EXPLORING ARTIFICIAL INTELLIGENCE APPLICATIONS IN HUMAN RESOURCE MANAGEMENT

Nishad Nawaz, Kingdom University

ABSTRACT

The aim of the study is to understand artificial intelligence applications in human resource management. The study considered Scopus online database from 1991 to 2020 and found 23 papers were relevant, and it is considered as a sample. The study identified nine areas of human resource management functions, where Industries can implement artificial intelligence applications to get efficient and effective in their human resource management functions to meet the requirements of their customers. The study can be extended in other areas of human resource management functions.

Keywords: Artificial Intelligence; Human Resource Management; Applications; Human Resource Functions.

INTRODUCTION

The current era has many developments in the area of information technology; in this direction, there is a new innovation was introduced that is Artificial Intelligence (AI). In the digital environment, for instance, the human knowledge of Artificial Intelligence, has become the key factor for an organization to endure and change in an evolving situation (Abdeldayem & Aldulaimi, 2020). Since Google's Alpha Go framework has won a mind-boggling triumph in the fight with South Korean player Lee Sedol, Artificial intelligence has pulled in considerations of the two specialists and experts. Artificial intelligence is called as machine insight, is an interdisciplinary science that impersonates human abilities and scholarly conduct (Upadhyay & Khandelwal, 2018). Elaine Rich characterize AI as "Artificial intelligence empower through related algorithms to computers to get right work better than individuals".

During the time spent mimicking the data procedure of human cognizance and figuring, it can rapidly recover the database, remove data, answer our questions effectively, and give the most intelligent answer legitimately and normally (Shanmugam & Garg, 2015). Artificial intelligence hypothesis and innovation applications are additionally growing, and many artificial intelligence devices, for example, fake neural systems, savvy choice frameworks, and fluffy sets are utilized in different fields. Among them, the utilization of AI in the field of human asset the board is still in the investigation stage. Artificial intelligence has been bit by bit applied to big business the executive's dynamic, taking on and helping administrators to accelerate their dreary and tedious day by day work (Ma & Wang, 2011). It gives the ground-breaking database and logical help, permitting directors to escape mechanical work and take part in more important work. As indicated by the Accenture key report, for coordination and administration, critical thinking and joint effort, worker and network, technique and development work, the utility and effect of insightful frameworks can change the administrator's work substance. Artificial intelligence can attempt and

assist directors with accelerating their day by day dreary and tedious work. It can likewise give an amazing database and expository help, with the goal that administrators can escape from the dreary work and get dedicated to more significant work (Li, 2011). Human resource management suggests the best HR strategies to the employees, and these techniques must be embedded in the HR procedures, recruitment & selection process, training & development, compensation management, health & safety and wellbeing activities of the organization.

During the time spent human asset, the executives, the utilization of AI innovation can bring more prominent monetary advantages. Improving the effectiveness of human asset the executives through the utilization of AI innovation has become a significant pattern later on the advancement of human asset the board. Be that as it may, in the exploration region of human asset the executives, there is as yet an absence of a general AI application framework, combined with the particular components of human asset the board, to dissect its particular application. Although, in light of the six components of human asset, the board and the fundamental specialized uses of AI (Stanley & Aggarwal, 2019). Therefore the study proposed the following question: To know the impact of AI applications on human resource management called functions.

The study was designed was developed as, next literature review, methodology, results & discussion the paper terminated with the conclusion with future directions.

LITERATURE REVIEW

As a key business apparatus for some organizations, IT is on the plan of numerous individuals, especially experts and scholastics. Today, it wins practically any significant business movement in different organizations, for example, banking, online business, the travel industry, and travel (Chakraborty et al., 2020). It is additionally the fate of such organizations since they have tech-accommodating and tech-subordinate natures. In particular, considering e-HRM, it will typically continue its advantages as to the administration of representatives over the long haul. What is all the more convincing that there is an undertaking in progress at the universal level targeting improving the qualities of IT with the assistance of AI or reciprocally intellectual figuring. Shao (2015) states that different IT mammoths have procured around 140 innovative firms in the field of AI since 2011. These business people are attempting to consolidate AI into different PC frameworks to make consistent encounters on these frameworks' usage. There is an overall origination that the term insight is generally credited to individuals. People compose PC programs, do arithmetic, take part in rational thinking, get language, and drive vehicles that all require insight. Artificial intelligence plans to empower machines to perform such exercises how individuals do in such manner (Guo, 2011).

Be that as it may, to explain, the machines performing like individuals could be better considered as far as the idea of emulating as (Davenport & Ronanki, 2018) contends, given the way that individuals have not still completely decoded and comprehended the human knowledge that AI mimics. Even though the term AI and its first practices go back to the 1950s, its noticeable quality is such another obtaining this way. Especially, solid AI (opposite, powerless AI) intending to copy the full scope of human psychological capacities has slowly heightened since the 1980s and turned into an interdisciplinary examination that attempts to enlighten the human knowledge puzzle, in this manner enhancing the advancement procedure with various outlooks. Of late, striking improvements have made AI a possibility for turning out to be some portion of regular daily existence and in this manner incited scientists to look at this marvel inside its complex angles as to particular exploration fields. An ongoing activity called Society 5.0 was presented by the

Japanese Cabinet with the point of making a social change. This imaginative endeavor tries to accomplish a significant level of connection between people and machines. It plans to associate individuals, things, and frameworks on the internet where orders are recognized by sensors and executed through AI. Not at all like the idea of industry 4.0 that we are just before, Society 5.0 isn't outlined by the assembling business, yet it infests public activity with the intermingling of AI, the Internet of Things, expanded reality, and robots (Bhardwaj et al., 2020).

Overview of AI and Human Resource Management

Artificial Intelligence (AI) is an order that reviews PCs to re-enact certain points of view and wise practices, (for example, learning process, thinking, thinking, arranging, and so on.). The Massachusetts Institute of Technology (MIT) teacher called attention to that Artificial Intelligence primarily concentrates how to utilize PCs to illuminate Artificial intelligence work. The idea of Artificial Intelligence was first advanced abroad in 1956 and started to be considered. McCarthy initially cited the term Artificial intelligence to make a hypothetical point of reference for the advancement of Artificial Intelligence. During the 1990s, Kasparov fought with the "dark blue" PC and "dark blue" won, which is a significant achievement in the advancement of AI (Vinichenko et al., 2019). In 2006, Varian Hinton proposed the idea of profound learning, and Artificial Intelligence has entered a phase of the fast turn of events. Artificial Intelligence covers numerous orders, for example, arithmetic, the board, PC, phonetics, and so on, and has a solid breadth. With the continuous advancement of innovation, artificial intelligence has made forward leaps in picture acknowledgement, discourse acknowledgement and different fields (Jia et al., 2018). Albeit AI is still in the continuous advancement stage, numerous organizations have understood the improvement possibilities and application estimation of Artificial intelligence.

Artificial intelligence innovation can likewise help organizations of all sizes to accomplish their improvement objectives. Artificial intelligence has a place with software engineering, yet it isn't merely software engineering. It regularly incorporates human science, brain science, arithmetic, and so forth, and even proficient hypothetical information and abilities in explicit application fields, just as human experience collection in related fields (Abdeldayem & Aldulaimi, 2020). Starting here of view, Artificial intelligence has extensive extensiveness and multifaceted nature in the hypothetical information level and won't have a place with a specific branch of knowledge (Pillai & Sivathanu, 2020). Human asset the board principally composes and deals with representatives' practices through arranging, association, control and different methods and techniques, with a definitive objective of helping endeavours to accomplish most extreme advantages (Wang & Yang, 2011).

The centre substance of conventional human asset the executives depends on the boost of big business interests and the administration of workforce in the venture while overlooking the improvement needs of abilities as people and the connection between the singular turn of events and undertaking advancement. In the period of the internet, the human asset the board of present-day endeavours should give more consideration to the advancement needs of gifts, from concentrating on the executives to concentrating on individuals. Human asset the executives is of extraordinary vital criticalness to the improvement of ventures. It is a significant piece of big business vital asset the executives and is additionally a significant reason for endeavours to keep up the sound turn of events. Consequently, logical techniques ought to be embraced to improve the proficiency and level of the board and advance the solid and economic improvement of ventures. In the time of the information economy, HR is the wellspring of information

advancement and improvement. To improve the accentuation on representative preparing, endeavours need to put more cost in human asset the executives, to improve the nature of workers, and simultaneously understand the maintainability of representative and venture advancement (Wang & Lu, 2011).

The study after observation of the previous literature and identified that there are very fewer studies taken place in this direction. Therefore, the present study to know the applications of artificial intelligence in human resource management and the consideration of all possible areas.

METHODOLOGY

To meet the study aim, the study developed the following method to gather the proper information to develop adequate information to present results & discussion.

The study literature was considered from the Scopus online database from January 1991 to December 05, 2020. To get full information, the researcher incorporated steps to get into the right information to draw results, discussion, and food for future research.

The study followed a systematic review process to identify relevant academic sources. First, the search query includes words in the title or keywords using Scopus online database (TITLE-ABS-KEY ("artificial intelligence") AND TITLE-ABS-KEY ("human resource management")) and found the 680 articles which are covered by following disciplines Computer Science, Engineering, Mathematics, Business, Management and Accounting, Decision Sciences, Social Sciences, Economics, Econometrics and Finance, Physics and Astronomy, Medicine, Environmental Science, Earth and Planetary Sciences, Energy, Materials Science, Chemical Engineering, Health Professions, Agricultural and Biological Sciences, Arts and Humanities, Psychology, Multidisciplinary, Biochemistry, Genetics and Molecular Biology, Chemistry and Neuroscience and papers were published as a Conference Papers, Articles, Conference Reviews, Reviews, Book Chapters, Editorials and the information shown in Table 1 and Table 2.

TABLE 1 SUBJECT-WISE DISTRIBUTION OF PAPERS	
Subject	**Numbers of papers**
Computer Science	493
Engineering	240
Mathematics	113
Business, Management and Accounting	94
Decision Sciences	78
Social Sciences	56
Economics, Econometrics and Finance	43
Physics and Astronomy	39
Medicine	23

Environmental Science	19
Earth and Planetary Sciences	15
Energy	14
Materials Science	12
Chemical Engineering	8
Health Professions	8
Agricultural and Biological Sciences	6
Arts and Humanities	6
Psychology	6
Multidisciplinary	3
Biochemistry, Genetics and Molecular Biology	2
Chemistry	2
Neuroscience	2
Total	630

Source: Scopus online database

TABLE 2 ARTICLES PUBLISHED PLATFORM	
Subject	**Numbers of papers**
Conference Paper	523
Article	142
Book Chapter	6
Conference Review	3
Review	3
Book	2
Editorial	1
Total	630

Source: Scopus online database

After reading of the abstracts, again the researcher scrutinizing in deep and removed the articles, which are not relevant to the selected topic, again the research limited to the Business Management & Accounting and Social Sciences by using following keywords or titles via search query (TITLE-ABS-KEY ("artificial intelligence") AND TITLE-ABS-KEY ("human resource management")) AND (LIMIT-TO (SUBJAREA, "BUSI")) here the researcher found 93 documents and extracted the abstract and title of the papers as a .csv file after careful study the author found there are 23 are relevant. So, the study considers these as samples, these papers were published as articles, conference papers, book chapter and conference review and the detail information presented in Table 3 and Table 4.

TABLE 3 YEAR-WISE CITED ARTICLES	
Year	No of Articles
2020	12
2019	11
2018	6
2017	4
2016	2
2015	5
2014	2
2013	1
2012	0
2011	39
2010	2
2009	0
2008	3
2007	1
2006	0
2005	1
2004	0
2003	2

2002	1
2001	0
2000	0
1999	0
Total	93

Source: Scopus database

TABLE 4 ARTICLES PUBLISHED PLATFORM	
Platforms	**No of Articles**
Conference Paper	54
Article	33
Book Chapter	2
Conference Review	2
Review	2
Total	93

Source: Scopus database

As a final step, the researcher used selected papers for analysis, based on that, the present study answered the research question through the results and discussion.

RESULTS AND DISCUSSION

AI Applications in Human Resource Management

Artificial Intelligence is a sort of machine capacity to impersonate human ability for solving problems, learning, critical thinking, and perceptual skills. Artificial Intelligence has a significant impact on human resources. The present study explained Artificial intelligence impact on human resource management, especially discussed in nine functional areas.

Talent Human Resources Planning

Talent resources management exercises of endeavors can be more forward-looking and driving through Talent human resources management, and the best designation of HR and different assets can be figured it out. Artificial Intelligence has constructed a decent advanced framework for Talent human resources management planning (Boon et al., 2019). The human asset arranging needs to make the interest and gracefully estimate, make the arrangement to adjust the flexibly and request, as per the model. The calculation can improve the exactness of the arrangement, guarantee

that a wide range of occupations in the undertaking can get the perfect individuals at the correct time, including the amount, quality, progression and structure of HR, the powerful acknowledgment of their latent capacity, and explicit projects dependent on anticipated outcomes, including employee recruitment and staffing, benefits of the employees, compensation management, employee labour relation, employee compliance, organization structure, human resource information system and payroll management and training & development.

Recruiting and Staffing Employees

The impact of Artificial Intelligence has been found in the field of enlistment, where a specific period of the enrolment venture advanced by artificial Intelligence is video meets, the utilization of talk robots (Nawaz, 2019b) to convey customized encounters on the web and to streamline some portion of the enlistment cycle. Recruiting groups are overburdened with managerial assignments, for example, screening resumes and directing introductory meeting screens and communicating through chatbots (Nawaz & Gomes, 2019). Be that as it may, as associations receive AI-based devices, for example, text-based meeting and mechanized arranging arrangements, these repetitive administration assignments will be killed, making scouts time more key and concentrated on commitment, to meeting and enlist reasonable ability. Artificial Intelligence and apply autonomy have opened up energizing new capacities for HR. Present programming currently perceives human gender classification like male & female, face recognition (Nawaz, 2020), voice & biometric, recognizable proof, picture acknowledgement, tuning in to sounds and feelings, and unravelling video conference to know the qualification profile, communication & cognitive skills. AI-based algorithms choose right candidate, provide career options and present the whole picture of skills to enhance various skills such as leadership, psychological & emotional intelligence.

Employee Benefits

Employee benefits should cover the following services such as medical, retirement coverage, services of medical with flexible plans, family leave facilities, family allowances and other related services, which are empowered by the laws &employers. The best talent will get attract with a lucrative package of the employers, and this will lead the organization into a competitive edge.

Employee Compensation

In the human resource performance-based payroll, bonuses paid always will be very beneficial and highly motivated to the employees, even if the payment will be given on hour's basis, vacation payment, and sick payments.

Human resource should have a competitive wage for all the position in the organization, those who are giving the best contribution and reaching their competitive edge. The organizations have to provide compensation based on the competitive manner with proper salary structure as per the organizational structure and hierarchy.

Employee and Labor Relations

Human resource needs to adhere to the procedure facts of their employees and their unions. The employers have to understand collective bargaining techniques.

The HR professional have to act smart in the collective bargaining of the compensation negotiate details, what are the expectations of the employers and employees in terms of compensation and benefits, they have to play neutral and adhere the federal/local laws. The HR needs to discuss their points on the table while discussing the concern of the employees before the employee unions, and facts will resolve the issues of both side (employee vs employers).

At the time of hiring process, the human resource professional need to explain the code of the conduct and make sure that employee understands the clear about the procedures, policies of the organizations, The HR need to mention about the emotional behavior within the organization, discipline procedure and handover the handbook of the employee and by explaining the breaking rules consequences and their zero-tolerance policy.

Human Resources Compliance

The government laws will present the working hours of the employee, the procedure of the recruitment as per the job description, employee termination, discrimination protection based the colour, age, sex. Moreover, employers have to respond and work as per the guidelines of the federal government. For example, if the employee affected with health issues/got injured on the job, labour guidelines of the federal government should have to incorporate in the employee handbook. Moreover, employers have to consider their local governance.

Organizational Structure

The design of the organizational structure responsibility is on the management team, along with human resource management. The HR has to assist the preparing of the business plans, missions & visions of the organization, have to prepare the conceptual based organizational structure to chart the flow of responsibilities and their job description. HR management can be suggested for the employee retention, turnover, employee career ladder and structure that will enrich the motivation of the existing of the employees. Moreover, human resource has to facilitate the multiple training programs to the employees, which will help other departments and overlap skills inventory.

Human Resources Information and Payroll

Human resource information and payroll function are accountable for maintaining the track of the entire information of the working environment of the organization (Liu & Wang, 2011; Baldegger et al., 2017). The system has to allow the feedback from the employees on their individual place environment so that will provide to know the requirements of the clients and the same services will facilitate by the employees. The employee working conditions always empowered the organizational reputation, and human resource professionals have to update their systems to obtain effective productivity of the employees. Besides, the management has to provide an adequate budget for the update for the benefit of the organization.

Employee Training and Development

Before training, artificial intelligence can discover the inadequacies of HR in enterprises and need to take focused on measures as far as abilities, that is, to examine the HR preparing necessities of undertakings through artificial intelligence. In preparing, utilizing artificial intelligence is to successfully dissect the lack and bit of leeway of representatives, to assume the job of preparing, to improve the preparation impact, to build up a powerful preparing educational plan framework, the conventional preparing strategies can't meet the preparation needs progressively, the substitution of human costs, Artificial knowledge applies its insight. It has higher proficiency, after completion of training impact can be assessed by artificial intelligence (Nawaz, 2019a).

Another aspect is that collaboration in HR create professional development programs help the employee succeed in their respective job, even though, they have opportunity to monitor each program, by having the feedback from line managers, the following programs are will be useful Diversity and inclusion, business communication and training on customer service.

CONCLUSION

The industry moves beyond the expectations with the help of technology to meet the requirement of the customers. Therefore, all the industries are using advance technologies to meet the needs, to reach the need of the customers, organizations need talented human resources along the with technology (Oswald et al., 2020).

The study is discussed the nine key areas of human resource management, how these functional areas have been changed their activities after the introduction of AI. In the concern of the talent human resource planning describing about the AI into employee benefits, employee recruitment & staff, compliance, organizational structure, human resource information system and other areas of the human resource management, in the recruitment and staff process provide the effectiveness and efficient in selecting talent people, employee benefits will display all the medical facilities and other benefits, which are providing by the organization, in the function of employee compensation will provide all information about the payroll structure of the employee, employee & labour relations will helpful in to show the laws and it will enrich the ethical activities of employee, human resource compliance represent the law characterized towards the employee and employers, organizational structure how it will enlighten the process of the hierarchy, in the other area of human resource information and payroll, all the information as a input and make process and facilitated with desired reports, every organization main concern on employee training and development, to make track needs of the employee, make structural map of programs, opportunities in training and development.

LIMITATION AND FUTURE RESEARCH DIRECTION

Every study has a limitation, and the present study discussed nine functional areas of HR. The study can be extended by taking other functional areas of HR such as employee retention, turnover, and employee promotion, RFID in employee attendance/activities within the organization & outside. Moreover, to maintain protein folder, health bulletin of the employee, to overcome future pandemics.

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