The Role of Leadership in Managing Information Technology Change and its Impact on Organisational Human Resources

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ABSTRACT

The development of information technology (IT) has significantly changed the way organisations operate and communicate. In the digital era, organisations that want to remain competitive and relevant must be able to manage information technology changes well. The purpose of this study is to examine the role of leadership in managing information technology change and its impact on organisational HR. This research is a literature review that utilises qualitative methods, which means that it will analyse and interpret data by utilising information and text derived from various sources. The results of the study show that the role of leadership in managing information technology change is very important in the ever-evolving digital era. Leaders must have a deep understanding of technology, formulate a digital transformation strategy, and guide the organisation through the change. The impact of effective leadership is increased productivity, innovation, and organisational competitiveness. However, technological change also impacts the organisation's people, and leaders must ensure that people have the necessary skills and knowledge, and create a culture that supports innovation and continuous learning.

ABSTRAK

Perkembangan teknologi informasi (TI) telah mengubah secara signifikan cara organisasi beroperasi dan berkomunikasi. Dalam era digital, organisasi yang ingin tetap kompetitif dan relevan harus mampu mengelola perubahan teknologi informasi dengan baik. Tujuan penelitian ini untuk menelaah peran kepemimpinan dalam mengelola perubahan teknologi informasi dan dampaknya pada SDM organisasi. Penelitian ini adalah sebuah review pustaka yang memanfaatkan metode kualitatif, yang berarti bahwa akan melakukan analisis dan penafsiran data dengan memanfaatkan informasi dan teks yang berasal dari berbagai sumber. Hasil studi menunjukkan bahwa peran kepemimpinan dalam mengelola perubahan teknologi informasi adalah sangat penting dalam era digital yang terus berkembang. Pemimpin harus memiliki pemahaman yang mendalam tentang teknologi, merumuskan strategi transformasi digital, dan membimbing organisasi melalui perubahan tersebut. Dampak dari kepemimpinan yang efektif adalah peningkatan produktivitas, inovasi, dan daya saing organisasi. Namun, perubahan teknologi juga berdampak pada SDM organisasi, dan pemimpin harus memastikan bahwa SDM memiliki keterampilan dan pengetahuan yang diperlukan, serta menciptakan budaya yang mendukung inovasi dan pembelajaran berkelanjutan.

1. INTRODUCTION

The development of information technology (IT) has brought about profound changes in the operational and communication landscape of organisations (Basir et al., 2023; Sudirjo et al., 2023). In the ever-evolving digital era, organisations are not only faced with the challenge of maintaining their competitiveness, but also need to have a strong capability to manage the continuous changes in information technology. These changes range from the introduction of new state-of-the-art systems, the adoption of new technologies that can improve efficiency, to digital transformation that involves a fundamental restructuring of an organisation's business processes. The implementation of new systems allows organisations to leverage the latest technology, improve productivity and deliver better services to customers (Rajapathirana & Hui, 2018). Meanwhile,

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the adoption of the latest technologies, such as artificial intelligence, data analytics and cybersecurity, helps organisations understand market trends and identify emerging opportunities. In addition, digital transformation can change the way organisations work by integrating IT into all aspects of operations, resulting in more efficient processes and more responsive interactions with customers (Kraus et al., 2022). Thus, the ability to manage and leverage changes in information technology has become the key to success for organisations that want to stay relevant in this digital age.

Leadership is a central component that plays a critical role in managing information technology (IT) change in organisations (Sow & Aborbie, 2018). Effective leadership not only serves as a guide, but also as a catalyst for successful change. On the other hand, ineffective leadership can lead to obstacles and uncertainties that can be detrimental to the organisation. Therefore, deeply understanding the role of leadership in the context of managing IT change is essential to ensure that the organisation can deal with the change well. It is important to recognise that the role of leadership in managing IT change is not limited to technical aspects, but also has a significant impact on the organisation's human capital. Leadership that is able to clearly articulate the vision for change, define measurable goals, and inspire the team with a commitment to change, can help minimise internal resistance and motivate people to actively participate in change (Steinmann et al., 2018). Moreover, leadership that understands the various impacts of change on people and provides appropriate support can create an environment conducive to individual adaptation, learning and growth. Therefore, the role of leadership in managing IT change goes beyond managing the technological aspects, but also includes managing the people and organisational culture that are critical elements in the success of the change (Sutrisno, 2023).

Changes in information technology (IT) often have a significant impact on the human resources (HR) of an organisation (Wahyoedi et al., 2023). The IT change process can change the duties and responsibilities of employees, sometimes significantly (Ali & Hassan, 2022). In addition, these changes can also create an increased need for training and development of employees to ensure that they have the necessary skills to keep up with fast-paced technological developments. During periods of IT change, employees can also experience psychological impacts, including uncertainty about the future of their jobs and resistance to changes they may experience. Leadership has a pivotal role in shaping how HR deals with these IT changes. Effective leadership is able to provide clear direction and emotional support to employees during periods of change, help them adapt to the changing environment, and see change as an opportunity for growth and development (Li et al., 2019). With effective communication, leadership can help overcome uncertainty by providing a strong vision and inspiring employees to actively participate in the change. In addition, leadership that is responsive to employees' training and development needs will help ensure that they have the necessary skills to successfully deal with IT changes. In essence, the role of leadership influences not only how an organisation manages IT change, but also how employees interact and thrive in a changing work environment.

In addition to evaluating the role of leadership in the face of IT change, organisations must also recognise the need to create a culture that supports continuous innovation and adaptation to new technologies. In an era where IT change is constant, organisations that want to stay relevant need to understand that leadership plays a key role in shaping a culture that encourages creativity and innovation (Kozioł-Nadolna, 2020). Visionary leadership has the ability to inspire employees to think outside the box and look for new solutions in managing IT change (Ariani et al., 2023). They not only see technology as a tool, but also as a source of untapped innovation potential. Leadership that is proactive in driving innovation can create a competitive advantage for the organisation. They stimulate collaboration, facilitate the exchange of ideas, and create an environment where new ideas are given value. In this situation, innovation becomes not only expected, but empowered, so that the organisation is able to adopt new technologies quickly and leverage them to achieve business goals. Leadership that promotes a culture of innovation is therefore a key element in IT change, which not only moves organisations towards a brighter future, but also helps them compete effectively in a changing world.

This research aims to delve deeper into the role of leadership in managing IT change and its impact on organisational HR. With a better understanding of this role, organisations can develop more effective leadership strategies in facing the challenges of rapid information technology change. In addition, the results of this research can also provide valuable insights for organisational managers and leaders in better managing IT change and maximising the potential of their people in a dynamic IT environment.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Leadership

Leadership is the ability or process of an individual to guide, motivate, direct, and influence individuals or groups in achieving predefined goals (Cahyono et al., 2023). It involves various aspects such as decision-making, communication, task delegation, problem-solving, and developing a vision to achieve shared objectives. Leadership is not only related to one's position or role within an organization but also pertains to an individual's ability to influence others, regardless of their status or hierarchy (Suherlan, 2023; Zen et al., 2023). Some key points in the concept of leadership include:

1. Influence: Leadership involves the ability to influence others. A leader can motivate, guide, and persuade others to willingly follow their direction or vision.
2. Vision and Goals: Leaders have a clear vision and specific goals to achieve, whether in an organizational, group, or specific project context. They can communicate this vision to others and motivate them to contribute to its attainment.
3. Communication: Effective communication is a key aspect of leadership. Leaders must articulate their vision, goals, and instructions clearly so that everyone can understand them.
4. Decision-Making: Leaders often face situations where they must make important decisions. The ability to make good decisions is a crucial characteristic of a leader.
5. Problem Solving: Leaders frequently encounter challenges and problems that need resolution. They must identify issues, analyze them, and find effective solutions.
6. Motivation: Leaders must be able to motivate others to achieve shared goals. This may involve providing rewards, recognition, moral support, or setting an example through their actions.
7. Delegation: A leader should also be capable of efficiently and effectively assigning tasks and responsibilities to team members or subordinates. Delegation helps distribute the workload and allows individuals to grow.

Leadership can manifest in various contexts, including business, politics, education, and society (Said Ahmad et al., 2023). Leadership can take various forms, such as authoritative leadership, democratic leadership, transformational leadership, or others, depending on a leader's style and approach in guiding and motivating others (Karneli, 2023).

Information Technology (IT)

Information Technology (IT), often abbreviated as IT, refers to a collection of tools, systems, infrastructure, software, hardware, and practices used to collect, manage, store, transmit, and access information (Prastyaningtyas et al., 2023; Wanof, 2023). IT serves to process data and information, whether on a personal, business, or governmental scale, and facilitates communication, analysis, and decision-making (Sutrisno et al., 2023). Here are some key components of Information Technology:

1. Hardware: This encompasses all physical components like computers, servers, network devices, data storage devices, printers, and other peripherals used to process and store information.
2. Software: This includes computer programs, applications, operating systems, and other software used to perform various computer tasks, such as data processing, analysis, and information management.
3. Communication Networks: Network infrastructure like the internet, intranets, local area networks (LANs), and mobile networks enables communication and data exchange among various devices and users.
4. Data: Data serves as the raw material of IT. Data includes facts, numbers, text, images, and sound collected and processed to produce useful information.
5. Business Processes: Business processes include workflows, practices, and procedures used within organizations to manage, process, and interpret data and information.
6. Information Management: This involves strategies and practices for efficiently and effectively collecting, storing, securing, and managing information.

Information Technology plays a crucial role in various aspects of our lives, including business, education, government, healthcare, entertainment, and more (Mahardhani, 2023). In business, IT is used to enhance productivity, manage operations, communicate with customers and business partners, and analyze data for better decision-making. In education, IT supports the learning process, student data management, and school administration. Furthermore, IT enables innovation through mobile apps, e-commerce, social media, and many other digital services that have transformed the way we live and interact (Ausat, 2023; Azzaakiyyah, 2023).

Organizational Human Resources (HR)

Organizational Human Resources (HR) refers to all individuals working within an organization or company (Gadzali, Ausat, et al., 2023). HR is a valuable asset to the organization as they contribute to the execution of tasks and the achievement of organizational goals (Gadzali, Gazalin, et al., 2023). HR is often referred to as "workforce" or "personnel." Here are some key components that form organizational HR:

1. Employees: These are individuals employed by the organization to carry out various tasks and responsibilities in line with their positions and roles within the organizational structure.
2. Skills and Qualifications: Organizational HR possesses diverse skills, education, and experiences required to execute their jobs. This includes levels of education, training, certifications, and work experience.
3. Leadership and Management: Organizational HR also includes managers and leaders responsible for managing, directing, and motivating employees. Effective leadership and management are critical for HR development and productivity.
4. Organizational Culture and Values: Organizational culture and company values influence the behavior and performance of HR. Organizations with cultures that support collaboration, innovation, and personal growth are better equipped to motivate and retain quality employees.
5. Development and Training: Organizations often provide training and development opportunities to employees to enhance their skills and knowledge. This includes technical skills training, leadership development, and other relevant training.
6. Employee Well-being: Employee well-being, which includes factors like compensation, benefits, work-life balance, and a healthy work environment, can affect employee satisfaction and productivity.
7. Diversity and Inclusion: Organizational HR encompasses a variety of backgrounds, skills, and experiences, promoting inclusivity in the workplace. Diversity in teams can bring different perspectives and creative ideas.

Effective HR management is key to achieving organizational success. Organizations capable of recruiting, developing, and motivating quality HR are more competitive, innovative, and likely to achieve their goals. Therefore, HR management involves various aspects, including recruitment, training, performance evaluation, career development, and conflict management.

3. RESEARCH METHOD

This study constitutes a qualitative literature review, indicating that it will analyze and interpret data by relying on information and texts from a variety of sources. The primary focus of this qualitative literature review revolves around gathering, evaluating, and consolidating existing knowledge pertaining to the topic of interest, specifically, the role of leadership in managing changes in information technology and its impact on organizational human resources. Throughout this investigation, data will be sourced from diverse, relevant sources such as academic journals, books, research papers, and various articles. The temporal range for data retrieval extends from 1992 to 2023, thereby enabling the researcher to observe transformations, trends, and developments that have occurred during this time frame.

The qualitative methodology employed in this literature review provides researchers with the ability to elucidate and delineate complex and multifaceted subjects in greater depth (Elo et al., 2014). Additionally, this approach facilitates the inclusion of multiple sources of information and encompasses various perspectives, thus enhancing the analysis and strengthening the credibility of the findings. The data collection process will involve careful scrutiny of textual content, the search for relevant information, and the categorization of data pertinent to the research topic. As a result, the author will organize this information in a structured format, compare and integrate findings from various sources, and identify patterns, themes, and trends that emerge from the collected data.

One of the significant advantages of using a qualitative literature review lies in its adaptability for comprehending and explaining complex phenomena, as it is not constrained by numerical or statistical parameters (Rahman, 2016). Furthermore, this method allows researchers to gain profound insights into the evolution of the subject matter over the specified period, as well as the evolution of concepts and perceptions related to the subject over the years. In the context of this research, it is essential to scrutinize the credibility and reliability of the sources used, as well as critically analyze the gathered information. Employing a qualitative methodology requires the researcher to maintain objectivity and reflexivity when presenting findings,

provide clear and precise interpretations, and acknowledge the inherent limitations in the methods and data used (Bradshaw et al., 2017). Ultimately, the conclusion drawn from this research effort aims to provide a comprehensive overview of the evolution of the subject matter under consideration over the time span from 1992 to 2023, potentially offering recommendations for future research endeavors that may further enhance the understanding of issues related to the subject matter.

4. DATA ANALYSIS AND DISCUSSION

The role of leadership in managing and guiding organisations through information technology (IT) change and its impact on human resources (HR) is essential amidst the transformation turmoil that characterises the rapidly evolving digital age. An organisation's success in dealing with IT change depends not only on the adoption of the latest technology, but also on the leadership's ability to shape an inclusive and innovative culture of change (Konopik et al., 2022). IT developments have fundamentally changed the way businesses and organisations operate, creating new demands in strategy, management and people development. Therefore, effective leadership in managing IT change is not just an option, but a necessity that determines the sustainability and competitive advantage of an organisation. In this changing context, leadership plays a key role in guiding organisations through IT changes that may bring complexity and uncertainty. Leadership that is able to understand and communicate the strategic vision of change, inspire employees to adapt, and provide the necessary support, will help overcome resistance and facilitate smoother change (Hubbart, 2023). In addition, the impact of IT change on an organisation's people is an important aspect that requires special attention. Employees must be able to develop new skills, adapt to changing roles, and understand the psychological impact of the change. Leadership that can create an environment that supports growth, learning, and innovation in managing people is a key component in maintaining organisational success in this digital era full of challenges and opportunities.

Information technology has become the backbone of modern business, and there is no doubt that technological developments such as the internet, cloud computing, data analytics, artificial intelligence (AI), and the Internet of Things (IoT) have driven profound changes in the business landscape (Rocha & Kissimoto, 2022). This transformation covers a number of aspects, including how organisations interact with customers, collaborate with partners, and manage their operations. We have witnessed significant changes in the way products and services are delivered to customers, where technologies such as e-commerce and mobile apps have transformed the way consumers shop and interact with brands. In addition, changes in the way data is collected, analysed and leveraged have helped organisations make smarter decisions and gain competitive advantage (Barham, 2017). However, while these technologies bring countless opportunities, they also often lead to significant challenges and uncertainties in terms of how organisations adapt and leverage these technologies effectively. In the context of rapid and complex information technology change, strong leadership is a must. Effective leadership will help organisations deal with uncertainty, articulate a strategic vision for the use of technology, and motivate teams to adopt change with conviction. They will understand that managing this change involves not only technical aspects, but also the management of human resources, organisational culture, and business processes. Strong leadership in the face of information technology change is key to helping organisations adapt, grow, and remain competitive in this ever-changing era (Tagscherer & Carbon, 2023).

To successfully manage information technology change, the leadership role is not just about understanding, but also about formulating a clear vision to shepherd the organisation through these changes successfully. First of all, leaders need to have a deep understanding of the impact of the technology on the business and organisational goals. They must be able to bridge the gap between technology and business strategy by exploring how the technology can be used to benefit the organisation. This includes a thorough understanding of the various aspects of technology, including its benefits in terms of operational efficiency, increased productivity and better market understanding, as well as its risks such as data security and the uncertainty associated with adopting new technologies. In addition to a strong technical understanding, effective leaders must also be able to integrate these technological changes with existing business strategies or formulate new strategies that are relevant and future-orientated. When leaders have a strong vision and are able to articulate it clearly, they can become change agents that inspire and motivate the entire organisation (Martin et al., 2014). Visionary leaders will be able to identify opportunities to improve operational efficiency, provide better service to customers, and create competitive advantage by adopting the right technology (Atthirawong et al., 2021). They will also be able to manage the psychological impact of change that may occur

in the organisation, such as resistance and anxiety related to change. In other words, leaders who are able to take a proactive role in understanding, planning and managing information technology change are a key element in organisational success in this changing era.

Furthermore, in the face of information technology change, leaders must actively involve themselves in guiding the organisation through this transition. This includes not only an understanding of technology, but also the ability to develop a clear vision of how information technology can be used to achieve organisational goals. Effective leaders will formulate an appropriate digital transformation strategy that not only considers the latest technology trends, but also creates an optimal balance between organisational goals and the potential of technology (Verhoef et al., 2021). By having this strong vision, leaders can effectively communicate it to the rest of the organisation, so that every team member understands the direction being taken and feels involved in this change. More than that, leaders also need to identify and address barriers that may arise during the change process. This includes overcoming resistance that may arise from some human resources (HR) who may be uncomfortable with the new technology or concerned about the impact it will have on their role in the organisation. During the change process, leaders should play a major role in devising solutions to overcome such barriers, focusing on effective communication, training and support to employees. In addition, they should facilitate collaboration and knowledge sharing between different teams and departments to maximise the benefits of information technology. This involves leaders promoting a culture open to change and innovation, where employees feel comfortable in sharing new ideas and learning from each other's experiences. In other words, leadership in the face of information technology change is about being a change agent who is visionary, communicative and responsive to the changes that are happening in the business world (Kadhum et al., 2023).

The key impact of effective leadership in managing information technology change extends to many vital aspects of the organisation. Increased productivity, innovation and competitiveness are the fruits of leadership that is able to guide organisations in adopting the right technology (Asrarudin, 2023). Besides managing people to master the necessary skills, effective leaders facilitate changes that enable organisations to optimise their business processes. This means introducing new efficiencies, reducing operational costs, and improving overall operational efficiency. In this regard, information technology becomes a powerful tool in improving an organisation's productivity and competitive advantage, by enabling employees to work smarter and more effectively (Attaran et al., 2020). In addition, information technology also enables organisations to be more responsive to dynamic market changes. Leaders who are able to navigate these changes wisely enable organisations to quickly adapt their business strategies and take advantage of new opportunities that arise (Tulasi et al., 2019). With faster and better access to market data and consumer trends, organisations can make more informed and proactive decisions. This creates a stronger competitive edge in an ever-changing business environment and enables organisations to continue to be leaders in their industry. All in all, the positive impact of effective leadership in managing information technology change helps organisations not only to survive, but also thrive in this dynamic digital age.

While technological change brings great benefits to organisations, it should be noted that the impact can also be very significant on the human resources (HR) within the organisation. Leaders have an important responsibility in ensuring that the organisation's people have the necessary skills and knowledge to deal with these changes effectively. In an ever-changing reality, this may require major efforts in terms of training and development. What's more, leaders may also need to consider additional recruitment from outside the organisation and plan for the necessary restructuring to maximise the potential of existing human resources. In the context of technological change, leadership should also pay attention to the importance of creating an organisational culture that supports innovation and continuous learning (Kundi et al., 2021). A culture that encourages employees to think creatively, create new solutions, and be open to change is key in enabling the organisation to continue to thrive (Zhang et al., 2023). Therefore, leaders must play a critical role in communicating the importance of this culture of innovation and learning, as well as ensuring that the necessary steps are taken to facilitate this process. In doing so, leaders not only ensure that people have the necessary knowledge and skills, but also create an environment where they feel supported to continue learning, adapting and evolving in the face of continuous technological change.

It should be recognised that technological change not only has an impact on the technical aspects of the organisation, but also on the social (Ohara, 2023) and psychological aspects of human resources (HR). In this context, leaders have a sensitive role in dealing with the emotional responses of their team members to these changes. Change often brings up feelings of anxiety and uncertainty, and leaders need to confront these

feelings with empathy and care. Listening to team members' concerns and needs is an important first step to creating a supportive work environment during this period of change (Jonsdottir & Kristinsson, 2020). In addition, leaders also have an important role in motivating team members to adapt and take an active role in the change. This can include clarifying the benefits of the change for them individually, providing support for the development of new skills, and providing opportunities to participate in the change. In this way, the leader not only acts as a driver of change, but also as an emotional supporter and motivator that helps overcome psychological barriers that may arise during the technology change process. With an empathic approach and a focus on empowering people, leaders can help create an environment that facilitates smoother adaptation and supports the well-being of team members in the midst of change.

In summarising, it cannot be ignored that leadership plays a very important role in managing information technology change and its impact on human resources (HR) in organisations. The importance of competent leaders in this regard includes not only a deep understanding of technology, but also skills in formulating digital transformation strategies that are relevant to organisational goals. They are also expected to guide the organisation through such changes with a clear vision, which includes the integration of information technology with existing business strategies or the establishment of innovative new strategies. With strong and visionary leadership, organisations can optimise the full potential of information technology to achieve sustainable competitive advantage. In addition, effective leaders also recognise the importance of the social and psychological impact of change on team members, and they take an active role in helping team members cope with feelings of anxiety and uncertainty that may arise during periods of change. In the overall picture, leaders who have a dominant role in managing information technology change become pioneers in value creation for the entire organisational ecosystem.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The role of leadership in managing information technology change is becoming increasingly important as the digital era continues to develop. Leaders are not only expected to have a deep understanding of technology, but also to be able to formulate digital transformation strategies that are relevant to the organisation's goals and vision. In carrying out this role, leaders are not only the drivers of change, but also the mentors who guide the organisation through this complex journey of change. The impact of effective leadership in managing change includes increased productivity, innovation and organisational competitiveness in a changing marketplace. In addition, it is important to recognise that technological change also impacts the human resources (HR) in the organisation, both technically and psychologically. Therefore, leaders must actively ensure that people have the necessary skills and knowledge to deal with these changes, which may involve training, development and organisational restructuring efforts. In addition, they must also create a culture that supports innovation and continuous learning, where employees feel supported to continuously grow and adapt to evolving technologies. In this overall context, leadership that is responsive to technological change is a key pillar in achieving competitive advantage and long-term organisational success in this digital age of challenges and opportunities.

The implication of the role of leadership in managing information technology change is that organisations need to invest time and resources in the development of high-quality leadership. Effective leadership in the context of technological change requires a deep understanding of technology, the ability to communicate effectively, and the ability to manage and motivate people. In addition, organisations must also design a sustainable digital transformation strategy that focuses on continuous learning for people.

Leaders in the organisation should constantly update their knowledge on information technology developments and related industry trends, while ensuring that a culture of innovation and learning is instilled in the organisation. Organisations need to develop specific training and development programmes for their people to master the skills required in the digital world and communicate the vision of digital transformation clearly to the entire organisation.

However, keep in mind that the impact of technological change on people and organisations can vary depending on a number of factors, such as industry, organisation size, and corporate culture, so the approach may need to be tailored to the specific organisational context. In addition, the implementation of a digital transformation strategy and the organisational culture that supports it can be a complex and time-consuming process, and not always successful in every case. Managing information technology change is therefore a significant challenge, requiring constant commitment and adaptation from the organisation and its leaders.

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