Influence of information and communication technology (ICT) on HRM resource planning for overall growth of IT industries: A systematic review

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Abstract

The HR management of an organization is becoming the most critical issue for every company. Due to the increasing number of employees and the complexity of the situation, it is becoming more important that the managers are able to identify the root cause of the issue and improve the performance of the organization. New intelligent technologies such as the Internet of Things, Machine learning, Artificial Intelligence, and Cloud Computing are helping organizations improve their internal processes and enable them to identify and manage their various opportunities and challenges. These technologies can also help them improve their decision-making capabilities and provide them with the necessary information to make informed decisions. The study aims to analyze the impact of ICT on the HR management process and how it can help improve the efficiency of an organization. It will look into the various practices related to the recruitment, planning, and selection of employees. The study aims to analyze the influence of ICT on the HR management process and how it can help improve the efficiency of an organization. It will look into the various practices related to the recruitment, planning, and selection of employees.
Keywords: **ICT, HRM, HR Management Process, HR Strategy, HR Information System, Cloud Computing, Internet of Things**

1. **Introduction:** The rise of ICT has greatly changed the way people work and live. Its applications in various sectors such as data science, artificial intelligence, and machine learning are growing rapidly in India and globally. The storage capacity of devices has increased ten-fold in just a short time. The rapid emergence and evolution of new ICT technologies such as the Internet of Things, Data Science, Machine Learning, Artificial Intelligence, and Cloud Computing have greatly changed the way people work (Ajzen, 1991). The use of data science has become a key component of the transformation of data into business insights (Albers-Mohrman and Lawler, 1997). The use of ICT has really influenced the way people work and live. It has affected the way they interact with one another and the way they work (Salvendy & Koubek). It has also affected the way they get to know each other and the people in their organizations.

   Undoubtedly, human capital is the greatest resource for organizational growth, and ICT has the potential to provide new ways for organizations to develop and utilize their human capital (Abhishek, Ankit and Rohit, 2015).

Today, Human Resources Management is under ever-increasing pressure in order to support strategic objectives and focus on value-adding activities in order to meet business objectives (Armstrong, 1984). As a result, the job responsibilities and expectations of HR professionals have changed significantly as a result of this change (Ball, 2001). A company is now able to capture a wide variety of behavioral data about its employees thanks to the use intelligent technologies like ICT (Barron et al, 2004). A data set of this type may include information about a user's social network activity, personal preferences, and interests (Beckers & Bsat, 2002). In recent years, with the increased impact and influence of information and communication technology in this earth, Human Resources practices have been influenced and effected accordingly. Changes such as these are thought to be cost-efficient and timely for businesses, as well as improving the satisfaction of their effort and their productivity. The use of new technologies in the field of HR, such as the use of Internet, communication through mobile, and media, as well as a range of other ICTs, can give a major contribution in framing and achieving any company's HR policy by providing a number of benefits (Beard, 1991). A company's human resources department can be greatly affected by the technological advancements that have taken place (Benjamin & Blunt, 1992). As a result, the company is able to improve its internal processes and procedures, core competencies, capturing of relevant markets, overall organizational structure, and productivity as a result (Mamoudou & Joshi, 2014).

Human resource planning (HRP) is the systematic process of continuously planning the use of human resources within an IT organization in order for the organization's most valuable assets, its employees, to be used as efficiently as possible. By planning human resources, it is possible to make sure that there is always the right fit between skilled employees and relevant jobs, while minimizing manpower shortages and surpluses (Fletcher, 2005). By analyzing and identifying an IT company's required skill set, and then targeting appropriate skills as needed, an IT company will be able to achieve business objectives in a strategic manner (Gilbreth, 1911). In this way, it will be able to meet the challenges of the future in a more prepared manner (Goldstein, 2001). Traditionally, recruitment has become a very difficult process because it requires a lot of

effort as well as being quite time-consuming, such as reading through CVs, manually marking scripts, etc. The use of these types of recruitment methods is gradually being phased out as a result. Nowadays, with the inclusion of intelligent technologies in the recruitment and selection process, the whole process has become much more efficient (Hannon et al, 1996).

2. Literature survey

In a number of studies, it has been found that organizational changes are linked to and aim to improve the performance of firms. Importantly, the studies find that ICT has a positive impact on firms.

Some notable studies include:

Black and Lynch (2000, 2001). According to both of them, there is a very positive relationship between the usage of computers by non-managers and the productivity of the company. Black and Lynch (2001) conducted a study to investigate how the practices of workplaces, the use of human capital investments, and the use of ICT contribute to productivity at work. According to this study, the effectiveness of human resource management depends on how effectively it is implemented.

Bresnahan, Brynjolfsson, and Hitt (2002) demonstrated that successful firms adopt ICT as part of a system or cluster of organizational changes that are mutually reinforcing one another. Gargallo-Castel and Galve-Górriz (2007) suggested theory of complementariness where they highlighted that only intelligent technologies like ICT is not enough to guarantee us an increase in organizational productivity and that it should be accompanied by other positive human nature such as the capabilities, the special talents of the workers, the thought process, and the proactive attitude of the work force. The combination of these human attributes coupled with the use of ICT is the only way to ensure an increase in output.

According to the study by Saleem and co-authors, (2011), they tried to measure the influence of ICT on organizational output and efficiency, which in turn leads to organizational effective performance (Cost, Time, Quality) by using a model of ICT adoption and role that was developed using that model as a foundation for developing the model.

According to Kuyoro and other coauthor's (2012), HRM views ICT as a catalyst for improving operational efficiency in the workplace. In support of this view, there has been an increase in investment in ICT-related management devices in developing countries in recent years.

Seyni Mamoudou, and Joshi (2014), studied the positive effectiveness of information technology (IT) intelligent tools for achieving business relevant market. Results of present day studies continue to confirm the influence of IT intelligent tools in the Human Resources (HR) process and procedures to accomplish tasks assigned to HR by the effective usage of IT capabilities. The paper gives a brief of IT usage possibilities in the HR field for monitoring the human capital. It also used the HR information system effectively.

In 2015, a group of researchers led by Shine David referred to ICT as a combination of the internet services and computers for the unified computing experience. The term refers to the integration of various technologies, such as telecommunications, computers, and software. These include the storage, transmission, and manipulation of information. According to the researchers, ICT can help organizations improve their efficiency and reduce their time spent in various tasks. It also helps employees perform better.

In 2015, Webster & Chapman stated that the work culture of an organization is one of the most important factor that affects the acceptance of HR technology. If an organization has a growth-oriented culture, then it will adopt HR technologies. The other reason why organizations should adopt HR technologies is to improve the efficiency of their recruitment process.

This study was conducted by John W. Boudreau and Edward E. Lawler (2017), and it focused on HR metrics and analytics. Furthermore, the study examined the efficiency, influence, and impact of HR organizations. This study also examined the influence of metrics and analytics systems in HR operations and the impact they had on strategic outcomes. According to the correlations that have been found, improvements in HR features have been linked to these significant outcomes. Increasing the effectiveness of the HR department and the performance of the organization can be achieved by improving different HR elements.

In Rahman and Hosain's study (2021), the authors sought to navigate the relationship between organizational sustainability and e-Human Resource practices within the organization. In order to carry out the study, primary and secondary data were used. Based on the results of a structured questionnaire that was distributed to 387 respondents, data was collected. Through the use of SPSS software, correlation and regression analysis was applied to the data in order to analyze the results. A significant and positive correlation was found between the level of organizational sustainability and the level of e-HRM practices in the organization.

3. Objective of Study:

The objectives of the study are as follows:

- To study the opportunities of ICT in HR selection and recruitment process
- To find the need of ICT in influencing HRM of IT organizations during the selection and recruitment process.
- To navigate around the challenges of ICT faced in HRM during selection and recruitment
- The goal is to observe how ICT impacts the HRM for productivity improvement of IT Industries, through its involvement during hiring of employees.

4. Methods of Data Collection

Primary Data:

- Questionnaire/ Survey to the owning practices
- Discussions / Interviews with the relevant responsibility holders

Secondary Data:

- Annual Reports
- IT magazines
- Published reports
- Published Interviews

5. Analysis

Here preliminary analysis has been done for some of ICT tools as listed below which are being currently used in selection and recruitment.

- Artificial Intelligence

- Big Data

- Mobile Application

- Social Media

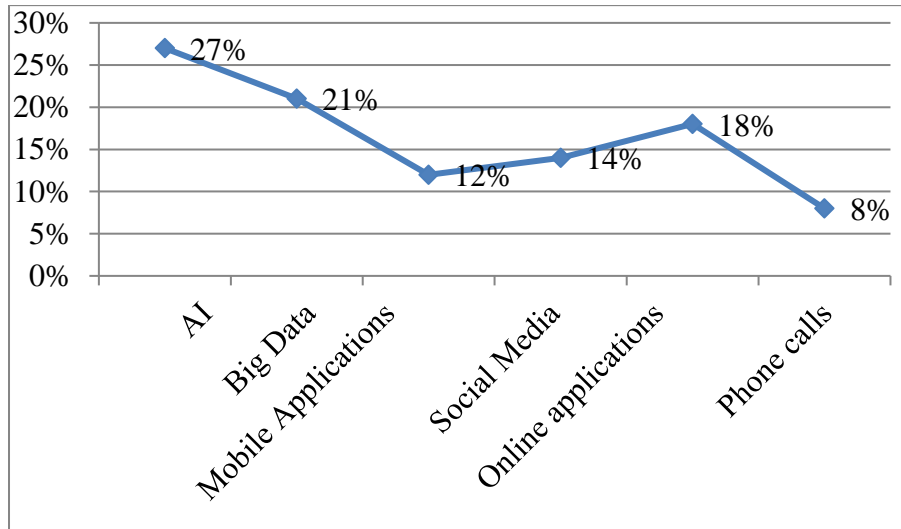The Figure 1 below shows the usage of ICT tools used for the selection and recruitment.

Fig. 1 Tools used for Selection and recruitment

The usage of ICT intelligent tools, such as artificial intelligence, enables the tools to learn, adapt and upgrade themselves on the basis of information present in any database. Therefore, it allows recruiters as well as the recruiting team to review and analyze huge amounts of data about a candidate from social media platforms, emails, and instant messaging channels in order to get the right candidate profile out of this vast pool of data. As a result of the collected data, a valuable insight into the talent database will be provided. As well as saving time during the screening process of candidates, AI also saves the time needed for the sourcing of candidates.

An emerging trend in recruiting is the use of big data analytics to make sense of the vast pool of talent in order to gain valuable insights out of it. The purpose of this is to improve the recruitment process and to hire better candidates by learning about the personality of each candidate even before they attend the interview. The majority of talent professionals in the industry agree that big data is the number one trend that is impacting hiring

strategies today. This approach not only aims at finding the most qualified candidates without wasting time, but also aims at attracting them as well.

Mobile applications and social media recruitment, including the use of advertisements, can also help attract a large number of relevant candidates through the use of mobile applications and social media recruitment. In addition to this, relying solely on CVs to find the right candidate is not sufficient if you are looking for the best.

Due to the rise of social media, it has become more prevalent that candidates are being monitored by various platforms such as LinkedIn and Glassdoor to see how they are communicating with other people and how they are presenting themselves in front of a potential employer. These kinds of technological advancements are expected to have a positive impact on the recruitment process, as it allows the right fit to be hired at the correct stage

6. Challenges due to ICT during Recruitment cycle

- It can be very time consuming for an IT organization to screen and verify the authenticity of millions of resumes.

- In many parts of the world, there is a lack of connectivity and internet awareness.

- In order to remain competitive, IT organizations need to continue to rely on the various recruitment methods available to them. In countries such as India, employees prefer to interact with their employers in person rather than through e-mails.

- Unfortunately, many HR professionals do not have the necessary knowledge about the use of e-recruiting. This can lead to waste of time and money.

- Due to the nature of the recruitment process, it has become more important that the information collected by the organizations is protected from unauthorized access and use. Some of the websites that are used for recruiting have privacy statements that explain how the data will be used.

- It is a common practice for candidates to apply and grab multiple opportunities at the same time, resulting in a lack of candidates showing up for the interview or on the joining date. As a result, there is a waste of time and money during the process of evaluating and selecting candidates.

7. Conclusion

ICT has empowered data-driven decision-making in HRM resource planning and recruitment. Advanced analytics tools and algorithms can analyze vast amounts of data, providing valuable insights into recruitment trends, candidate profiles, and hiring outcomes. This data-driven approach enables HR departments to make informed decisions, refine their recruitment strategies, and optimize their processes for better results. Overall, the impact of ICT on HRM resource planning and recruitment has been significant. By leveraging technology, organizations can attract a diverse talent pool, streamline their recruitment processes, enhance assessment and evaluation methods, improve communication and collaboration, and make data-driven decisions. Embracing ICT in HRM resource planning and recruitment not only increases efficiency and effectiveness but also enhances the overall quality of hires, leading to better organizational performance and sustainable development of a society at large.

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