

Role of Internet of Things (IOT) to improve Overall Recruitment and Manpower management system of an organization

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Abstract

With technological advancement, organizations are evolving and building a novel-tech culture by the implementation of IoT-based devices including big data, cloud computing, and Google glasses. Organization can predict their future events across all functional areas including marketing, human resource management, finance, and operations with the digitalization of both structured and unstructured data present in the organization. Organizations are rapidly shifting towards the IoT for improving the overall recruitment process as well as the manpower management system of the organization. The decision-making ability of the organizations is highly affected by the implementation of IoT-based devices. The article will highlight the role of IoT in an organization and how it impacts overall recruitment and manpower management. Recruitment is one of the most critical factors for the growth of the organization. IoT-based applications such as Google glasses allow capturing the interviews for analyzing the behavior and attitude of the candidate. IoT helps to capture the information that enhances the decision-making ability of the organization as well as helps in choosing the well-deserved employees for the organization. Hire bue is an AI-based application used by the organization for improving the recruitment process.

Keywords: IoT, recruitment process, manpower management, Google glasses, and Hire Bue

Introduction

In this article, the role of IoT in improving the overall recruitment and manpower management system of the organization has been studied. Due to the rapid development of economic globalization and the advent of information technology, various organizations have shown changes under the influence of the technologies therefore organizations have focused on the manpower management of the organization and turn them into their competitive advantages. The recruitment process is the most critical aspect of the manpower management system of the organization as it plays an important role in the success of the organization. The organization needs to develop strategies to use the IoT-based application for the overall recruitment process and manpower management system of the organization. Numerous devices are connected to the internet with the development of computer and network communication technology¹. The introduction of IoT has blurred the differences between the real world and the virtual world. HR managers of the organizations use IoT to search the details of the candidates as IoT stores the various details such as objects, people, and web pages that are important for the manpower management and overall recruitment of an organization.

The growth of Big Data and 5G technology has played an important role in the growth of IoT business data. Using IoT-based technology such as cloud computing and big data helps the organization to store their big volume of data that enhances the task efficiency of the organization. Construction of the HRM information technology gets improved with the IoT-based applications and reduces the expenditure of management costs. Labor costing, recruitment monitoring, payroll accounting, automatic attendance, and tracking compensation are some of the major advantages of using IoT-based applications in the organization². IoT helps an organization to gain competitive advantages and provides opportunities for research on strategic information. Using IoT-based applications by the company helps them to develop and implement new systems.

Based on the information technology and competitive strategy, the strategic significance of HR information technology has been discussed. The organization uses IoT-based applications to understand the needs of the employees as well as easily achieve the goals of maximizing economic benefits³. It helps to develop an appropriate route for organizational development by reducing the human resources challenges in the organizations. Increasingly fierce competition in the market has forced the organization to adopt the IoT based applications in their organizations for enhancing the manpower management of the organization⁴. The changes in the market environment are easily adapted to the HR management system as it helps in promoting the reform process. The system helps to enhance the efficiency of personnel management and the development of various tasks that happen due to favorable conditions.

2. Literature review

2.1 overview of the chapter

IoT and digitalization have a long-term effect on the success of the organization such as changes in the employment forms, the transformation of job profiles and occupation, and provide a huge platform for economic development for the organizations. In the literature review, the effect of IoT on the recruitment process of the organization as well as the manpower management system of the organization. The chapter will discuss the process of e-recruitment, digitalization, and the impact of IoT on the productivity of the organization. The manpower management system of the organization can be defined as the planning of human resources available in the organization. The manpower management system is one of the most important factors for the success of the organization. In the chapter, the role of IoT in the manpower management system of the organization can be discussed.

2.2 IoT Design for Manpower management system of an organization

IoT systems have become one of the most important tools for generating spatial-temporal data in organizations. The IoT system has been used by the organization to solve the problem of storing large volumes of data in the organization. The user terminal

¹Gaur, Bhawna, Vinod Kumar Shukla, and Amit Verma. "Strengthening people analytics through wearable IOT device for real-time data collection." *2019 international conference on automation, computational, and technology management (ICACTM)*. IEEE, 2019.

²Margherita, Emanuele Gabriel, and Ilenia Bua. "The role of human resource practices for the development of Operator 4.0 in Industry 4.0 organisations: a literature review and a research agenda." *Businesses* 1.1 (2021): 18-

³Kodithuwakku, Purna Dhakshika. "INTERNET OF THINGS IN HUMAN RESOURCE MANAGEMENT."

⁴Zhou, Zhiping, et al. "Effects of resource occupation and decision authority decentralisation on performance of the IoT-based virtual enterprise in central China." *International Journal of Production Research* (2020): 1-17.

(UE) and sensing terminal (SE) is used by cloud computing to upload IoT data on the cloud, and from the cloud data are fed back after the successful execution of the task. Network congestion is created due to the huge test for the bandwidth that affects the experience of users while using the IoT applications. These problems in the manpower management system can be reduced by the introduction of edge computing architectures. Manpower management of the organization is positively influenced by the IoT-based application. Smart technology based on IoT is used by the employees in the organization to enhance the efficiency of the workforce and productivity of the organization⁵.

The Decision-making ability of the employees increased with the presence of huge amounts of data due to IoT search. IoT generates a lot of data associated with the employees and their related processes. These data are used for enhancing the decision-making process of the organization. Experiences of the employees improve with the IoT as it allows the employees and the HR managers to get connected through Internet-enabled mobile devices. It allows the managers to book meeting rooms, exchange ideas, and communicate easily with the team members. IoT technology plays an important role in providing a flexible work environment to employees as it allows them to manage the flex and provide flexibility to work with the mobile from remote areas⁶. Employees are the most important asset of any organization and IoT based applications allow to monitor the wellness of the employees

2.2 Importance of IoT in the recruitment process of organization

Recruitment is the fundamental part of the growth of any origination. Recruitment is the way for choosing the right employees for the organization who can enhance the productivity of the organization. The recruitment process of an organization is a critical thing as a selection of the appropriate candidate is a must for the growth and success of the organization. Choosing the correct employees during the recruitment process is the sensitive thing that puts various challenges to the HR management of the organization⁷. The introduction of IoT has highly influenced the recruitment process of the organization and provides an effective way for choosing the right employees for the organization. The recruitment process varies with the size of the organization. In the normal recruitment process, organizations have hiring managers who hire the employees; however, in a large and giant company, it is difficult for a single hiring manager to choose the appropriate employees. Selection becomes complicated in the giant company through the traditional method of hiring as they require a team for the selection of the appropriate employees that is much more expensive. Internal, external, and e-sources are the various sources used in the organization for the recruitment of employees.

Internal sources for the recruitment process involve the transfer of employees intra-organization and promotion. It is cost-effective and economically beneficial for the organization. External sources for the recruitment process involve choosing the fresher candidates from the schools, colleges, and universities and providing them training about the work. The external source recruitment process involves getting inexperienced and fresh candidates who need proper training and guidance about the work. E-sources are the most popular way for the recruitment of employees. This process of recruitment invokes websites posted on the agency as well as digital advertisements for hiring candidates from different backgrounds. All these sources are used for the hiring of the employees in the organization, however; all these sources have certain limitations such as hiring cost, expenses and have a higher probability of wrong selection of the employees.

Recruitment in an organization is a dynamic process that caters to the employees as well as the organization. Recruitment in the organization has several benefits and is considered an important parameter of the human resource management of the company. Some of the major benefits of the recruitment process are explained below.

The recruitment process provides a potential chance for the candidates to get aware of the organization and get employment.. Recruiters provide various options for the candidates to choose from to cater to the needs of the organization.

The Success Rate of Selection: The success rate of the selection enhances during the recruitment process as it allows choosing the more qualified candidates over the under-qualified candidates⁸.

Meeting Obligations: The recruitment process allows to choose the right candidates that help in maintaining the legal obligations of the organization and the workforce composition.

⁵Braccini, Alessio Maria, and Emanuele Gabriel Margherita. "Exploring organizational sustainability of industry 4.0 under the triple bottom line: The case of a manufacturing company." *Sustainability* 11.1 (2019): 36.

⁶Cantoni, Franca, and Gianluigi Mangia, eds. *Human resource management and digitalization*. Routledge, 2018

⁷Nasar, N., Ray, S., Umer, S. and Mohan Pandey, H., 2020. Design and data analytics of electronic human resource management activities through Internet of Things in an organization. *Software: Practice and Experience*

⁸Ghosh, Swapan, et al. "Corporate Digital Entrepreneurship: Leveraging Industrial Internet of Things and Emerging Technologies." *Digital Entrepreneurship* (2021): 183.

Transparency: The recruitment process involves organizational transparency and it is an effective way to maintain the transparency of the organization. Transparency is not only important for the organization, however, but it is also important for the selection of the employees. HR managers, clients, field recruiters should have a complete awareness of the process of the organization and there should be transparent procedures to ensure the candidates regarding the job profile and job status of their job applications⁹.

Confidence: Transparency of the recruitment process enhances the confidence of the organization. The awareness among the recruiters, clients, and managers regarding the entire recruitment process creates confidence among them and brings satisfaction among the HR manager and the candidates¹⁰.

In the recruitment process, there is less chance of discrimination among the candidates based on their race, color, caste, and personal connection.

Job Description: Job description plays an important role in choosing the candidates during the recruitment process. Framing a proper job description is a detrimental factor during the recruitment process. Recruitment helps in curating an effective job description that includes primary, secondary, and tertiary aspects of the job role¹¹.

Consistency: Consistent system of recruitment is needed for choosing the right candidate who provides standardized results. The recruitment process should be consistent to ensure fair judgment as well as the selection of the right job. The organization has shifted its focus from increased production to increased productivity through the uses of IoT.

2.3 Effect of IoT on the future HRM of the organization

Advancement in technology has a tremendous effect on the development of human society. HRM of the organization has been positively influenced by technological progress and inventions. Information and Communications Technologies (ICT) have highly influenced the recruitment process of the organization. The importance of IoT has been released by the HR managers and recruiters and they tried to recruit the employees digitally. The old way of recruitment has been changed by the introduction of IoT in the field of the recruitment process of HRM. Using IoT for the recruitment process has several positive advantages and helps to select the right candidates for the job profile¹². The traditional method of recruitment process unimpressed the candidates however, using IoT for choosing the candidates can bring the attraction of the candidate nearer to the organization. An HR manager uses IoT to gather various information regarding the most qualified candidate who uses the Smartphone. IoT helps the recruiters to easily find the most suitable candidates for the job role without being physically present at every place. The vast amount of data allows the recruiters to analyze the data and choose the right one¹³.

In the traditional recruitment process hiring managers have to be physically present to select the candidates; however, IoT allows to get notification of the employees who are interested in the job and can virtually be selected. IoT helps to reduce the recruitment cost of the organization as well as provide a more qualified selection of the employed as compared to the traditional way of the recruitment process. IoT allows the HR manager to get information about the right candidate's through smart phones, the candidate who visited the profile of the company as well as several times the page visited by the candidates gets saved through the IoT. It helps the HR manager to know the job-seekers and can easily choose the best candidates among them. The recruiter prepares the data from the information gathered by the IoT¹⁴.

Recruiters can easily acquire the skills and hardware needed to process the data. This allows the recruiters to make the appropriate selection based on the IoT gathered information. The recruitment process gets easier with the adoption of IoT as preparing for IoT allows to hire the right people who know software and applications that enhance the opportunity to engage more and more employees. Organizations use social media platforms to recruit the right and well deserving candidates as IoT helps and the

⁹Solanki, Vijender Kumar, Vicente García Díaz, and J. Paulo Davim, eds. *Handbook of IoT and big data*. CRC Press, 2019.

¹⁰Barrozo, Edgar N. "Strategic Management System For Competitive Business Performance: A Literature Review."

¹¹Sherif, K. and Al-Hitmi, M., 2017. The moderating role of competition and paradoxical leadership on perceptions of fairness towards IoT monitoring.

¹²Moyeenudin, H. M., and R. Anandan. "IoT Implementation at Global Enterprises for Progressive Human Resource Practices." *Proceedings of First International Conference on Mathematical Modeling and Computational Science: ICMMCS 2020*. Springer Nature.

¹³J. Dash, Debasis, et al. "Internet of Things (IoT): the new paradigm of HRM and skill development in the fourth industrial revolution (industry 4.0)." *IUP Journal of Information Technology* 15.4 (2019): 7-30.

¹⁴Puhovichova, Diana, and Nadežda Jankelova. "Changes of human resource management in the context of impact of the fourth industrial revolution." *Industry* 4.0 5.3 (2020): 138-141.

candidates. Streamlining the sourcing part of the recruitment process is the best use of the IoT in the recruitment process. Selection of candidates based on the IoT is less time-consuming as well as cost-effective for the company. Offer rejection can be rescued as well as turnover rates get reduced with the use of IoT in the recruitment process.

IoT allows the data and processes to be automated. Networks of objects are involved in the IoT that is controlled by the sensors, transducers, and software. IoT helps the HR recruiters to access information regarding the information of the possible candidates¹⁵.

IoT helps in building an effective and intelligent workforce without involving time-consuming processes¹⁶. Thousands of resumes support from the AI-guided ATS. Based on the interest, traits, qualification and social media posts.

ATS refine the resume and help the recruiters as well as the candidates to choose the right job. AI algorithm is used for classifying the candidates based on their interests and qualifications submitted on their various social media platforms¹⁷. This helps the hiring agencies to select the most relevant and best-qualified candidates. Turnaround time and productivity of the organization gets positively impacted by the IoT-based recruitment process. Google Glasses is the revolutionary IoT-based technology that is used by the HRM of the organization. Google glasses are used for recording the interviews that help in the decision-making process of the recruitment¹⁸. It allows the recruiters to rewind the video of the interview and choose the appropriate candidates. This allows the HR management group to match the behavior and ethics of the candidates with the job role. Huge databases of the candidates are available to the candidates that help to malaise the behavior and approach of the candidate during the interviews. Cloud technology is also used by the company during the recruitment process to back up their data in cloud computing infrastructure¹⁹.

Cloud computing allows access to the candidate data from anywhere that reduces the chance of disk failures and theft. IoT and AI-based technology are the initial interviews process as most of the HR companies are using AI-based video platforms to capture the interviews of the candidate²⁰. These interviews are later analyzed which helps in the decision-making of choosing the appropriate candidate. Biometric and psychometric analyses of the candidates are done through the captured data. The pandemic period has increased the demand for IoT and AI-based technology for the recruitment process of the organization. Most of the company has shifted to AI-based platform for the recruitment process. The basic screening of the candidates has been removed through AI-driven recruitment. Hire Bue is an AI-based hiring platform used by most organizations to select the candidate with the help of prediction of the AI-led. It allows us to take the interviews consistently and reduce the biases of the recruitment process.

3. Materials and methods

Materials

To provide an overview of the research on the role of the IoT on the recruitment and manpower management of the organization's various IoT-based applications. Systematic Reviews and Meta-Analysis has been used in the study to determine the effect of the IoT on the recruitment process and manpower management of the organization. The Systematic Literature Reviews (SLR) method has been used to evaluate, identify and analyze the current need of IoT in the recruitment process as well as manpower management of the organization.²¹ This technique involves the restrictive collection, localization methodological analysis,

¹⁵Labib, Nader S., et al. "Trustworthiness in IoT—a standards gap analysis on security, data protection and privacy." *2019 IEEE Conference on Standards for Communications and Networking (CSCN)*. IEEE, 2019.

¹⁶El-Aziz, Rasha Abd, Sarah El-Gamal, and Miran Ismail. "Mediating and Moderating Factors Affecting Readiness to IoT Applications: The Banking Sector Context." *International Journal of Managing Information Technology (IJMIT) Vol 12* (2020).

¹⁷Hsu, Hsiao-Tzu, et al. "Improve IoT security system of smart-home by using support vector machine." *2019 IEEE 4th International Conference on Computer and Communication Systems (ICCCS)*. IEEE, 2019.

¹⁸Kebande, Victor R., et al. "Holistic digital forensic readiness framework for IoT-enabled organizations." *Forensic Science International: Reports 2* (2020): 100117.

¹⁹de Vass, Tharaka, Himanshu Shee, and Shah J. Miah. "IoT in supply chain management: a narrative on retail sector sustainability." *International Journal of Logistics Research and Applications* (2020): 1-20.

²⁰Singh, Anupam, and Satyasundara Mahapatra. "Network-based applications of multimedia big data computing in IoT environment." *Multimedia Big Data Computing for IoT Applications*. Springer, Singapore, 2020. 435-452.

²¹Vrontis, Demetris, et al. "Artificial intelligence, robotics, advanced technologies and human resource management: a systematic review." *The International Journal of Human Resource Management* (2021): 1-30.

rigorous scientific and elimination of the subjective element²². SLR has been used to build an overview and provide an effective summary of the literature that resulted in the effect of the study²³. In social distancing, research SLR is becoming more important. It is possible to determine the theme or domain of the study, based on the function of the SLR method. Snyder's approach has been used to conduct the literature review regarding the role of IoT in the recruitment process and manpower management of the organization. Four processes were involved in conducting this study that includes designing the review, conducting the review, analysis and writing up the review²⁴.

3.1 Information Source Search Strategy, and Identification

For using the Web of Science database a proper and effective strategy was developed. A search was made on the various IoT-based applications such as Google Glass, AI-based applications such as Hire Bue. Due to the ability of the broad coverage, a web of science database has been selected²⁵. Open access sources have been selected due to budgetary constraints. The initial search has been shown in figure 1. In the systematic literature review of the effects of IoT in the recruitment process and manpower management system, only journal articles were chosen. High-quality studies have been ensured by the review process of the study²⁶. In the study, non-journal articles, another language than English, studies not focus on the recruitment process as well as a manpower management process, no open-access paper, and conceptual Achilles which haven't any evidence that involves IoT based technology has been excluded.

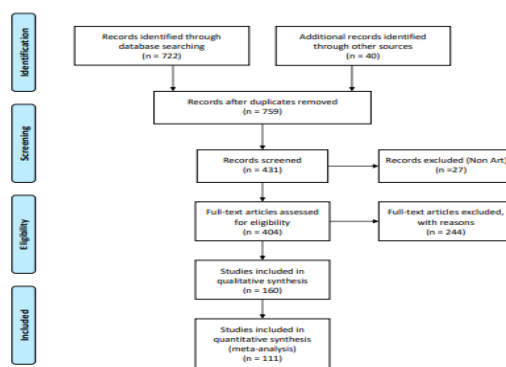


Figure 1: Flowchart of selection criteria²⁷

(Source: Authors own design based on PRISMA)

3.2 Inclusion and Exclusion Criteria

Figure 1 show the inclusion and exclusion criteria. According to the time present in the PRISMA flow diagram, the inclusion and exclusion process was prepared. Abstracts were first screened in the qualitative analysis and 20 records were excluded as they were not provided information regarding the relation with IoT and recruitment process of the organization as well as the way

²²Mathur, Geetika, Harshit Sharma, and Rishabh Pandey. "A Study on Self-Driving Car an Application of IoT." *International Journal of Computer Networking, Wireless and Mobile Communications (IJCNWMC)* 9 (2019): 25-34.

²³. Mohammadian, Hamid Doost. "IoT-Education technologies as solutions towards SMEs' educational challenges and I4. 0 readiness." *2020 IEEE Global Engineering Education Conference (EDUCON)*. IEEE, 2020.

²⁴Jirasatjanukul, Kanokrat, Prachyanun Nilsook, and Panita Wannapiroon. "Intelligent Human Resource Management Using Latent Semantic Analysis with the Internet of Things." *International Journal of Computer Theory and Engineering* 11.2 (2019): 23-26

²⁵Cockcroft, Sophie, and Mark Russell. "Big data opportunities for accounting and finance practice and research." *Australian Accounting Review* 28.3 (2018): 323-333.

²⁶Main, A., and N. A. Zakaria. "IPv6 Readiness towards Future Internet of Things (IoT)." *International Journal of Human and Technology Interaction (IJHaTI)* 2.2 (2018): 1-8.

²⁷Amankwah-Amoah, Joseph, and Samuel Adomako. "Big data analytics and business failures in data-Rich environments: An organizing framework." *Computers in Industry* 105 (2019): 204-212.

through which IoT impacts the manpower management of the organization²⁸.

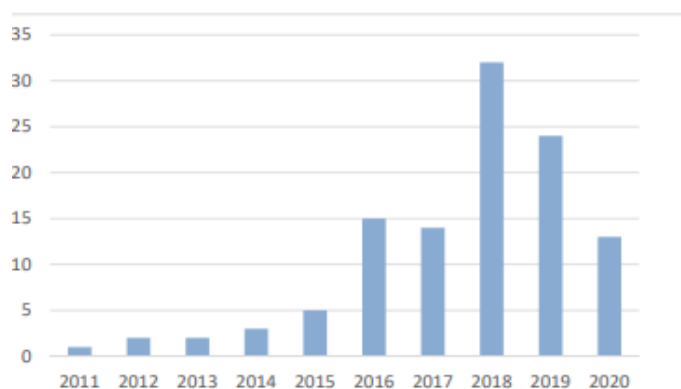
Various other methodologies have been used in the study to identify the impact of IoT on the recruitment process of the organization and the manpower management of the organization. Methodologies help to select the appropriate tools and techniques for the systematic completion of the study. It allows one to choose the appropriate approach, philosophy, design, and data collection method for the collection of the data that helps in the completion of the study²⁹.

Research philosophy allows us to collect the data in a way that enhances the authenticity of the study. Positivism, paramititgsm, and intervism are the four types of research philosophy used in the various studies according to the nature of the study. Positivism philosophy has been used in this study, as it follows the easy structure for collecting the data. The deductive research approach has been used in the study as it is an existing study therefore deductive approach helps to collect the data easily³⁰. Descriptive research design has been used in the study for collecting the data as it provides information regarding the Iot and its impact on the recruitment process and manpower management of the organization³¹.

Primary and secondary are the two types of data collection methods used in the study. In this study, a secondary way of data collection has been used. Journal and articles have been chosen for collecting the data and helps in maintaining the authenticity of the study³².

4. Results

More than 50 articles were used for analyzing the role of IoT in the recruitment process and manpower management of an organization. After exclusion criteria and duplicate removal, 30 articles and abstracts were chosen. 15 full articles were analyzed in detail and helped in analyzing the role of IoT-based applications in the recruitment process and manpower management of the organization³³. The number of selected published articles used in the study has been shown in figure 2. The number of publications regarding the role of IoT in the recruitment process and manpower management has increased linearly. The findings suggest that using IoT-based applications has increased the recruitment process of the organization in the pandemic period³⁴.



²⁸MOHANTY, Sasmita, and Padma Charan MISHRA. "Framework for understanding Internet of Things in human resource management." *Revista ESPACIOS* 41.12 (2020).

²⁹Sahidon, AtirahBinti, et al. "Integration of Shari'ah Governance Framework in Human Resource Management Practice in Malaysia."

³⁰Dhanpat, Nelesh, et al. "Industry 4.0: The role of human resource professionals." *SA Journal of Human Resource Management* 18.1 (2020): 1-11.

³¹Orakcioglu, Selim, DenizHoruz, and MuhammedPaksoy. "The influence of effective human resource management on the success of SMEs in Gaziantep and its environment in 2" *Research Papers in Economics and Finance* 4.4 (2020): 15-30.

³²Arnaboldi, Michela, Cristiano Busco, and Suresh Cuganesan. "Accounting, accountability, social media and big data: revolution or hype?." *Accounting, auditing & accountability journal* (2017).

³³Piwozar-Sulej, Katarzyna. "Human resource management in the context of Industry 4.0." *OrganizacjaiZarządzanie: kwartalniknaukowy* 1.49 (2020).

³⁴Rafique, Maryam, Muhammad Asim, and Salman Manzoor. "Human Resource Management in Industrial Revolution 4. O." (2021).

Figure 2; Increment in the recruitment process through the use of IoT

(Source: Created by author)

Table 1: Mean and Standard deviation of the function

HR Functions	un-weighted		Weighted	
	Mean	Standard Deviation	Mean	Standard Deviation
Recruitment and Selection	3.00	1.0	3.01	1.10
Performance Management	2.98	0.81	3.00	0.80
Training and Development	3.43	0.91	3.45	0.86
HR Information and Analytics	3.27	0.76	3.62	0.78
Compensation Management	2.900	0.88	3.00	0.9

Various IoT-based applications such as Google Glasses, ATS and Hire blu are rapidly accepted by the HR managers for the adoption of IoT for the recruitment process and the improvement of the Manpower management process. IoT has become an integral part of the HRM of the organization as it allows users to interact with software and devices³⁵. IoT-based technology such as Voices and Gestures and Speeches are the most important thing of communication used as an HRM technology in the organization³⁶. Technology enables HR to take the organization to the core competency level. Manpower management of the organization gets integrated with the IoT's smart functions that make the system more powerful and allow ease to the HR leaders³⁷. Recruitment is one of the most important domains that is used in the human resource of the company. IoT guides the HR recruiters to gauge the candidates during the interviews. Less subsequent attrition is present that enhances the efficiency of the recruitment process.

Table 2: Optimization of the manpower management system in the organization based on Internet of Things

Primary node	Secondary node	Introduction to functional design	Values
Basic settings	1	Basic crotch case	12.518
Basic settings	2	Salary period	3.154
Basic settings	3	Salary standard category	45.257
Basic settings	4	Salary standard table	14.879
Basic settings	5	Salary standard setting	46.578

Comparative analysis between the role of Iot in overall recruitment and manpower management of an organization

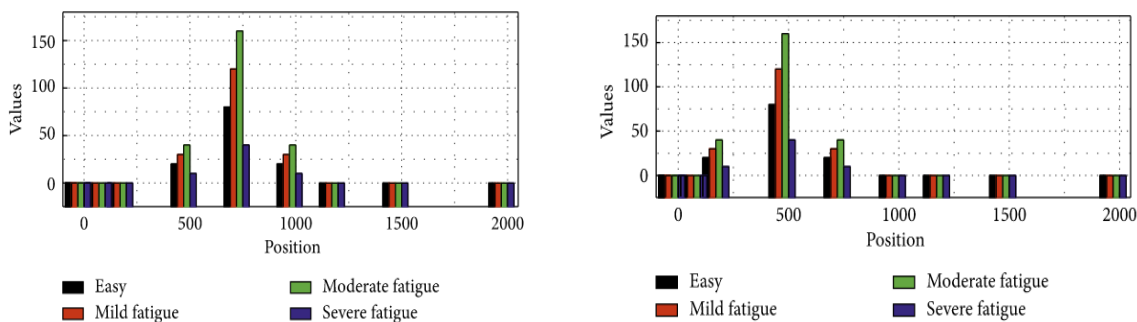
³⁵Dash, Debasis, et al. "Internet of Things (IoT): the new paradigm of HRM and skill development in the fourth industrial revolution (industry 4.0)." *IUP Journal of Information Technology* 15.4 (2019): 7-30.

³⁶Shamim, Saqib, et al. "Role of big data management in enhancing big data decision-making capability and quality among Chinese firms: A dynamic capabilities view." *Information & Management* 56.6 (2019): 103135.

³⁷Fredriksson, Cecilia, et al. "Big data in the public sector: A systematic literature review." *Scandinavian Journal of Public Administration* 21.3 (2017): 39-62.

IoT has been rapidly adopted by various organizations for the overall recruitment process and manpower management of the organization. Advancement in information and communication technology changes the human resource management of the organization by modifying the way the organization produces and markets its products. Figure 1 shows the shifting on IoT by the organizations in the various years³⁸. The figure has shown the growth of adoption of IoT trends by organizations. From the year 2015 to 2020, the rise in the use of IoT-based applications has been shown. Global human capital trends have been shown in figure 2, which shows the HR recruitment process based on the IoT. Sourcing outreach, screening, applications, assessment, other generation, selection, candidate closing are some of the parameters used in the recruitment process of the candidates based on the IoT. Figure 3 has shown the adoption of IoT by various organizations³⁹.

The departmental file of the organization plays an important role in the management of the human resource and helps in sharing the data related to the management⁴⁰. The construction of comprehensive departmental information helps in reducing the basic input volume of human resource management⁴¹. To maintain the personnel information, personnel information maintenance is used. Personal information, job information, and subset information are the various information covered in the personal information. Personnel cards, add users and personnel rosters are the various information that is used for managing the ability matching function to view the employee's works in the organization and workability qualities⁴². For the analysis of the employee's personal information including transferred employees, current employees, terminated employees, and retired employees statistical analysis is used. Results of the statistical analysis can be done with the help of flexible statistical analysis⁴³. A variety of graphics is used for displaying the statistical analysis. Based on positions and posts to the performance of the employee's salary system is built and it also considered the fairness and efficiency of the designed system. The establishment of the multi payroll category scheme allows the configuration of the salary rule table⁴⁴. Salary period, salary item setting, substitute bank, tax rate table, and statistical report are the various attributes of payroll items. In the given figure 4 count taxi items have been shown after the configuration of the items in the payroll system⁴⁵.



³⁸ Yadav, Sanjeev, Sunil Luthra, and Dixit Garg. "Internet of things (IoT) based coordination system in Agri-food supply chain: development of an efficient framework using DEMATEL-ISM." *Operations Management Research* (2020): 1-27.

³⁹ Esangbedo, Moses Olabhele, et al. "Evaluation of human resource information systems using grey ordinal pairwise comparison MCDM methods." *Expert Systems with Applications* 182 (2021): 115151.

⁴⁰ Dubey, Rameshwar, et al. "Big data analytics and artificial intelligence pathway to operational performance under the effects of entrepreneurial orientation and environmental dynamism: A study of manufacturing organisations." *International Journal of Production Economics* 226 (2020): 107599.

⁴¹ de Vass, Tharaka, Himanshu Shee, and Shah Miah. "IoT in Supply Chain Management: Opportunities and Challenges for Businesses in Early Industry 4.0 Context." *Operations and Supply Chain Management: An International Journal* 14.2 (2021): 148-161.

⁴² Laosirihongthong, Tritos, et al. "Logistics 4.0: implementation of Internet of Things (IoT)." *Proceedings of the 24th Asia-Pacific Decision Science Institute International Conference (APDSI): Technology Supporting People and Decision Making, July 15-18, 2019, Mercure Hotel, Brisbane, Australia*. 2019.

⁴³ Guerrero, PhD César D. "Technology readiness for IoT adoption in Colombian SMEs."

⁴⁴ Shee, Himanshu, Tharaka de Vass, and Shah Jahan Miah. "IoT in Supply Chain Management: Opportunities and Challenges for Businesses in Early Industry 4.0 Context." *Operations and Supply Chain Management: An International Journal* 14.2 (2021): 148-161.

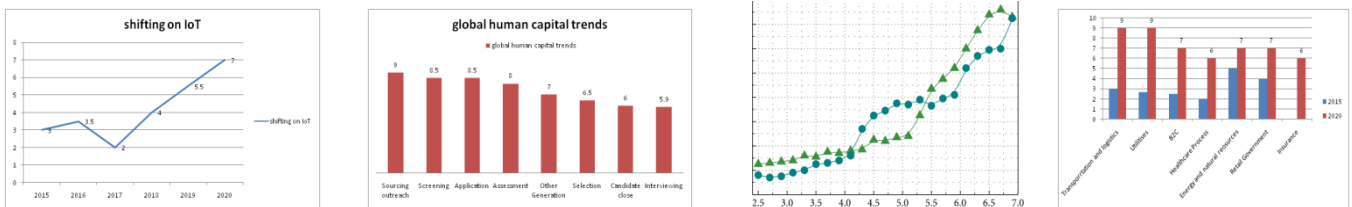
⁴⁵ Dlamini, Nomusa Nomhle, and Kevin Johnston. "Exploring the Barriers and Challenges That Limit the Uptake of the Internet of Things (IoT) in South African Retail Businesses." *MESSAGE FROM CONFERENCE CHAIR: DR ALBERT VAN JAARSVELD (UKZN)*.

Figure 3: Payroll statistics⁴⁶

To generate the natural monthly payroll period, the payroll period can be set up and refer to as the accounting period. Business management systems are involved while using the information technology systems for the overall recruitment and manpower management of the system. Information system allows us to consider the way of optimizing the business management quality through the information system⁴⁷. It is important to consider the management and facilities of the organization for the employees

Year	Area	Outcomes
2015	IoT and Human	Provided two-way interaction between humans and opportunistic IoT
2016	IoT in retail business	Motivations of the customers for the shop have a major influence on the customers for the acceptance of IoT.

as well as for the customers.



Spending on IoT by the various organizations in 2015 and 2020⁴⁸

Figure 4: Scaling factor⁴⁹

Table 3: IoT in Business and HR of the organization

⁴⁶Shee, Himanshu, Tharaka de Vass, and Shah Jahan Miah. "IoT in Supply Chain Management: Opportunities and Challenges for Businesses in Early Industry 4.0 Context." *Operations and Supply Chain Management: An International Journal* 14.2 (2021): 148-161.

⁴⁷Wei, Jaimy. *Where are the employees?!: The expansion of an integral IoT model*. MS thesis. University of Twente, 2020.

⁴⁸Carlén, Niclas, et al. "IoT Enabled Process Innovation: Exploring Sensor-Based Digital Service Design Through an Information Requirements Framework." *IFIP International Internet of Things Conference*. Springer, Cham, 2018.

⁴⁹. Singh, G., L. Gaur, and R. Ramakrishnan. "Internet of Things—Technology adoption model in India." *Pertanika J. Sci. Technol* 25.3 (2017): 835-846.

2017	High-resolution management to develop business models	Efficient, security, transparency gets enhanced with the IoT
2018	BcRMS and BcHRM in factor management	Application of Blockchain technology helps in achieving efficient, secure, smart, transparent, and effective HRM
2019	Smart things and HRM	Modifications in HR activities, change task and qualification of hR actors
2020	Information technology and HRM variables	For measuring the strategic organizational variables need to develop a comprehensive model for information technology

Conclusion

From the study, it has been concluded that IoT plays an important role in the recruitment process and man power management of the organisation. IoT gathers all the essential data of the candidate that helps the recruiters during the hiring process. The availability of a huge amount of data regarding the candidate allows the recruiter to choose the best among the best. Various possibilities are present for HR during the selection process and IoT based information is sufficient for the recruiters to choose the appropriate candidates. HR gets an appropriate chance to shortlist the right and desirable candidates among the various options present through the IoT. As compared to the traditional way of the recruitment process HR managers have more options to gather information regarding the candidates. Initial screening processes are automated for the basic task and intense. The process becomes cognitive with smart applications through the IoT. One of the most time-consuming tasks during the traditional recruitment process is sourcing candidates; however, IoT technology allows to shortlist the candidates who have digitally applied for the job.

References

1. Gaur, Bhawna, Vinod Kumar Shukla, and Amit Verma. "Strengthening people analytics through wearable IOT device for real-time data collection." *2019 international conference on automation, computational, and technology management (ICACTM)*. IEEE, 2019.
 2. Margherita, Emanuele Gabriel, and Ilenia Bua. "The role of human resource practices for the development of Operator 4.0 in Industry 4.0 organisations: a literature review and a research agenda." *Businesses* 1.1 (2021): 18-33.
 3. Kodithuwakku, Purna Dhakshika. "INTERNET OF THINGS IN HUMAN RESOURCE MANAGEMENT."
 4. Zhou, Zhiping, et al. "Effects of resource occupation and decision authority decentralisation on performance of the IoT-based virtual enterprise in central China." *International Journal of Production Research* (2020): 1-17.
 5. Braccini, Alessio Maria, and Emanuele Gabriel Margherita. "Exploring organizational sustainability of industry 4.0 under the triple bottom line: The case of a manufacturing company." *Sustainability* 11.1 (2019): 36.
 6. Cantoni, Franca, and Gianluigi Mangia, eds. *Human resource management and digitalization*. Routledge, 2018.
 7. Nasar, N., Ray, S., Umer, S. and Mohan Pandey, H., 2020. Design and data analytics of electronic human resource management activities through Internet of Things in an organization. *Software: Practice and Experience*.
 8. Ghosh, Swapan, et al. "Corporate Digital Entrepreneurship: Leveraging Industrial Internet of Things and Emerging Technologies." *Digital Entrepreneurship* (2021): 183.
 9. Barrozo, Edgar N. "Strategic Management System For Competitive Business Performance: A Literature Review."
 10. Sherif, K. and Al-Hitmi, M., 2017. The moderating role of competition and paradoxical leadership on perceptions of fairness towards IoT monitoring.
 11. Moyeenudin, H. M., and R. Anandan. "IoT Implementation at Global Enterprises for Progressive Human Resource Practices." *Proceedings of First International Conference on Mathematical Modeling and Computational Science: ICMACS 2020*. Springer Nature.
- [Kodithuwakku, Purna Dhakshika. "INTERNET OF THINGS IN HUMAN RESOURCE MANAGEMENT."
12. Labib, Nader S., et al. "Trustworthiness in iot—a standards gap analysis on security, data protection and privacy." *2019 IEEE Conference on Standards for Communications and Networking (CSCN)*. IEEE, 2019.
 13. El-Aziz, RashaAbd, Sarah El-Gamal, and Miran Ismail. "Mediating and Moderating Factors Affecting Readiness to IoT Applications: The Banking Sector Context." *International Journal of Managing Information Technology (IJMIT) Vol 12* (2020).
 14. Kebande, Victor R., et al. "Holistic digital forensic readiness framework for IoT-enabled organizations." *Forensic Science International: Reports* 2 (2020): 100117.
 15. de Vass, Tharaka, Himanshu Shee, and Shah J. Miah. "Iot in supply chain management: a narrative on retail sector sustainability." *International Journal of Logistics Research and Applications* (2020): 1-20.
 16. Singh, Anupam, and Satyasundara Mahapatra. "Network-based applications of multimedia big data computing in iot environment." *Multimedia Big Data Computing for IoT Applications*. Springer, Singapore, 2020. 435-452.
 17. Mathur, Geetika, Harshit Sharma, and Rishabh Pandey. "A Study on Self-Driving Car an Application of IoT." *International Journal of Computer Networking, Wireless and Mobile Communications (IJCNWMC)* 9 (2019): 25-34.
 18. Main, A., and N. A. Zakaria. "IPv6 Readiness towards Future Internet of Things (IoT)." *International Journal of Human and Technology Interaction (IJHaTI)* 2.2 (2018): 1-8.

19. MOHANTY, Sasmita, and Padma Charan MISHRA. "Framework for understanding Internet of Things in human resource management." *Revista ESPACIOS* 41.12 (2020).
20. Sahidon, AtirahBinti, et al. "Integration of Shari'ah Governance Framework in Human Resource Management Practice in Malaysia."
21. [Orakcioglu, Selim, DenizHoruz, and MuhammedPaksoy. "The influence of effective human resource management on the success of SMEs in Gaziantep and its environment in 2" *Research Papers in Economics and Finance* 4.4 (2020): 15-30.
22. Piwowar-Sulej, Katarzyna. "Human resource management in the context of Industry 4.0." *OrganizacijaiZarządzanie: kwartalniknaukowy* 1.49 (2020).
23. Dhanpat, Nelesh, et al. "Industry 4.0: The role of human resource professionals." *SA Journal of Human Resource Management* 18.1 (2020): 1-11.
24. Rafique, Maryam, Muhammad Asim, and Salman Manzoor. "Human Resource Management in Industrial Revolution 4.0." (2021).
25. Dash, Debasis, et al. "Internet of Things (IoT): the new paradigm of HRM and skill development in the fourth industrial revolution (industry 4.0)." *IUP Journal of Information Technology* 15.4 (2019): 7-30.
26. Esangbedo, Moses Olabhele, et al. "Evaluation of human resource information systems using grey ordinal pairwise comparison MCDM methods." *Expert Systems with Applications* 182 (2021): 115151.
27. Laosirihongthong, Tritos, et al. "Logistics 4.0: implementation of Internet of Things (IOT)." *Proceedings of the 24th Asia-Pacific Decision Science Institute International Conference (APDSI): Technology Supporting People and Decision Making, July 15-18, 2019, Mercure Hotel, Brisbane, Australia.* 2019.
28. Akpınar, Sinem, Moritz Hofmann, and Erik Månsson. "Adoption of IoT Platforms: In Swedish municipalities for smart city initiatives." (2020).
29. Dlamini, Nomusa Nomhle, and Kevin Johnston. "Exploring the Barriers and Challenges That Limit the Uptake of the Internet of Things (IoT) in South African Retail Businesses." *MESSAGE FROM CONFERENCE CHAIR: DR ALBERT VAN JAARSVELD (UKZN).*
30. Wei, Jaimy. *Where are the employees?!: The expansion of an integral IoT model.* MS thesis. University of Twente, 2020.
31. Carlén, Niclas, et al. "IoT Enabled Process Innovation: Exploring Sensor-Based Digital Service Design Through an Information Requirements Framework." *IFIP International Internet of Things Conference.* Springer, Cham, 2018.
32. Venkatraman, Sitalakshmi, and Anthony Overmars. "New method of prime factorisation-based attacks on RSA Authentication in IoT." *Cryptography* 3.3 (2019): 20.
33. Singh, G., L. Gaur, and R. Ramakrishnan. "Internet of Things—Technology adoption model in India." *Pertanika J. Sci. Technol* 25.3 (2017): 835-846.
34. de Vass, Tharaka, Himanshu Shee, and Shah Miah. "IoT in Supply Chain Management: Opportunities and Challenges for Businesses in Early Industry 4.0 Context." *Operations and Supply Chain Management: An International Journal* 14.2 (2021): 148-161.
35. Guerrero, PhD César D. "Technology readiness for IoT adoption in Colombian SMEs."
36. [36]. Yadav, Sanjeev, Sunil Luthra, and Dixit Garg. "Internet of things (IoT) based coordination system in Agri-food supply chain: development of an efficient framework using DEMATEL-ISM." *Operations Management Research* (2020): 1-27.
37. Shee, Himanshu, Tharaka de Vass, and Shah Jahan Miah. "IoT in Supply Chain Management: Opportunities and Challenges for Businesses in Early Industry 4.0 Context." *Operations and Supply Chain Management: An International Journal* 14.2 (2021): 148-161.

38. Shee, Himanshu, Tharaka de Vass, and Shah Jahan Miah. "IoT in Supply Chain Management: Opportunities and Challenges for Businesses in Early Industry 4.0 Context." *Operations and Supply Chain Management: An International Journal* 14.2 (2021): 148-161.
39. Dubey, Rameshwar, et al. "Big data analytics and artificial intelligence pathway to operational performance under the effects of entrepreneurial orientation and environmental dynamism: A study of manufacturing organisations." *International Journal of Production Economics* 226 (2020): 107599.
40. Fredriksson, Cecilia, et al. "Big data in the public sector: A systematic literature review." *Scandinavian Journal of Public Administration* 21.3 (2017): 39-62.
41. Shamim, Saqib, et al. "Role of big data management in enhancing big data decision-making capability and quality among Chinese firms: A dynamic capabilities view." *Information & Management* 56.6 (2019): 103135.
42. Arnaboldi, Michela, Cristiano Busco, and Suresh Cuganesan. "Accounting, accountability, social media and big data: revolution or hype?." *Accounting, auditing & accountability journal* (2017).
43. Amankwah-Amoah, Joseph, and Samuel Adomako. "Big data analytics and business failures in data-Rich environments: An organizing framework." *Computers in Industry* 105 (2019): 204-212.
44. Cockcroft, Sophie, and Mark Russell. "Big data opportunities for accounting and finance practice and research." *Australian Accounting Review* 28.3 (2018): 323-333.
45. Mohammadian, Hamid Doost. "IoT-Education technologies as solutions towards SMEs' educational challenges and I4. 0 readiness." *2020 IEEE Global Engineering Education Conference (EDUCON)*. IEEE, 2020.
46. Jirasatjanukul, Kanokrat, Prachyanun Nilsook, and Panita Wannapiroon. "Intelligent Human Resource Management Using Latent Semantic Analysis with the Internet of Things." *International Journal of Computer Theory and Engineering* 11.2 (2019): 23-26.
47. Vrontis, Demetris, et al. "Artificial intelligence, robotics, advanced technologies and human resource management: a systematic review." *The International Journal of Human Resource Management* (2021): 1-30.
48. Hsu, Hsiao-Tzu, et al. "Improve IoT security system of smart-home by using support vector machine." *2019 IEEE 4th International Conference on Computer and Communication Systems (ICCCS)*. IEEE, 2019.
49. Dash, Debasis, et al. "Internet of Things (IoT): the new paradigm of HRM and skill development in the fourth industrial revolution (industry 4.0)." *IUP Journal of Information Technology* 15.4 (2019): 7-30.
50. Puhovichova, Diana, and Nadežda Jankelova. "Changes of human resource management in the context of impact of the fourth industrial revolution." *Industry 4.0* 5.3 (2020): 138-141.
51. Solanki, Vijender Kumar, Vicente García Díaz, and J. Paulo Davim, eds. *Handbook of IoT and big data*. CRC Press, 2019.