The Role of Information and Communication Technology in Improving the Efficiency of Human Resource Management Administration

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ABSTRACT

The use of ICT has fundamentally changed the way organisations work and operate in various sectors, including HRM. Along with technological advancements, organisations across industries have adopted various ICT solutions to improve efficiency and productivity in HRM administration processes. The role of ICT in improving HRM administration efficiency is increasingly recognised as a key element in achieving organisational success in this digital era. This research aims to explore relevant studies and literature on how ICT has influenced and improved HRM administration efficiency in various organisations. The current research type is qualitative. Data collection techniques include listening and recording important information to conduct data analysis through data reduction, data display, and conclusion drawing. This study arrived at a discovery that the role of ICT in improving the efficiency of HRM administration has become something that cannot be ignored. The application of technology in HRM provides various benefits to organisations, including more efficient employee recruitment and selection processes, automation of administrative tasks, more affordable and accessible employee training and development, and more secure and integrated employee data management.

Keyword: ICT, Administrative Efficiency, HRM

INTRODUCTION

The integration of Information and Communication Technology (ICT) has significantly transformed the operational dynamics of organizations across diverse sectors, including the domain of human resource management (HRM) (Wahyoedi et al., 2023). In conjunction with the progress of technology, organizations across diverse sectors have implemented a range of ICT solutions to enhance the effectiveness and productivity of their HRM administrative procedures (Prastyaningtyas et al., 2023). The significance of ICT in enhancing the efficiency of HRM administration is progressively acknowledged as a fundamental component in attaining organizational success in the contemporary digital age (Kamar et al., 2022).

Prior to the advent of digital technology, human resources (HR) departments frequently encountered laborious and repetitive tasks, including the management of employee data, payroll processing, attendance tracking, training administration, and recruitment activities (Diawati, Gadzali, Abd Aziz, et al., 2023). The aforementioned processes frequently relied on manual intervention, were characterized by a significant investment of time, and were susceptible to human fallibility (Sandbank et al., 2020). The current manual management approach also imposes constraints on the accessibility of HRM data and the efficiency of information processing (Piwowar-Sulej, 2021).

Nevertheless, the emergence of information and communication technology has significantly transformed the function of HRM. The utilization of applications, software, and digital platforms has facilitated the automation of numerous routine tasks within human resources departments, leading to enhanced overall operational effectiveness. Several instances of how ICT contributes to enhancing the efficiency of HRM administration are as follows:

1. HR Information Management System (HRMS): The adoption of an information and communication technology (ICT)-based human resources (HR) information management system allows organizations to effectively consolidate and oversee employee data in a centralized manner (Chakraborty & Mansor, 2013). Rapid and precise access can be obtained to various types of information, including personal data, attendance records, performance records, and training data (Belen Saglam et al., 2022). This phenomenon mitigates the necessity for manual administrative tasks and expedites the process of making decisions based on data.
2. Vacancy Announcement and E-Recruitment: The utilization of online platforms and websites facilitates a more streamlined and effective approach to the job posting and recruitment process (Melanthiou et al., 2015). The utilization of electronic application submission by prospective employees enables recruitment teams to efficiently evaluate and evaluate potential candidates (Chen, 2023).
3. Automated Payroll System: The utilization of information and communication technology (ICT)-based payroll systems facilitates the automation and accuracy of salary calculations (Resca & Munandar, 2022). This practice mitigates the likelihood of payroll inaccuracies and guarantees that employees receive suitable remuneration within a shorter timeframe.
4. Online-based Training and Development: E-learning platforms and online courses afford employees the opportunity to conveniently access training and development materials remotely, without constraints of location or time (Ausat, 2022). This practice diminishes the dependence on in-person instruction, resulting in cost and time savings for the organization.
5. Digital Performance Management: The utilization of performance management software enables the implementation of a systematic and ongoing approach to employee appraisals and performance monitoring (Schleicher et al., 2018). Real-time feedback enables employees to promptly identify areas for improvement and enhance their skills and performance more expeditiously (Gnepp et al., 2020).

The objective of this literature review is to examine pertinent research and literature regarding the impact of ICT on the effectiveness of HRM administration in diverse organizational contexts. This research aims to provide insights for organizations on optimizing the application of ICT to enhance HRM performance and efficiency. Additionally, it seeks to offer guidance for future research endeavors in this domain.

LITERATURE REVIEW

Information and Communication Technology

ICT stands for Information and Communication Technology. The term encompasses all technologies and devices utilized for the purpose of digitally collecting, storing, processing, transmitting, and receiving information (Lubbe & Singh, 2009). ICT encompasses a diverse range of hardware and software tools that enable the efficient transfer and processing of data, as well as effective communication among users (Fu, 2013). ICT hardware encompasses a range of devices, including but not limited to computers, laptops, tablets, smartphones, servers, routers, and various other network devices (Almaududi Ausat et al., 2021). In addition, ICT software encompasses a range of components such as operating systems, applications, computer programs, and online platforms and services. Several examples of frequently utilized information and communication technologies encompass:

1. Internet: A global network that connects billions of devices around the world, enabling online access to information and communication.
2. Computers: Hardware used to process, store and manage data.
3. Software: Programmes or applications used to perform various tasks, such as word processing, data management, presentations, and others.

4. Computer Network: An infrastructure that enables data communication between devices via wired or wireless connections.
5. Cloud Computing: Data storage and processing over the internet, allowing data access from anywhere with an internet connection.
6. Database Management System: Software used to organise and manage data in a database.
7. Mobile Device: Includes smartphones and tablets, which enable internet access and communication without time and place limits.
8. Web and Mobile Applications: Applications that run on mobile devices or web browsers to perform various tasks and functions.
9. Social Media: Online platforms that allow users to interact, share information, and communicate with each other.

The advent of ICT has facilitated rapid access and transmission of information, thereby creating novel prospects for communication, collaboration, and efficiency across diverse domains of human existence, including the realms of business and HRM.

Administrative Efficiency

Administrative efficiency pertains to the degree of effectiveness and productivity in executing diverse administrative duties and procedures within an organization (Adu-Oppong et al., 2014). Administration refers to a collection of activities and protocols that are implemented to oversee and regulate different facets of an organization's functioning (Diawati, Gadzali, Mahardhani, et al., 2023). These include the management of data, processing of information, making decisions, and carrying out routine tasks. Within the framework of administrative efficiency, the primary aim is to attain optimal outcomes while minimizing the utilization of resources, including time, labor, and expenses. In essence, administrative efficiency refers to the ability to perform tasks in a suitable and efficient manner, thereby attaining desired outcomes while making optimal use of available resources (Manzoor et al., 2021). Several crucial factors that impact administrative efficiency include:

1. Automation: Using appropriate technology and information systems to automate routine tasks and reduce reliance on manual processes.
2. Organisation: Organising tasks and responsibilities in a structured and efficient manner, ensuring smooth work flow and minimal bottlenecks.
3. Assignment and Delegation: Assign tasks to appropriate individuals or teams according to their respective expertise and responsibilities.
4. Use of Technology: Utilise appropriate software and hardware to manage data and information more efficiently.
5. Training: Ensure employees have the necessary skills and knowledge to properly carry out administrative tasks.
6. Performance Measurement: Measuring the results and performance of administrative processes to identify potential improvements and efficiencies.

Organizations can enhance resource allocation, minimize operational expenses, boost productivity, and enhance service quality through the attainment of administrative efficiency. The enhancement of administrative efficiency is crucial for organizations to effectively tackle the obstacles that arise from expansion, bolster their competitiveness, and adapt to the ever-changing dynamics of the business landscape.

Human Resource Management

HRM stands for Human Resource Management. Human Resource Management (HRM) is a managerial discipline that pertains to the administration of various facets related to personnel within an organization (Taslim Ahammad, 2017). The primary goal of HRM is to establish a work environment that is both efficient and productive, while also maximizing the potential contributions of the organization's human resources (HR) towards the attainment of organizational objectives (Anwar & Abdullah, 2021). The subsequent elements hold significance in the field of HRM:

1. Recruitment and Selection: The process of attracting qualified candidates, identifying skills and talents relevant to the position, and selecting the most suitable candidates to meet the organisation's needs.
2. Training and Development: Providing training and development of employees in order to have the necessary skills to perform their tasks well, as well as enhance their career potential and competence.
3. Performance Evaluation: Conduct regular performance appraisals of employees to identify their achievements and contributions, provide feedback, and identify areas of improvement.
4. Payroll and Wages: Manage the compensation system and salary management of employees based on responsibility, merit, and company policy.
5. Employee Relations Management: Foster positive relationships between employees and management, and resolve problems or conflicts that arise in the workplace.
6. Employee Welfare Management: Ensuring the physical and mental well-being of employees, including occupational health and safety programmes.
7. Performance and Career Management: Develop career paths, development plans, and assist employees in achieving their career goals.
8. Change Management: Helping employees adjust to organisational changes, such as restructuring, mergers, or policy changes.

HRM assumes a significant role in the establishment of a competitive work environment, the enhancement of employee motivation, the augmentation of efficiency, and the maximization of the contribution made by human resources to the growth and prosperity of the organization. In the contemporary era characterized by globalization and heightened business competition, the significance of HRM is progressively acknowledged as a pivotal determinant of organizational success and long-term viability.

RESEARCH METHOD

This research aims to analyse the role of ICT in improving the efficiency of HRM administration. In this study, researchers conducted library research so that there was no need to go directly to the field during the data collection process, but rather examine various reference sources that support this research. The literature was obtained from online media and databases from journal portals that are in accordance with the keywords related to this discussion, namely the role of ICT in improving the efficiency of HRM administration. The author does not focus on specific journal portals or online media in determining relevant reference sources such as referring to the Emerald Insight, ResearchGate, and Elsevier journal portals, but is more flexible. In this article, with a focus on the role of ICT in improving the efficiency of HRM administration, the author makes these keywords the focus of the search so as not to widen the main discussion. The search for journals, articles, and publications was mostly in the range of articles published between 2010 and 2023. Not all articles, journals, and publications that appear in the search results will be used, but only those related to the role of ICT in improving HRM administrative efficiency.

This research is a type of qualitative research. Data collection techniques include listening and recording important information to conduct data analysis through data reduction, data display, and conclusion drawing to obtain a picture of the conclusions regarding the literature study that will be developed in this study. Data validation uses triangulation of data sources.

RESULTS AND DISCUSSION

The utilization of ICT has emerged as a pivotal element in enhancing the efficacy of HRM administration across diverse organizations in the contemporary digital age. The HRM sector has experienced a substantial transformation in conjunction with the advancement of technology. This modification entails the integration of diverse ICT solutions that streamline procedures, expedite information retrieval, and enhance the overall administration of human resources.

ICT plays a significant role in enhancing the efficiency of HRM administration, particularly in the domain of employee recruitment and selection (Piabuo et al., 2017). Historically, the recruitment process commonly entailed the utilization of traditional job announcements and the dissemination of advertisements through print media. Nevertheless, the emergence of internet

technology and online recruitment platforms, such as recruitment websites, career portals, and social media, has enabled companies to effectively expand their reach to a larger pool of potential applicants, while also reducing costs and saving time. The integration of ICT also facilitates the utilization of advanced selection techniques, such as data analysis, to align candidate profiles with desired job criteria (Skulimowski & Köhler, 2023). Furthermore, the utilization of information and communication technology (ICT)-based human resource (HR) management systems also facilitates the automation of diverse administrative tasks that were previously time-consuming and labor-intensive. An illustrative instance involves the utilization of a biometric or access card-based system for managing employee attendance, which expedites the attendance procedure and automates the computation of working hours (Soyemi & Isinkaye, 2020). Therefore, by minimizing errors in the calculation of working hours and tardiness, the HR team can allocate their attention towards more strategic tasks.

Moreover, ICT also contributes to enhancing efficiency in the process of employee training and development. Through the utilisation of e-learning platforms and webinars, organisations have the ability to deliver online training and educational opportunities to their employees, regardless of their geographical location (Ausat, 2023). This practise diminishes the need for in-person training, resulting in cost savings related to travel and accommodation expenses. Furthermore, the management of employee training and development can be effectively monitored through digital means, enabling organisations to discern specific training requirements by analysing employee performance data (Yimam, 2022). However, it is imperative to acknowledge the significance of ICT in the management of employee data. An integrated human resources management information system facilitates convenient and secure access to employee data, encompassing personal information, performance records, training history, and salary details (Silva & Lima, 2018). The significance of safeguarding employee data is duly acknowledged, thus the integration of advanced data security measures is also encompassed within the purview of information and communication technology's role in HRM administration.

Information and Communication Technology (ICT)-based performance management systems play a significant role in enhancing the efficiency of HRM administration. By utilising specialised applications or software, employees are able to conveniently establish work objectives, engage in performance assessments, and offer feedback. This process facilitates the prompt identification of underperformance by management and enables the implementation of necessary corrective measures.

In addition to this, the utilisation of ICT in the context of internal communication plays a crucial role in enhancing the efficiency of HRM administration. Digital communication tools, such as email, instant messaging applications, and collaboration platforms, enable HR teams to engage in efficient and prompt communication with employees. Efficient and timely delivery of internal announcements, meeting invitations, and other critical information can be ensured, thereby minimising the risk of delays or information loss (Kruk et al., 2018). Ultimately, ICT plays a significant role in effectively managing the overall performance of an organisation (Harahap et al., 2023). By employing advanced and contemporaneous data analysis techniques, management is able to enhance their ability to discern patterns of performance, identify potential issues, and recognise opportunities for improvement. The utilisation of Business Intelligence (BI) technology additionally empowers HR to make more precise and effective data-informed decisions (Alsaad et al., 2022).

The significance of ICT in enhancing the effectiveness of HRM administration is a fundamental consideration that cannot be disregarded (Gür, 2021). Through the utilisation of appropriate technological advancements, organisations have the potential to enhance the management of their human resources, elevate employee productivity, and effectively respond to the swift transformations occurring within an increasingly interconnected digital work environment (Attaran et al., 2020). It is important to consider that technology functions as a tool, and the effective management and utilisation of this technology by human resources is essential in order to attain optimal efficiency in the administration of human resource management (Sutrisno et al., 2023).

On the other hand, it is important to be aware of some of the challenges and strategies that can help organisations deal with change and implement technology successfully. Here are some of

the challenges in adopting ICT in HRM:

1. Resistance from Employees: When an organisation decides to adopt a new technology, not all employees will accept this change with enthusiasm. Some may feel concerned about job loss or obsolete skills. Therefore, it is important for the HR team to communicate the benefits of this change transparently and provide adequate training to overcome this resistance.
2. Data Security: As more employee data is stored in ICT systems, the risk of data leakage or hacking increases. Organisations must take appropriate measures to protect employees' personal and performance data, including the use of encryption technology and strong security systems.
3. Technology Limitations: Not all organisations have enough budget to adopt the latest and most advanced technology. This can be an obstacle in implementing more advanced ICT solutions. Therefore, there needs to be careful planning in choosing the technology that best suits the needs and budget of the organisation.

In every challenge, there must be a solution that can be implemented to easily face all these challenges. The following are strategies to successfully adopt ICT in HRM:

1. Careful Planning: Before adopting a new technology, an organisation must have a well-thought-out plan. This involves a needs analysis, an assessment of the organisation's technical and financial capabilities, and a clear determination of the objectives of using ICT in HRM.
2. Employee Involvement: Involve employees in the decision-making process and implementation of new technologies. Explain the benefits and provide adequate training so that employees can understand and feel more comfortable with this change.
3. Change Management: The implementation of new technology in HRM will cause changes in work processes and culture. Effective change management should be implemented to help employees adapt to these changes well.
4. System Integration: Ensure that the various ICT solutions used in HRM are well integrated with each other. This will avoid fragmented information and ensure efficiency in data processing.
5. Evaluation and Improvement: After ICT implementation, conduct periodic evaluations to see to what extent the efficiency of HRM administration has improved. Identify problems and obstacles that may arise, and find solutions to continuously improve the quality of technology use in HRM.

By adopting these strategies, organisations can make the most of ICT's potential in improving HRM administration efficiency. The benefits gained not only impact employee performance, but can also provide a competitive advantage for the organisation in the face of increasingly fierce business competition.

As for other successful strategies in adopting ICT in HRM, here are some further steps that can be taken to maximise the benefits of information and communication technology in human resource management:

1. Use of Analytics and AI: Utilise data analytics and artificial intelligence (AI) to gain deeper insights into employee data. With proper data analysis, organisations can identify performance trends, absenteeism patterns, and employee potential, and can formulate more effective management strategies. The use of AI can also help in the employee selection process by matching candidate profiles with optimal job criteria.
2. Self-Service Platform for Employees: Give employees independent access through a self-service platform, where they can access personal information, performance records, work schedules, or apply for leave without the need to involve the HR team. This will reduce the administrative burden on HR, while giving employees more control over their data and administrative needs.
3. Mobile Applications: The development of mobile technology has made a huge impact in the world of work. By using mobile applications designed specifically for HRM, employees can easily access up-to-date information, fill out reports, and communicate with fellow employees or the HR team, anytime and anywhere.
4. Personalise the Employee Experience: Utilise ICT to create a personalised and enjoyable employee experience. Training tailored to individual needs, regular feedback, or a more

humanistic approach to communication will increase employee motivation and engagement in the organisation.

5. Data-Driven Decision Making: Make data-driven management decisions the cornerstone of every aspect of HRM. By relying on accurate data and analysis, decisions can be made more rationally and efficiently, without bias or decisions based on perception alone.

6. Integration with Other Systems: Ensure that the HRM system used is integrated with other systems in the organisation, such as accounting, finance, or operational systems. This integration allows for a seamless flow of information between departments, reduces data redundancy, and improves overall operational efficiency.

7. Employee Training and Development in ICT: Don't forget the importance of employee training and development in using the technology implemented in HRM. HR teams should provide regular training to improve employees' digital literacy and ensure that they are able to optimise the benefits of existing technologies.

Through the implementation of these strategies, organisations can attain enhanced efficiency in the administration of HRM and effectively confront the challenges posed by the evolving landscape of work. Adapting to dynamic technological advancements is crucial for sustained success in effectively managing valuable human resources. One key strategy to achieve this is the integration of ICT into HRM processes.

CONCLUSION

The indispensability of ICT in enhancing the efficiency of HRM administration has been widely recognised. The utilisation of technology in the field of HRM offers a multitude of advantages to organisations. These advantages encompass enhanced efficiency in employee recruitment and selection procedures, automation of administrative tasks, cost-effective and easily accessible employee training and development, as well as improved security and integration in the management of employee data. Furthermore, ICT plays a crucial role in enhancing internal communication effectiveness and facilitating data-driven decision-making processes. Nevertheless, the integration of ICT in HRM encounters several obstacles, including employee resistance, concerns regarding data security, and limitations in technology. Hence, it is imperative for organisations to adopt strategic measures in order to effectively confront these challenges. In view of all the above, this study arrives at a suggestion among others:

a) Careful Planning: Before adopting a new technology, organisations should conduct careful planning, including needs analysis, assessment of technical and financial capabilities, and clear objectives for the use of ICT in HRM.

b) Employee Involvement: Involving employees in the change process and providing adequate training will help reduce resistance to new technology and increase acceptance of change.

c) Data Security: Ensure the protection of employee data by implementing advanced security technologies and strict privacy policies.

d) Proper ICT Integration and Use: Select and implement technologies that fit the needs of the organisation and ensure ICT systems are well integrated with other systems in the organisation.

e) Data-Based Decision Making: Make data-based management decisions the cornerstone in every aspect of HRM, so that decisions are more rational and efficient.

f) Employee Training in ICT: Provide employee training and development in using the technology applied in HRM to improve digital literacy and make maximum use of ICT.

g) Evaluation and Improvement: Conduct periodic evaluations to see to what extent the efficiency of HRM administration has improved. Identify problems and obstacles that may arise, and find solutions to continuously improve the quality of technology use in HRM.

By incorporating the aforementioned recommendations, organisations can optimise the advantages of ICT in HRM and attain enhanced efficacy in the administration of their human resources. The integration of technology will facilitate organisational adaptation to the dynamic and competitive work environment, enabling them to establish themselves as industry frontrunners through the implementation of efficient, innovative, and data-centric human resource management administration procedures.

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