ISSN 2278-3091
Volume 9, No.1.1, 2020
International Journal of Advanced Trends in Computer Science and Engineering
Available Online at http://www.warse.org/IJATCSE/static/pdf/file/ijatcse9891.12020.pdf
https://doi.org/10.30534/ijatcse/2020/9891.12020

The Association between the Effectiveness of Human Resource Management Functions and the Use of Artificial Intelligence

Omar A. Baakeel
University of Jeddah, College of Business
Alkamil, Department of Human Resources Management, Jeddah, Saudi Arabia
obaakeel@uj.edu.sa

ABSTRACT

The main purpose of this study is to investigate the association between the effectiveness of human resource management (HRM) functions and the use of artificial intelligence (AI). The HRM functions included in this research are recruitment and selection, people analytics, and talent acquisition. A quantitative research design was used in this study. A questionnaire containing 30 questions was prepared and submitted to employees and managers working in companies in three major cities (Riyadh, Jeddah, and Dammam) in Saudi Arabia. Data were collected using the random sampling method. The study used SPSS software to analyse data collected from 50 participants. The findings reveal that there was a statistically significant association between the effectiveness of HRM functions, including recruitment and selection, people analytics, and talent acquisition, and the use of AI. In addition, the correlations between the effectiveness of HRM functions and the use of AI were moderate and strong. The contribution of this study is to enhance the literature on HRM functions and AI. In addition, the study reveals that HRM functions can operate effectively using appropriate AI programs.

Key words : Artificial intelligence, Human resource management functions, Recruitment and selection, Talent acquisition, People analytics, SPSS

1. INTRODUCTION

Human resources are considered an asset of the organization. Utilizing human resources effectively and efficiently can help an organization to achieve its objectives and goals. To do so, the human resource management department (HRM) should apply the necessary tools to acquire a suitable workforce. Functions in HRM include recruitment and selection, compensation, human resource planning, training and development, performance management, and job analysis. [1], emphasize the importance and complexity involved in managing human resources. [2] differentiate between HRM regulations and HRM functions: HRM regulations are procedures, whereas HRM functions are the instruments with which to implement these procedures. Effective HRM helps executives and leaders to make appropriate decisions in relation to recruitment, training, compensation, and promotions.

According to [3], artificial intelligence (AI) is defined as the ability to make computers do things that humans do. In addition, AI is defined as form of machine learning that replicates human competencies and behavior [4]. [5] emphasizes that AI has the following features:

1- Representation—how do we represent what we know in a machine?
2- Decoding—translation from the real world into the representation selected;
3- Inference—the process of figuring out the significance and full meaning of a collection of knowledge represented explicitly or sensed directly;
4- Prediction and Recovery—ability to predict from current knowledge and recover from inevitable mistakes;
5- Generalization—the process of drawing conclusions from disparate data, the basis of creativity;
6- Curiosity—a process of probing beyond the known and understood of constructing both questions and explanations;
7- Creativity—the process of generating new information, often viewed as generating useful relationships between known items that were previously thought to be unrelated. [p.13]

[6] have demonstrated that AI is becoming an important element for organizations and that AI is emulating human tasks in many aspects, such as business procedures, productions, distribution, industrial functions, research and development, and data analysis. Using AI can make HRM functions more efficient and effective and help an organization achieve its goals and objectives. Furthermore, the growing inevitability of applying AI in HRM makes the topic an important one to consider.

While there is an abundance of research that articulates the important of AI in different fields, the literature shows a lack of studies on the effect or association between HRM functions and AI. In addition, [7] elaborates that the process of adapting AI to HRM functions is in its early stages. Therefore, the purpose of this study is to investigate the effectiveness of utilizing AI in performing the HRM functions of recruitment and selection, people analytics, and talent acquisition. Will using AI help HRM functions to operate more effectively compared to the traditional methods? The review of literature on HRM functions (recruitment and selection, people analytics, and talent acquisition) and AI are discussed in the following section. Section 3 addresses the methodology of the study. The results are presented in Section 4, followed by discussion of the results in Section 5. Limitations of the study are considered in Section 6. Finally, conclusion is drawn and recommendations stipulated in Section 7.

2. LITERATURE REVIEW

2.1 Human Resource Management Functions

The literature reveals a shortage of studies about HRM functions and AI. The few existing studies exploring HRM and AI, such as [8], [9], [10], [11], demonstrate the benefits of AI in general. However, research that investigates the association or relation between the effectiveness of HRM functions, including recruitment and selection, people analytics, and talent acquisition, and AI is still inadequate.

Human resources management combines the concept of human resources and the ability to manage these resources efficiently. Effective HRM is vital in any organization. The HRM division is responsible for individual relations, including hiring, firing, and promotions. According to [12] the concept of HRM includes different disciplines, which are business management and philosophy management. In addition, [13] asserts that achieving organizational objectives and strategies and managing employees is done through the functions of HRM. When it comes to utilizing the functions of HRM, [14] differentiates between soft and hard components of HRM functions. Moreover, [15] indicate that there are two models that organizations should consider when formulating polices and regulations that relate to human resources. These two models are “best-fit” and “best-practice.” The “best-fit” model emphasizes that human resources strategies should be designed in such a way that the organization will have the ability to adapt or adjust to any critical incidents. The “best-practice” model, in contrast, stresses that organizations can achieve their goals and objectives and improve the performance of their employees by implementing the concept of “best-practice.” According to [16], there are seven practices involved in HRM: recruitment and selection, teamwork, employee security, knowledge sharing, pay for performance, training, and equal opportunity.

Using AI in HRM can help corporations with recruitment, selection, and obtaining reports regarding skills and competencies. According to [17], AI can help managers and leaders to make appropriate decisions regarding HRM functions including recruitment, training and development, performance evaluation, and the selection process. In addition, [18] explain that AI can assist managers’ formulation of teamwork based on employees’ skills. [19] emphasizes the importance of AI in HRM when it comes to producing reports and analysing employee data, which might take longer using traditional HRM methods. [20] add that monitoring, assessment, and skills management for employees can be conducted effectivity and efficiently using AI. This study focuses on three functions of HRM: recruitment and selection, people analytics, and talent acquisition.

2.1.1 Recruitment and Selection

The cornerstone of HRM is recruiting and selecting individuals who are qualified to accomplish the organization’s objectives and goals. Unless appropriate individuals are employed, the organizational objectives could be at risk. Recruitment and selection activities include choosing individuals who manifest skills, competences, knowledge, and values that comply with the organization’s strategies. In order to select the most suitable individual for an available position, the organization should list the skills and knowledge required for the job as well as the responsibilities and tasks it involves. There are two types of recruitment: internal and external [21]. In addition, the recruitment process includes interviewing candidates, reviewing resumes, and choosing the right candidate for the available position considering the responsibilities, tasks, and skills it involves.

According to [22] AI can optimize the process of recruitment and selection by expediting the process of scanning resumes, answering candidates’ questions virtually, and assessing the selection process and the behavior and values of the candidates. [23] explain that AI can be used as tool in HRM to save time and costs and reduce obstacles presented by geographical distance. [24] list some of the AI programs that can be used in HRM, such as expert systems, fuzzy logic, and genetic algorithms. Moreover, [25] declares that productive problem solving and the avoidance of mistakes can create a competitive advantage for organizations that use AI. Based on the above clarification, the present study proposed the following hypothesis:

H1: There is a significant association between the effectiveness of recruitment and selection and the use of AI.

2.1.2 People Analytics

Currently, having information and data about employees is becoming important for all types of corporations. Data about an employee can be used to predict

and describe the employee's skills, behavior, and activities. [26] define people analytics as the analysis of the workforce using analytical techniques such as predictive and comparative analyses and data mining to generate reports and help managers and leaders make timely decisions. [27] highlights the fact that aligning employee data with organizational data such as production and sales can give an organization a competitive advantage. Furthermore, [28] states that there is no limitation regarding the types of data that can by analysed; individual data can range from data on performance and skills to data on behavioral and communication complications. According to [29], people analytics can be used in training, retention, competences, and engagement. Based on this information, the study proposed the following hypothesis:

H2: There is a significant association between the effectiveness of people analytics and the use of AI.

2.1.3 Talent Acquisition

In recent years, the concept of "war of talent" has been vigorously applied in organizations. According to [30], "talent" includes employees and leaders who can help an organization accomplish its objectives and implement its strategies. [31] confirms that an organization that has talented employees has a competitive advantage over other companies. Talent acquisition is one of the four primary strategies of talent management, which also include development, deployment, and retention [32]. In addition, the number of talented employees in an organization represents a small proportion of the overall number of employees [33]. The present study focuses on talent acquisition, which is a continuing process of finding talented individuals, leaders, and candidates internally and externally. Processes and strategies that are detailed for acquiring talented individuals from start to finish will yield practical benefits for the corporation [34]. [32] list strategies for talent acquisition, including listing the needed skills, competences, and knowledge; acquiring qualified individuals; promoting cooperation between hiring and recruiting divisions; creating an emphasis on the experience, behavior, and culture of candidates; establishing effective communication between different departments; involving stakeholders in the entire process; and implementing an effective system that is able to sort candidates, analyse and report on their qualifications, and obtain suitable individuals from a local or international pool. The organizational goal is to accomplish its objectives by focusing on talented individuals. [32] distinguish between talent acquisition, which deals with strategies for hiring talent and is a continuous process, and recruitment, which deals with procedures for finding, attracting, hiring, and interviewing candidates and is not an ongoing process.

Using AI for talent acquisition processes is becoming necessary because of the benefits it offers in this domain. Using AI programs in talent acquisition makes regular and traditional tasks easier and more effective. In addition, AI allows a company to search for talented persons using social media and to reach international candidates [35]-[36] find that organizations are adopting different types of technology to attract and hire talented individuals. Based on the above descriptions, the study suggests the following hypothesis:

H3: There is a significant association between the effectiveness of talent acquisition and the use of AI.

2.2 Artificial Intelligence

The story of AI begins after World War I—more precisely, in the 1940s, according [37]. The AI concept was articulated by scientist John McCarthy at Massachusetts Institute of Technology; McCarthy supposed that computers could behave like humans [38]. [39] defines AI as the process of imitating human thinking and actions. [40] declare that AI can be used in many diverse fields if they deal with intellectual tasks. The attention given to AI programs and software has increased because of the growth in big data and the need for organizations to be able to use and benefit from these data. The HRM department performs many functions that are energy- and time-intensive, from filling job vacancies and trying to find the right individual for each job to orchestrating an employee's last day in the organization. These challenges encourage human resources departments to look for ways to save time and money. The advantages of using AI in HRM to provide recommendations and analysis are making its adoption one of the main objectives in many organizations [41]. Furthermore, [42] concurs that HRM departments can use AI for job descriptions, recruitment, training, screening, and performance evaluation.

3 METHODOLOGY

3.1 Research Design and Data Collection

The purpose of this study is to investigate the association between the effectiveness of HRM functions, including recruitment and selection, people analytics, and talent acquisition, and the use of AI at different companies in Saudi Arabia. A quantitative research method was used that defined a set of variables through which to examine the association. Data were collected using SurveyMonkey platform by submitting the questionnaire randomly to employees and managers working at companies in three cities (Riyadh, Jeddah and Dammam) who had volunteered to answer the questionnaire. According to [43], target population is defined as "A specified group of people or objects for which questions can be asked or observations made to develop required data structures and information" [p.43]. Equally important, [44] attests that a sample size larger than 30 and less than 500 is suitable for a study of this kind. Therefore, the questionnaire was dispersed randomly to employees and managers, and a total of 50 questionnaires were returned. The questionnaire was adapted from previous studies and literature reviews. The

questionnaire contained two sections; the first section pertained to participant demographics, and the second section pertained to the variables. The questionnaire contains 30 multiple-choice questions and used a Likert Scale with the following options: strongly agree (5), agree (4), neither disagree nor agree (3), disagree (2), strongly disagree (1). The questionnaire was reviewed by numbers of professors and specialists in HRM and AI to test the content validity. Based on their comments, the required modifications were made to serve the purpose of the study and the final questions were as follows: seven questions related to participant demographics, seven questions regarding recruitment and selection, six questions on people analytics, five questions related to talent acquisition, and five questions about AI. The data were analyzed with SPSS software using descriptive and correlation analysis.

4 RESULTS

4.1 Participant Demographics

The demographics of the participants are presented in Table 1.

Table 1: Participants Demographics

	Frequency	Percentage (%)
Gender		
Male	35	70
Female	15	30
Age		
18–29	18	36
30–44	32	64
Position		
Employee	22	44
Manager	28	56
Company activity		
Commercial	22	44
Industrial	13	26
Services	15	30
Artificial intelligence knowledge		
Yes	48	96
No	2	4
Working in HR department		
Human Resource	39	78
Other	11	22

The number of male participants was 35 (70%); 15 (30%) participants were female. Out of the 50 participants, 32 (64%) were aged between 30 and 44 and 18 (36%) between 18 and 29. Table 1 shows, also, that 22 (44%) participants worked in commercial companies, 13 (26%) worked in industrial companies, and 15 (30%) were employed in services companies. Most of the participants, 48 (96%), had knowledge about AI; only 2 (4%) did not know about it. Finally, 39 (78%) of the participants worked in HRM departments, and only 11 (22%) were employed in different departments.

4.2 Reliability Test:

Table 2 presents the results of Cronbach's alpha for recruitment and selection (α =.785), people analytics (α =.754), talent acquisition (α =.836), and artificial intelligence (α =.870). The Cronbach's alphas for the variables are above.70, which is considered acceptable for the purpose of analysis, according to [45].

Table 2: Cronbach's Alpha for the Variables

Variables	Cronbach's alpha
1. Recruitment & selection	0.785
2. People analytics	0.754
3. Talent acquisition	0.836
4. Artificial intelligence	0.870

4.3 Hypotheses Testing

To test the hypotheses of the study, correlation analysis was performed using SPSS software. Correlation tests the association between two variables, and it varies between -1 and +1. Zero indicates that there is no correlation or relation between the two variables [46]. According to [47], a correlation of +1 is a perfect correlation; between 0.70 to 0.90 is strong; between 0.4 to 0.69 is moderate, and between 0.1 and 0.39 is weak. As Table 3 shows, the correlation between recruitment and selection and AI is r = 0.612, which is moderate and significant (sig < 0.01). The correlation between people analytics and AI is r = 0.738, which indicates that the relationship is strong and significant (sig < 0.01). Finally, the correlation between talent acquisition and AI is r = 0.847, which means the association is strong and significant (sig < 0.01). Thus, H1, H2, and H3 are all accepted.

Table 3: Pearson Correlation for the Variables

	1	2	3	4
1. Recruitment & selection	--			
2. People analytics	0.278	--		
3. Talent acquisition	0.671**	0.646**	--	
4. Artificial intelligence	0.612**	0.738**	0.847**	--

Note: **p <.01, two-tailed, Bootstrapped, N = 50

5. DISCUSSION

While the publicity around AI is continuously rising and studies about the relationship between HRM functions and AI are still inadequate, the findings of this study reveal that the relationship between certain HRM functions (recruitment and selection, people analytics, and talent acquisition) and the use of AI is significant and strongly associated. The finding of this study reveals a relationship between recruitment and selection and AI which is consistent with the findings of [11], who conclude that the use of AI empowers HRM functions such as recruitment and training and provides the corporation a competitive advantage. A

study by [48] supports the finding of this research that HRM functions operate effectively in recruitment and that practitioners in the HRM field should understand the benefits of using technology.

The results of this study reveal that the relationship between people analytics and using AI was significant and strong. This finding is consistent with the conclusions of [29], who states that organizations cannot survive in a big data–driven environment without implementing programs and software that can analyse people. Finally, the results disclose that there is an association between talent acquisition and using AI. This finding concurs with a study by [49] that emphasizes the importance of AI in talent acquisition and the fact that technology changes will influence talent management procedures and activities. One of the managerial implications that can be drawn from the results is the importance of using AI to operate HRM functions. Human resources managers need to implement AI in different functions of the HRM, and particularly in recruitment and selection, people analytics, and talent acquisition [50-51].

6. LIMITATIONS

There are three main limitations of this study. First, the sample for the study was drawn only from employees and managers working at companies in three cities in Saudi Arabia. Further studies could use sample from different cities in Saudi Arabia and other countries. A second limitation is the method of collecting data, which was by questionnaire only. Future studies could use interviews in conjunction with a questionnaire as a method of collecting data to obtain more insight about HRM functions and AI. A third limitation is that the current study investigates only three functions of HRM; future research that includes all six functions of HRM (recruitment and selection, human resource planning, compensation, job analysis, performance appraisal, and training and development) should be executed.

7. CONCLUSION AND RECOMMENDATIONS

The study findings show there was a moderate to strong correlation between the effectiveness of certain HRM functions (recruitment and selection, people analytics, and talent acquisition) and the use of AI according to employees and managers working in a corporation. The three hypotheses of the study were tested using SPSS software, and they were all accepted significantly. Utilizing AI in the recruitment and selection process should help organizations to choose appropriate individuals when adapting suitable AI programs. Artificial intelligence can help by scanning resumes very fast, answering candidates' questions virtually, and interviewing and recruiting from all over the world without having to visit in person. People analytics helps generate reports, conduct analysis, and find patterns in employees' behavior and activities. The findings of this study suggest the following recommendations:

1- The organization should list the skills, knowledge, and abilities required for all the jobs it has and use AI to sort and archive resumes based on the criteria for each job.
2- Recruitment, people analytics, and talent acquisition are among the most important HRM functions because of the importance of choosing the right individual. Hence, an organization should make use of AI to gain a competitive advantage.
3- Studies on the impact of AI on HRM functions including recruitment, human resource planning, compensation, training and development, retention, and organizational behavior should be conducted.
4- The differences between male and female perceptions about utilizing AI for HRM functions could be investigated.
5- Studies to investigate the readiness of human resources departments to implement AI should be carried out.
6- Studies of the relationship between HRM functions and AI in academic institutions and universities could also be conducted.

REFERENCES

[1]. M. Loosemore, A. Dainty, and H. Lingard, Human Resource Management in Construction Projects: Strategic and Operational Approaches. Published by Routledge, London, 2003. https://doi.org/10.4324/9780203417881

[2]. N. Kinnie, S. Hutchinson, J. Purcell, B. Rayton, and J. Swart, "Satisfaction with HR practices and commitment to the organisation: why one size does not fit all", *Human Resource Management Journal*, Vol. 15, No. 4, pp. 9-29, 2005.

[3]. E. Rich, "Users are individuals: individualizing user models", *International journal of man-machine studies*, Vol. 18, No.3, pp. 199-214, 1983.

[4]. Q. Jia, Y. Guo, R. Li, Y. Li, and Y. Chen, "A conceptual artificial intelligence application framework in human resource management". *In Proceedings of the International Conference on Electronic Business*, pp. 106-114, 2018.

[5]. R. C. Schank, Tell me a Story: A New Look at Real and Artificial Memory. Published by Charles Scribner, New York, NY, 1990.

[6]. J. LIoret, J. Tomas, A. Canovas and L. Parra, "An integrated IoT architecture for smart metering." *IEEE Communications Magazine*. Vol. 54, No. 12, pp.50-57, 2016.

[7]. S. L. McGovern, S. Gill, C. Myers, M. Gera, V. Pandey, T. Aldrich, C. Desai, V. Balasuramanian, The New Age: Artificial Intelligence for Human Resource Opportunities and Functions. Published by Ernst & Young LLP, UK, 2018.

[8]. C. Maduravoyal, "Artificial intelligence in human resource management", *International Journal of Pure and Applied Mathematics*, Vol. 119, No. 17, pp. 1891-1895, 2018.

[9]. P. Cappelli, P. Tambe, and V. Yakubovich, Artificial Intelligence in Human Resources Management: Challenges and a Path Forward, 2019, Article ID 3263878, available at http://ssrn.com/abstract=3263878 https://doi.org/10.2139/ssrn.3263878

[10]. T. Rana, The Future of HR in the Presence of AI: A Conceptual Study, 2018, Article ID 3335670, available at http://ssrn.com/abstract=3335670

[11]. M. P. Ruby and R. Jayam, "Artificial Intelligence in Human Resource Management*", International Journal of Pure and Applied Mathematics*, Vol.119, No. 17, pp.1891-1895, 2018.

[12]. F. B. Siber, Management ljudskih potencijala. Published by Golden marketing, Zagreb, 1999.

[13]. A. S. Supriyanto and V. Maharani, "Relationship between human resource management (HRM) practices and organizational performance moderated by organizational commitment", *Australian Journal of Basic and Applied Sciences*, Vol. 9, No. 7, pp. 185-188, 2015.

[14]. J. Storey, Human Resource Management: A Critical Text. 2nd Ed. Published by Routledge, New York, NY, 1995.

[15]. P. Boxall and J. Purcell, "Strategic human resource management: where have we come from and where should we be going?", *International Journal of Management Reviews*, Vol. 2 No. 2, pp. 183-203, 2000.

[16]. J. Pfeffer, The Human Equation: Building Profits by Putting People First. Published by Harvard Business school Press, Boston, MA, 1998.

[17]. M. S. Mehrabad, and M. F. Brojeny, "The development of an expert system for effective selection and appointment of the jobs applicants in human resource management", *Computers & Industrial Engineering*, Vol. 53, No. 2, pp. 306-12, 2007.

[18]. J. Malinowski, T. Weitzel, and T. Keim, "Decision support for team staffing: an automated relational recommendation approach", *Decision Support Systems*, Vol. 45 No. 3, pp. 429-47, 2007. https://doi.org/10.1016/j.dss.2007.05.005

[19]. S. Jain, "Big data analysis: Changing the way", *International Journal of Research in Advanced Engineering and Technology*, Vol. 2, No, 6, pp. 34-36, 2016.

[20]. M. A. Robinson, P. R. Sparrow, C. Clegg, and K. Birdi, "Forecasting future competency requirements: a three□phase methodology", *Personnel Review*, Vol. 36, No. 1, pp 65 – 90, 2007.

[21]. J. P. Marras, Human Resource Management. 15th Ed. Published by Saraiva Editor, Sao Paulo, SP, 2017.

[22]. M. Jatoba, I. Gutierriz, P. O. Fernandes, J. P. Teixeira, D. Moscon, "Artificial intelligence in the recruitment & selection: innovation and impacts for the human resources management", *Economic and Social Development*, pp. 96-104, 2019.

[23]. T. M. Almeri, K. R. Martins, and D. D. S.O. Paiva de Paula, "The use of virtual social networks in the recruitment and selection processes", *Education Magazine: Education Culture and Communication*, pp. 77-93, 2013.

[24]. T. D. O. Rosa and H. S. Luz, "Basic concepts of genetic algorithms: Theory and practice", *XI Meeting of Tocantins Informatics Students*, pp. 27-37, 2009.

[25]. Z. B. Nespoli, "Science, artificial intelligence and postmodernity", *Educational Dialogue Magazine*, Vol. 4, No. 13, pp. 31-42, 2004. https://doi.org/10.7213/rde.v4i13.7004

[26]. S. Shrivastava, K. Nagdev, A. Rajesh, "Redefining HR using people analytics: the case of google", *Human Resource Management International Digest*, Vol. 26, No. 2, pp. 3-6, 2018.

[27]. A. Tursunbayeva, S. Di Lauro, C. Pagliari, "People analytics—a scoping review of conceptual boundaries and value propositions", *International Journal of Information Management*, Vol. 43, pp. 224-247, 2018.

[28]. D. Peck, "They're watching you at work", *The Atlantic*, Vol. 312, No. 5, pp. 72–84, 2013.

[29]. S. N. Mishra, D. R. Lama, Y. Pal, "Human resource predictive analytics (HRPA) for HR management in Organizations", *International Journal of Scientific and Technology Research*, Vol. 5, No. 5, pp. 33-35, 2016.

[30]. F. Hansen, "What is talent", *Workforce Management*, Vol. 86, No. 1, pp. 12-13, 2007.

[31]. M. A. Huselid, ''The impact of human resource management practices on turnover, productivity and corporate financial performance'', *Academy of Management Journal*, Vol. 38, No. 3, pp. 635-672, 1995. https://doi.org/10.2307/256741

[32]. S. K. Dawn and S. Biswas, "Talent management: designing strategies", *Bi-annual Journal of Asian School of Business Management*, Vol. 6, No. 2, pp. 41-51, 2013.

[33]. L. Berger and D. Berger, Talent Management Handbook: Creating Organizational Excellence by Identifying, Developing and Promoting Your Best People. Published by McGraw-Hill, New York, NY, 2003.

[34]. K. Ronn, Rethinking talent acquisition, Business Week Online, 2007, available at https://www.bloomberg.com/news/articles/2007-03-05/kurt-ronn-rethinking-talent-acquisitionbusinessweek-business-news-stock-market-and-financial-advice

[35]. G. Walford-Wright and W. Schott-Jackson, "Talent rising people analytics technology driving talent acquisition strategy", *Strategic HR review*, Vol. 17, No. 5, pp. 226-233, 2018.

[36]. P. Van Esch, G. Northey, J. Heller, S. Duffy, and M. Striluk, "The moderating influence of country of origin information seeking on homophily and product satisfaction", Journal *of Promotion Management*, Vol. 24, No. 3, pp. 332–348, 2018.

[37]. D. N. Muller, "Basic definitions about AI". Professor at the Faculty of Informatics of the Lutheran University of Brazil. Brazil, 1998.

[38]. L. Harasim, "Online education and the implications of artificial intelligence", *FAEEBA-Education and Contemporaneity*, Vol. 24, No. 44, pp. 25–39, 2015.

[39]. R. Bellman, An Introduction to Artificial Intelligence: Can Computers Think? Published by Boyd and Fraser, San Francisco, CA, 1978.

[40]. S. J. Russel and P. Norvig, Artificial Intelligence: A Modern Approach. 3rd Ed. Published by Prentice Hall: Pearson Education, New Jersey, NY, 2010.

[41]. L. P. Cintra, J. Barbosa, A. C. Q. Barbosa, D. Franco, "Human resources, skills and performance: (Im) possible articulation in the Minas Gerais Foundation", *Administration Magazine FACES Journal*, Vol. 16, No. 4, pp. 27-44, 2017.

[42]. C. Unahabhokha, K. Platts, and K.H. Tan, "Predictive performance measurement system: A fuzzy expert system approach", *Benchmarking: An International Journal*, Vol. 14, No. 1, pp. 77-91, 2007.

[43]. J. F. Hair, R. P. Bush, and D. J. Ortinau, Marketing Research: Within a Changing Information Environment. 2nd Ed. Published by McGraw Hill Irwin, Boston, MA, 2003.

[44]. J. T. Roscoe, Fundamental Research Statistics for the Behavioral Sciences. 2nd Ed. Published by Rinehart and Winston, New York, NY, 1975.

[45]. U. Sekaran, (2005). Research Methods for Business: A Skill-Building Approach. 4th Ed. Published by John Wiley and Sons, New York, NY, 2005.

[46]. H. Akoglu, "User's guide to correlation coefficients", *Turkish Journal of Emergency Medicine*, Vol. 18. No. 3, pp. 91-93, 2018.
https://doi.org/10.1016/j.tjem.2018.08.001

[47]. C. P. Dancey and J. Reidy, Statistics without Maths for Psychology. 4th Ed. Published by Pearson Education Limited, Essex, England, 2007.

[48]. D. Dickson and K. Nusair, "An HR perspective: the global hunt for talent in the digital age", *Worldwide Hospitality and Tourism Themes*, Vol. 2 No. 1, pp. 86-93, 2010.

[49]. S. L. Wiblen, D. Grant, and K. Dery, "Transitioning to a new HRIS: the reshaping of human resources and information technology talent", *Journal of Electronic Commerce Research*, Vol. 11, No. 4, pp. 251-267, 2010.

[50]. Nishad Nawaz. Artificial Intelligence interchange human intervention in the recruitment process in Indian Software Industry. International Journal of Advanced Trends in Computer Science and Engineering 8(4), July-August 2019, 1433 – 1441
https://doi.org/10.30534/ijatcse/2019/62842019

[51]. Daniel Lester C. Guillermo, Floyd Robert C. Dim, Sandra Margarita L. Fernando, Leila Yasmin C. Young. A Study on How Evolution Simulator Utilizes the Windows Operating System to Demonstrate Artificial Intelligence Learning. International Journal of Advanced Trends in Computer Science and Engineering. Volume 8, No.3, May - June 2019
https://doi.org/10.30534/ijatcse/2019/67832019