which can lead to inappropriate and suboptimal decisions.

Another impact is the increased time required to collect and process information. When data is spread across multiple systems and formats, the process of gathering information becomes more complicated and time-consuming (Hu et al., 2014). For example, a manager who needs to access sales, financial and inventory data to make decisions may have to collect data from several different systems and combine them manually. This reduces the time that can be used for more in-depth analysis and strategic decision-making. As a result, decisions can be slower and less responsive to rapidly changing market conditions (Laudon & Laudon, 2018).

The inability to properly integrate IT systems can also lead to difficulties in more complex data analysis. Many organizations rely on data to make evidence-based decisions. Without proper integration between systems, data collected from various sources may not be fully analyzed (Gardi & Darmawan, 2022). This limits the organization's ability to produce comprehensive, data-driven analytical reports that can be used to make more informed and strategic decisions. In other words, decisions taken may only be based on partial information, which reduces the effectiveness and efficiency of the decision-making process (Chen et al., 2012).

In managerial processes, decision-making based on non-integrated information can lead to inconsistent decisions. When managers make decisions based on data coming from disconnected systems, there is a great risk that those decisions are not aligned with decisions made by other managers in different departments or divisions. Scattered and unsynchronized information between divisions can create imbalances in decision-making. This can lead to inefficiencies, confusion, or even internal conflict within the organization. According to Bharadwaj et al. (2013), these mistakes can also risk costing the organization in the long-term because the decisions taken do not reflect a full and comprehensive picture of the situation at hand.

Lack of integration of IT systems can also affect an organization's ability to adapt to changes in the external environment, such as changes in market demand or changes in regulation. Poorly integrated IT systems will struggle to provide the information needed to respond quickly to changes. For example, if an organization does not have an integrated system to track changes in customer demand in real-time, managers may be late to make decisions regarding product production or distribution. According to Westerman et al. (2014), this risk reducing the organization's competitiveness because it cannot respond to changes quickly and effectively.

Finally, poor integration between IT systems can affect overall organizational performance. Non-integrated systems lead to fragmented information management, which negatively impacts operational efficiency and data-driven decision-making. The inability to combine information from different departments and systems can also lead to decision-making confusion, slow down business processes, and reduce the organization's ability to make timely and data-driven decisions. Good IT system integration is essential to improve operational efficiency and ensure more informed and responsive decision-making (Brynjolfsson & McAfee, 2014).

The Effect of Employee Technical Skill Limitations on the Effectiveness of IT Use

The limited technical skills of employees to manage and utilize information technology (IT) can be a significant obstacle for organizations to improve managerial effectiveness. Information technology today plays an important role in decision-making, data management and productivity improvement. However, if employees do not have adequate technical skills to operate IT systems, the potential of the technology cannot be fully utilized. This can lead to sub-optimal use of existing systems thus lowering managerial efficiency and effectiveness in organizations (Sparrow, 2016).

One of the main impacts of limited technical skills is the difficulty of using complex management information systems (MIS). A MIS designed to facilitate data-driven decision-making requires an understanding of how to access, process and analyze data. Employees who are not skilled to use these systems may find it difficult to generate accurate reports or even to use advanced features that can help managers to make better decisions. Without sufficient technical skills, employees may only be able to operate the system at a basic level, which limits its potential to support management more strategically (Davenport, 2013).

Limited technical skills can slow down the adoption of new technologies in organizations. Organizations adopting advanced technologies such as ERP systems or big data analytics require specialized training for employees to use the technology effectively. When employees' technical skills are limited, the process of adopting new technologies becomes slower and challenging. This prevents organizations from taking advantage of the benefits of the latest technology, and creates discomfort for employees who have to adjust to the changes. Brynjolfsson and McAfee (2014) statute that a slow adaptation process can cause organizations to fall behind in terms of speed and accuracy of decision-making.

Limited technical skills also lead to operational errors and increased human error. Inefficient or incorrect use of IT to operate software can result in errors in data processing, which impacts inappropriate decision-making. For example, errors to enter data or misinterpretation of information can result in inaccurate reports, which then affect managerial decisions based on the data. These kinds of errors can be very costly, especially in industries that depend on the accuracy and speed of data for decision-making (Westerman et al., 2014).

A further impact of limited technical skills is reduced collaboration between teams or departments within the organization. Modern IT systems are often designed to support cross-departmental collaboration and facilitate real-time information exchange. However, if employees lack the necessary technical skills to utilize these systems, collaboration is hampered. Slow or inefficient communication flows can lead to communication errors, delays in decision-making, and lost business opportunities. In other words, limited technical skills can create information silos that hinder teamwork efficiency and reduce an organization's ability to respond to market needs (Zhu et al., 2017).

Limited technical skills can also exacerbate dependence on the IT department. When employees do not have sufficient technical skills, they more often rely on support from internal or external IT teams to solve simple technical problems. This can put a strain on the IT team, which should focus on system maintenance and further technology development. Over-reliance on the IT department for simple day-to-day tasks reduces operational efficiency and can hinder innovation in the use of IT throughout the organization (Henderson & Venkatraman, 1999). Organizations need to develop technical training programs to improve employee digital literacy equally.

Finally, limited technical skills among employees can also affect their level of satisfaction and motivation. When employees feel incompetent to use existing technology, they may feel frustrated or depressed, which impacts their morale and productivity. On the contrary, employees who have sufficient technical skills tend to be more confident to carry out their tasks and are more motivated to contribute maximally in the organization. Organizations should invest in technical skills training to ensure that employees have the necessary knowledge and abilities to effectively utilize IT in management (Brynjolfsson & McAfee, 2014).

CONCLUSION

The conclusion that can be drawn from this whole discussion is that information technology (IT) plays a very important role to improve managerial efficiency in organizations, but there are several challenges that hinder the maximum potential of IT. First, the high cost of IT procurement and maintenance is one of the main barriers for organizations, especially those with limited resources. These high costs limit an organization's ability to update technology regularly, and strain budgets that could otherwise be used for other investments. The lack of integration of IT systems within organizations worsens information flow and decision-making. Isolated or poorly connected systems slow down the communication process between departments and worsen the quality of decisions made, as the data needed is not available quickly and accurately. Furthermore, limited technical skills of employees are also a hindering factor in the effective utilization of IT. Employees who do not have sufficient skills to use complex IT systems can cause operational errors, increase dependency on the IT department, and slow down the adoption of new technologies.

Suggestions that can be given to overcome these problems are first, organizations need to allocate resources wisely for investment in IT, both for procurement and maintenance, by considering the long-term costs and benefits obtained. It is important to ensure better integration between various IT systems in the organization to enhance smoother information flow and more timely decision-making. The implementation of integrated systems can improve efficiency and allow managers to make decisions based on more accurate and up-to-date data. Ongoing training to improve employees' technical skills is also indispensable. Organizations should provide adequate training to enable employees to operate IT systems effectively so that they can leverage technology to improve performance and managerial effectiveness. With the right investment

in IT and improvement of employees' technical skills, organizations can maximize the potential of technology to improve operational efficiency and better decision-making.

Overall, the successful implementation of IT to improve managerial efficiency depends on the technology itself, and on appropriate strategies in resource management, system integration, and employee skill development. Organizations that are able to overcome these challenges will have a greater competitive advantage to deal with increasingly complex market dynamics.

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