Artificial Intelligence Integration for Employee Engagement: A Review to Redefine Predictors

*Sakshi Kheterpal[1] , Ashita Chadha[2]

and Afia Shabi[3]

[1] Research Scholar, Department of Commerce, Chandigarh University, Mohali, India
[2] Professor and Director, University of Liberal Arts and Humanities, Chandigarh University, Mohali, India
[3] Research Scholar, Department of Commerce, Chandigarh University, Mohali, India

sakshikheterpal19@gmail.com

Abstract. The breath-taking pace of advancements in information technology has reflected profound transformation in the way firms operate. Artificial Intelligence (AI), a novel technology, is fundamentally modifying corporate operations; as an outcome of these advances, Human Resource Management (HRM) has undergone paradigm shift in light of these advancements. However, implementing these technologies would be quite challenging with the absence of engagement levels of employee. Employee engagement is a key driver that contributes to employee's productivity as disengagement of employees has a negative effect on business's financial success. The incorporation of AI facilitates increased employee engagement in the workplace. The present study utilised the combination of narrative review method and word cloud based on selected 156 research papers to conduct the review. The outcomes of the study demonstrate word cloud that assist to identify the AI technologies and predictors of employee engagement. With the help of narrative review, the research investigates the transformed definitions of predictors of employee engagement in the age of AI. Implementing AI with HR functions has redefined the determinants of employee engagement including learning, motivation, workplace communication, employee performance, and employee retention, create an impact on engagements levels of employees by giving them a swift and fantastic experience while carrying their specific responsibilities.

Keywords: Artificial Intelligence, Employee engagement, Technology, HRM, Gamification.

1   Introduction

In today's evolving corporate landscape, the digital transformation happens at a remarkable pace, significantly modifying the way businesses operate [1]. Entering the

era of Industrial Revolution 5.O, Artificial intelligence (AI) emerges as a prominent innovation that streamline organizational processes by performing complex activities equivalent to human intelligence [2]. The favorable consequences of AI are visible in increasing efficiency as it can automate repetitive and laborious operations, enabling professionals to focus on more tactical and strategic jobs. The implementation of sophisticated Artificial Intelligence (AI) powered tools is gradually changing the departmental operations, leading to reduced costs, boosts productivity, and improves overall organizational performance.

Human Capital Management are rapidly being implemented intelligent technologies to optimize manual tasks. Previously, Human Resource experts were overburdened with basic administrative responsibilities such as calculating workers' salary at a large scale, evaluating chunks of resumes, scheduling interviews, providing information to resolve employees' grievances, allocating duties, reviewing workers' performance, etc. The optimum utilization of human capital stands out as a prominent strategic function at the workplace. However, HR specialists frequently find themselves busy in handling mundane activities that hinder their creative ability and pull their focus away from value added operations [3]. By automating repetitive tasks, the talented personnel can dedicate more time to focus on projects that better align with their abilities, interests and skills, ultimately enhancing job satisfaction. This transformation creates a more engaging and fulfilling work that allows them to leverage their expertise more effectively. AI-driven training plans improvise employees' learning journeys by providing personalized and adaptable learning experiences that allow individuals to upskill and reskill more effectively, thereby promoting employee engagement at work. Implementing AI-powered decision-making processes empowers managers with important information and insights needed to take better decisions, encouraging a higher   sense   of   responsibility   and   ownership.

The negative impact of AI raises problems about future job displacement caused by automation, leading to higher stress and anxiety among employees. As consequence, work engagement and morale reduce that impact workplace wellbeing negatively. Artificial intelligence technology frequently diminishes human interactions, contributing towards a feeling of disconnection and isolation from workplace [4]. In the absence of regulation, AI algorithms run the risk of amplifying bias and discrimination, causing a feeling of injustice and detachments among impacted employees. This research addresses the crucial challenges of lack of engagement being a negative predictor to the growth of an organization.

Recent survey conducted by Gallup company in 2022 survey reveals that significant portion of employees are highly disengaged, resulting in substantial losses to companies. The primary cause of disengagement may be confined opportunities for career growth, lack of trust in organizational policies, unfriendly work environment and unchallenging job role and so on [5]. Promoting employee participation stands out as an essential function of HR managers at work. A feeling of belongingness to businesses inspires employees to work more effort, reduce turnover intentions and persuade peers to do the same. Companies are continuously investing in engagement initiatives to elevate productivity levels. This major change serves as a cornerstone for incorporating

AI technologies in HR departments, including data analytics, gamification Chabot, and many more to promote employee engagement in the workplace[6].

Our research makes several contributions to the body of current literature. First, the study looks at how the incorporation of AI-based tools into the human resources area changed the indicators of employee engagement. Secondly, this study provides a novel perspective for future directions to academicians in the field. The remaining sections of review paper includes Research Objective, material and methods, findings and conclusion.

2 Research Objectives

The prime focus of the study is:

1. To understand the integration of Artificial Intelligence with the Human Resource operations in an organization.
2. To redefine employee engagement predictors transformed due to integration of Artificial Intelligence.

3 Research Methodology

This study followed narrative review approach to arrive at the findings and conclusion. A narrative review is an in-depth investigation of available research papers, book chapters, lecture notes, books, and conference papers to recognize the research problem in a certain domain and attain the purpose of the study[7]. Demiris [8]proposed procedure for narrative reviews, which are outlined below:

3.1 Investigation plan

To ensure quality, the study selected only Scopus database, having empirical as well as conceptual papers, book sections, conference papers, and so on.

3.2 Selecting relevant articles

The authors searched on Scopus for numerous combinations of keywords, including artificial intelligence, gamification, data analytics, Chabot, and employee engagement, and got 186 published records. After screening, 156 relevant articles were selected for exploring relevant literature.
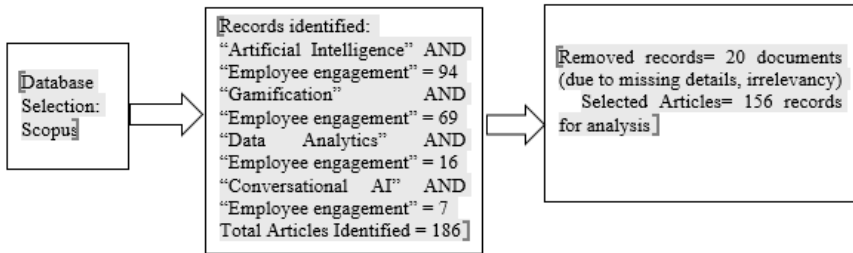
Fig. 1. Workflow of selecting relevant articles
Source: Author's own work

3.3   Analyzing available literature

Determine the research objective is primary task while examining published records from the aforementioned databases. The research utilized 156 documents for performing word cloud analysis with the help of R for analyzing literature to achieve research objectives.

3.4   Reporting outcomes

The research investigation seeks to redefine employee engagement drivers with the integration of AI techniques.

4   LITERATURE REVIEW

4.1   Application of Artificial Intelligence (AI) in Human Capital Management

AI technology excels effectively in managing employees. HR professionals' responsibility encompasses a broad spectrum of operations such as recruitment, selection, learning and development, leadership, employee well-being, fraud prevention, employee engagement, performance assessments, and other numerous functions[9]. Selecting the most appropriate candidate from pool of applications is most prominent decision for every recruiter, yet it is a time-consuming process [10]. Automation has revolutionized the hiring process and streamline it from the initial application screening to schedule the final interviews, empowering HR managers for performing efficient procedures in a brief amount of time[11]. The applications of Intelligent screening swiftly evaluate extensive volumes of candidate applications and identifies the most qualified employees as per specific search criteria [12]. Virtual interviews can be facilitated by bots equipped with deep learning algorithms, natural

language processing and interview analytics that assess non-verbal cues such as face expressions, tone of voice and eye contact to recommend the best match candidate for job position based on performance. As an illustration, Microsoft has utilized an AI software named as People Phenom that assists the HR specialists by assigning a prospect depend upon how efficiently candidates during an interview [13].

HR executives require accurate and trustworthy data to assess employee performance. In recent years, businesses have shifted from traditional performance evaluation to AI driven performance monitoring on real time basis. Contemporary data mining techniques seamlessly consolidate all required business data into a single accessible location. Real time automated performance reviews and ongoing evaluation can be conducted through AI powered tools that recommends insightful information for decision-making. These intelligent machines identify skill gaps and suggest quick feedback regarding current performance, and offer customized training program based upon employee's progress[14]. Learning and Development plays a vital role in closing employees skill gaps to gain a competitive advantage. Organizations leverage AI for providing tailored learning journey to their workforce. Machine learning algorithms empower L&D experts with valuable insights to design customized training strategies to meet the specific requirement of employees [15]. Integrating gamification elements into training programs boost the levels of engagement within the workforce. Evaluating the success of learning and development (L&D) initiatives using AI-driven technology and making suggestions for bettering learner material, courses, and learning methodologies for upcoming projects[16].

Both monetary and non-monetary benefits are included in compensation provided by companies to employees, forming the foundation of employee satisfaction. Presently, the alignment of employer-employee relationships depends on well-structured compensation plans. Businesses are employing intelligent systems to design cost-effective compensation strategies [17]. Machine learning merges both internal and external data of employees to classify staff to reduce discriminatory practices and eliminate pay disparities. Data analytics can be utilized to build up an equitable salary assessment system, facilitating forward thinking decisions on promotions, bonuses, and other matters[18].

4.2   Employee Engagement

In 1990, Kahn introduced engagement concept in his work for first time and described it as an emotional condition that motivates employees to participate actively in their job role at physical, cognitive and psychological level [19]. Schaufeli explained engagement by linking it to emotional well-being and optimistic attitude of employees measurable through vigor, dedication and absorption [20]. Overall, engagement denotes a positive bond between employees and company that manifests in the outcome achieved.

Employee Engagement, originally a vague notion according Saks has gained widespread acceptance from a macro standpoint which provides contributing to significant advancement of theoretical constructs[21]. Macey & Schneider classified engagement in three kinds i.e. Trait engagement reflects an individual optimistic

outlook on work and life; State engagement entails the feeling of Vigor and focus towards their jobs; Behavioral engagement involves extra role conduct[22].

Alam M Saks outlined the drivers of engagement, including job characteristics, distributive justice, projected organizational support, rewards and approvals, procedural fairness and perceived support from supervisor. These factors subsequently influence corporate citizenship behavior, turnover intention, job commitment, and satisfaction towards organizations[21]. Saks's recent study utilized UWES scale to measure work engagement. This extended research examined job characteristics by assessing elements such as autonomy, role clarity, skill diversity, job relevance and workplace interactions [23]. Each employee holds double role at work: one pertained to their specific job tasks and other concerned with employee involvement within company [24].

Emma Soane contributed an ISA (Intellectual, Social and Affective) framework for measuring employee engagement. As per framework, employee engagement is concerned with intellectual, social and affective [25]. Employee engagement has steadily gained popularity since its inception and its relevance still continues even now[26].

5   Result and Analysis

Word cloud is a form of graphical representation of text data based on how frequently keywords utilized in a particular field. The fundamental unit for quantification in this method is keyword utilized in published documents. The size of keyword is directly influence to importance of keywords. The study seeks to build word cloud on 156 records utilizing R software. Figure 2 depicts a word cloud to better understand numerous AI tools employed by organizations and redefining transformed predictors, including motivation, employee development, learning, communication and many others that contributes towards better employee engagement.

Fig. 2. Word Cloud Analysis
Source: R software

5.1   Employee Engagement and Gamification

Gamification is a technique of incorporating game features to non-gaming settings. These game elements include scores, leaderboards, quizzes, ranks, challenges, rewards, badges and more. HR managers customize their tactics to fit the situations [27]. Digital gamification is replicating with conventional recruitment activities to assess candidate's real cognitive capabilities and help employer to select the best fit applicant for the company. Gamification in learning and development (L&D) activities satisfies an individual's inherent competitiveness, strengthening extrinsic motivation through incentives and thereby keep them more engaged at work. Gamification can be an effective method to raise engagement levels in organizations [28].

5.2   Employee Engagement and Conversational AI

Conversational AI, often called Bots, represent a sophisticated form of artificial intelligence by utilizing voice commands, text dialogues or both designed to mimic human conversation. These bots are invaluable resources for organizations, allowing them to provide timely information to employees. Artificial conversational entities address essential questions and provide employees with precise information about organizational rules and procedures. In the future, Chabot will act as creative HR specialists within organizations [29]. For example, Hindustan Unilever, a global company, employs a Chabot called Una to support its employees by providing details about the policies of the company related to selection criteria, recruitment, performance assessment, leave policies, compensation structures and more related inquiries upon request. This helps companies to establish robust communication networks, thereby boosting employee engagement at work[30].

5.3   Employee Engagement and Data Analytics

Predictive Analytics is a subset of data analytics that employs past data, statistical tools, data mining and mathematical algorithms to anticipate future outcomes. Businesses incorporate predictive analytics powered by artificial intelligence to detect behavioral patterns using advanced data mining techniques [31]. These prediction methods would be helpful in forecasting future employee actions such as anticipate turnover intentions, inactivity, absenteeism, shifts in employees' innovative work behavior, need for skill upgradation at workplace. Employees prioritize professional growth as their top priority in this highly competitive atmosphere [32]. Enhancing employee engagement is significantly influenced by learning and development. After evaluating personnel's preferred ways of learning using available records, predictive analytics suggests specific training material, programs, and career advancement ideas. A significant investment in training initiative based on individuals' chosen mode of learning promotes employee engagement in corporations [33]. Predictive and behavioral analytics will be widely utilized method to mitigate disengagement challenges in organizations.

Table 1 provides a summary of the findings on how AI integrations reshape the understanding of determinants of employee engagement such as employee learning, workplace communication, motivation and many more.

Table 1. Integration of AI with Employee engagement predictors

Kinds of AI tools applied	Employee Engagement's Indicators	Definitions	A Comprehensive Definition of Indicators with Respect to AI
Gamification	Motivation	Employee motivation encompasses both internal and extrinsic elements that generate an individual's need, want, and desire to take action towards achieving corporate goals.	The use of various gamified components, such as scoreboards, ranking systems, incentives, leadership boards, and badges, is employed as a new method of acknowledgment to motivate staff members to perform better at workplace [28, 34–37].
	Learning	Learning can be defined as a process of transformation that	Using gamified e-learning platforms helps staff members

		modifies people's knowledge, abilities, and attitudes in a way that changes their behaviour over time.	develop critical thinking skills that improve their ability to solve problems, make decisions, feel accomplished and satisfied, manage their time effectively, and adapt their current behaviours. All of these skills make the learning process more advantageous for improved performance [27, 34, 38].
.	Employee Retention	An organization's efforts to retain high-performing personnel are referred to as employee retention.	Gamification features like earning of points or status, awards, and high ranks help businesses foster a competitive workplace that improves employee skill development and lowers employee turnover by keeping workers engaged in their work [39–41].
	Employee performance	The evaluation of an employee's work in terms of quantity, efficiency, effectiveness, and quality is known as employee performance.	Workplace performance is increasingly being measured using gamification elements like leader boards, badges, ranks, awards, and more, which encourage an individual's extrinsic motivation [28, 37, 42].
	Workplace Communication	In the workplace, communication refers to	Playing games at work increases employee

		how staff members exchange ideas and information, either orally or non-verbally.	engagement and provides real-time feedback on performance through leader boards and incentive systems. Games also have the binding capacity to reveal behavioural insights and serve as motivational aids [43, 44].
Chatbot	Employee experience	The process of creating a perception of a company in the eyes of an employee from the beginning to the end of their work lifetime is known as the employee experience.	Conversational AI applications help employees quickly obtain all the knowledge they need about hiring procedures, payroll systems, and other topics, improving their overall work experience [29, 45–48].
	Communication	Within the workplace, communication refers to the exchange of ideas and information between employees, either through spoken or nonverbal means.	Chabot are used to develop real-time internal communication methods, allowing staff members to receive updated information with only a click and automatically respond to task requests, increasing their level of involvement in the designated role [30, 48].
Data Analytics	Employee Performance	The assessment of an employee's work in relation to quantity,	Big data and data analytics exercises help businesses

	quality, efficiency, and effectiveness is known as employee performance.	identify deficiencies in performance and self-appraise projects that are impartial or error-free, which improves decision-making for things like promotions and salary management [31, 47, 49, 50].
Employee Development	Organizations can use employee development as a strategic plan to improve current knowledge and skills in order to achieve organizational goals.	By offering personalized training and learning programs for each employee's development and keeping them engaged at work, people analytics on massive amounts of employee data are utilized [32, 51].

6   Findings and Discussion

The study's finding demonstrates that the acknowledged core ideas like Gamification, Data Analytics, Chabot are prominent artificial intelligence techniques. The adoption of AI powered software by Human Resource experts has redefined the landscape of employee engagement metrics. Notably, the integration of gamification combined with diverse gaming features including badges, feedback, points, leader boards, rewards and levels etc. is a promising strategy at work. This approach fosters positive encouragement, enriches learning experiences, reduce employee's turnover and cultivates a stronger cohesion through enhanced communication, leading to enhance engagement levels at the workplace [34]. Digitally driven gamification provides numerous growth prospects for employees to develop innovative skills, demonstrate their incentives and accomplishments over time, evolve themselves as a solution-oriented individual, and fosters confidence levels among employees. Moreover, companies can make more profits by spending less cost than tangible prizes and milestones, make easy access for everyone, and offering immediate feedback. Gamification becomes a crucial determinant for active participation and performance of employees [52].

Conversational   AI with   advanced learning   algorithms and   language understanding competencies respond quickly to prompts by providing real-time information to personnel. Virtual Interaction fully collaborates with Human Resource

Information Systems to provide employees with more personalized interpersonal communications [46]. Intelligent Bots revolutionizes the overall employee experience by accelerating knowledge retrieval and fostering great work concentration.

HR managers are gradually beginning to view data analytics as a cutting-edge method for assessing employee performance. Traditionally, HR staff members evaluate employees' performance every six months or a year. Making decisions on pay, promotions, periodic increases in salary, bonuses, and other matters is the primary goal of this assessment [53]. A significant amount of data needs to be evaluated and the function of automation comes into action. The new approach to evaluating employee performance is through periodic assessments as well as feedback that makes use of data analytics to help managers make fair and accurate decisions. In order to save HR managers time that can be spent on more productive tasks, data analytics is quickly emerging as an essential part of performance management. It also improves decision-making efficiency. Conversely, data analytics are employed to pinpoint performance gaps and, if required, training requirements. Additionally, it offers specialized training and learning initiatives that support employees' professional growth [51]. An organization's ability to support employees' career advancement also boosts employee engagement.

In an effort to increase performance and engagement, organizations are implementing artificial intelligence software that has modified employee engagement predictors. Robotic Process Automation (RPA) is used to handle payroll and leave records, monitor employee working hours, evaluate employee performance, screen qualified resumes, and execute other repetitive tasks that improve HR operations. An AI application has the capacity to produce vast amounts of precise and impartial performance records data. In order to implement measures that encourage engagement and productivity at work, Data analytics analyses historical performance patterns and identifies the underlying causes of underwhelming performance. By saving time and enhancing overall organizational performance, Chabot provide employees with instant access to a wealth of information previously supplied by HR managers in response to their questions about organizational processes and procedures, handling complex issues, updates regarding their position, pending tasks, expenditure information, and more [54].

7   CONCLUSION

The impact of AI on employee engagement depends on how it gets implemented and integrated into an organization's culture and values. Companies that prioritize employee well-being and engagement when implementing AI are more likely to reap the benefits of this technology. A key factor that contributes to the success of a firm is employee engagement. Businesses make large investments to guarantee employee engagement at work. Artificial intelligence (AI) technology adoption streamlines processes by lowering costs, improving task effectiveness and efficiency, and improving overall organizational performance in human resource operations such as hiring and selection,

development and learning, performance management, compensation and incentives, etc.

The article redefined the predictors of employee engagement with Artificial Intelligence integration in Human Resource operations pertaining to retention, performance, learning, workplace communication, and motivation that affect employee levels of engagement by giving workers a quick and safe experience while carrying out tasks.

References

1. Rana, S.: AI and GPT for Management Scholars and Practitioners: Guidelines and Implications, (2023)
2. Bailey, D.E., Barley, S.R.: Beyond design and use: How scholars should study intelligent technologies. Information and Organization. 30, (2020). https://doi.org/10.1016/j.infoandorg.2019.100286
3. Qamar, Y., Agrawal, R.K., Samad, T.A., Chiappetta Jabbour, C.J.: When technology meets people: the interplay of artificial intelligence and human resource management. Journal of Enterprise Information Management. 34, (2021). https://doi.org/10.1108/JEIM-11-2020-0436
4. Chandani, A., Mehta, M., Mall, A., Khokhar, V.: Employee engagement: A review paper on factors affecting employee engagement. Indian J Sci Technol. 9, (2016). https://doi.org/10.17485/ijst/2016/v9i15/92145
5. Rastogi, A., Pati, S.P., Krishnan, T.N., Krishnan, S.: Causes, Contingencies, and Consequences of Disengagement at Work: An Integrative Literature Review, (2018)
6. Shuck, B., Adelson, J.L., Reio, T.G.: The Employee Engagement Scale: Initial Evidence for Construct Validity and Implications for Theory and Practice. Hum Resour Manage. 56, (2017). https://doi.org/10.1002/hrm.21811
7. Ferrari, R.: Writing narrative style literature reviews. Medical Writing. 24, (2015). https://doi.org/10.1179/2047480615z.000000000329
8. Demiris, G., Oliver, D.P., Washington, K.T.: Defining and Analyzing the Problem. In: Behavioral Intervention Research in Hospice and Palliative Care: Building an Evidence Base (2019)
9. Nawaz, N.: Artificial intelligence interchange human intervention in the recruitment process in Indian software industry. International Journal of Advanced Trends in Computer Science and Engineering. 8, (2019). https://doi.org/10.30534/ijatcse/2019/62842019
10. Upadhyay, A.K., Khandelwal, K.: Applying artificial intelligence: implications for recruitment. Strategic HR Review. 17, (2018). https://doi.org/10.1108/shr-07-2018-0051
11. Albassam, W.A.: The Power of Artificial Intelligence in Recruitment: An Analytical Review of Current AI-Based Recruitment Strategies. International Journal of Professional Business Review. 8, (2023). https://doi.org/10.26668/businessreview/2023.v8i6.2089

12.   PAL SUPRIYA, CHABANE AMINE MOHAMMED: Supriya Pal* Mohammed Amine Chabane* Inclusion of Artificial Intelligence in the Recruitment Process in the Indian Corporate Sector. LIBERAL STUDIES , VOL3. ISSUE 2 . (2018)

13.   Kambur, E., Akar, C.: Human resource developments with the touch of artificial intelligence: a scale development study. Int J Manpow. 43, (2022). https://doi.org/10.1108/IJM-04-2021-0216

14.   Strohmeier, S., Piazza, F.: Artificial intelligence techniques in human resource management—A conceptual exploration. Intelligent Systems Reference Library. 87, (2015). https://doi.org/10.1007/978-3-319-17906-3_7

15.   Randhawa, G.K., Jackson, M.: The role of artificial intelligence in learning and professional development for healthcare professionals. Healthc Manage Forum. 33, (2020). https://doi.org/10.1177/0840470419869032

16.   Küpper, D.M., Klein, K., Völckner, F.: Gamifying employer branding: An integrating framework and research propositions for a new HRM approach in the digitized economy. Human Resource Management Review. 31, (2021). https://doi.org/10.1016/j.hrmr.2019.04.002

17.   Das, S., Barik, R., Mukherjee, A.: Salary Prediction Using Regression Techniques. SSRN Electronic Journal. (2020). https://doi.org/10.2139/ssrn.3526707

18.   Kakulapati, V., Chaitanya, K.K., Chaitanya, K.V.G., Akshay, P.: Predictive analytics of HR - A machine learning approach. Journal of Statistics and Management Systems. 23, (2020). https://doi.org/10.1080/09720510.2020.1799497

19.   Kahn, W.A.: Psychological conditions of personal engagement and disengagement at work. Academy of Management Journal. 33, (1990). https://doi.org/10.5465/256287

20.   Schaufeli, W.B., Bakker, A.B., Salanova, M.: The measurement of work engagement with a short questionnaire: A cross-national study. Educ Psychol Meas. 66, (2006). https://doi.org/10.1177/0013164405282471

21.   Saks, A.M.: Antecedents and consequences of employee engagement. Journal of Managerial Psychology. 21, (2006). https://doi.org/10.1108/02683940610690169

22.   Macey, W.H., Schneider, B.: The Meaning of Employee Engagement. Ind Organ Psychol. 1, (2008). https://doi.org/10.1111/j.1754-9434.2007.0002.x

23.   Saks, A.M.: Antecedents and consequences of employee engagement revisited. Journal of Organizational Effectiveness. 6, (2019). https://doi.org/10.1108/JOEPP-06-2018-0034

24.   Bailey, C., Madden, A., Alfes, K., Fletcher, L.: The Meaning, Antecedents and Outcomes of Employee Engagement: A Narrative Synthesis. International Journal of Management Reviews. 19, (2017). https://doi.org/10.1111/ijmr.12077

25.   Soane, E., Truss, C., Alfes, K., Shantz, A., Rees, C., Gatenby, M.: Development and application of a new measure of employee engagement: The isa engagement scale. Human Resource Development International. 15, (2012). https://doi.org/10.1080/13678868.2012.726542

26.   Saks, A.M.: Caring human resources management and employee engagement. Human Resource Management Review. 32, (2022). https://doi.org/10.1016/j.hrmr.2021.100835

27. Balakrishnan Nair, B.: Endorsing gamification pedagogy as a helpful strategy to offset the COVID-19 induced disruptions in tourism education. J Hosp Leis Sport Tour Educ. 30, (2022). https://doi.org/10.1016/j.jhlste.2021.100362

28. Sobrino-Duque, R., Martínez-Rojo, N., Carrillo-de-Gea, J.M., López-Jiménez, J.J., Nicolás, J., Fernández-Alemán, J.L.: Evaluating a gamification proposal for learning usability heuristics: Heureka. International Journal of Human Computer Studies. 161, (2022). https://doi.org/10.1016/j.ijhcs.2022.102774

29. Et. al., S.W.,: How Artificial Intelligence Transforms the Experience of Employees. Turkish Journal of Computer and Mathematics Education (TURCOMAT). 12, (2021). https://doi.org/10.17762/turcomat.v12i10.5603

30. Tsai, W.H.S., Liu, Y., Chuan, C.H.: How chatbots' social presence communication enhances consumer engagement: the mediating role of parasocial interaction and dialogue. Journal of Research in Interactive Marketing. 15, (2021). https://doi.org/10.1108/JRIM-12-2019-0200

31. Osaysa, E.K.: IMPROVING THE QUALITY OF MARKETING ANALYTICS SYSTEMS. International Journal for Quality Research. 16, (2022). https://doi.org/10.24874/IJQR16.01-08

32. Gaikwad, D., Lamkuche, H.: Segmentation of Services Provided by E-Commerce Platforms Using PAM Clustering. In: Journal of Physics: Conference Series (2021)

33. Shet, S. V., Poddar, T., Wamba Samuel, F., Dwivedi, Y.K.: Examining the determinants of successful adoption of data analytics in human resource management – A framework for implications. J Bus Res. 131, (2021). https://doi.org/10.1016/j.jbusres.2021.03.054

34. Alshammari, M.T.: Evaluation of gamification in e-learning systems for elementary school students. TEM Journal. 9, (2020). https://doi.org/10.18421/TEM92-51

35. Zeng, Z., Tang, J., Wang, T.: Motivation mechanism of gamification in crowdsourcing projects. International Journal of Crowd Science. 1, (2017). https://doi.org/10.1108/IJCS-12-2016-0001

36. Oxarart, R.A., Houghton, J.D.: A spoonful of sugar: Gamification as means for enhancing employee self-leadership and self-concordance at work. Adm Sci. 11, (2021). https://doi.org/10.3390/admsci11020035

37. Rincon-Flores, E.G., Mena, J., López-Camacho, E.: Gamification as a Teaching Method to Improve Performance and Motivation in Tertiary Education during COVID-19: A Research Study from Mexico. Educ Sci (Basel). 12, (2022). https://doi.org/10.3390/educsci12010049

38. Lam, P., Tse, A.: Gamification in Everyday Classrooms: Observations From Schools in Hong Kong. Front Educ (Lausanne). 6, (2022). https://doi.org/10.3389/feduc.2021.630666

39. Hussain, S., Qazi, S., Ahmed, R.R., Streimikiene, D., Vveinhardt, J.: Employees management: Evidence from gamification techniques. Montenegrin Journal of Economics. 14, (2018). https://doi.org/10.14254/1800-5845/2018.14-4.7

40. Larson, K.: Serious Games and Gamification in the Corporate Training Environment: a Literature Review, (2020)

41. Behl, A., Sheorey, P., Jain, K., Chavan, M., Jajodia, I., Zhang, Z. (Justin): Gamifying the gig: transitioning the dark side to bright side of online engagement. Australasian Journal of Information Systems. 25, (2021). https://doi.org/10.3127/ajis.v25i0.2979

42. Benitez, J., Ruiz, L., Popovic, A.: Impact of mobile technology-enabled HR gamification on employee performance: An empirical investigation. Information and Management. 59, (2022). https://doi.org/10.1016/j.im.2022.103647

43. Meske, C., Brockmann, T., Wilms, K., Stieglitz, S.: Social Collaboration and Gamification. Presented at the (2017)

44. Muszynska, K.: Gamification of communication and documentation processes in project teams. In: Procedia Computer Science (2020)

45. Curtis, R.G., Bartel, B., Ferguson, T., Blake, H.T., Northcott, C., Virgara, R., Maher, C.A.: Improving User Experience of Virtual Health Assistants: Scoping Review, (2021)

46. Mostafa, R.B., Kasamani, T.: Antecedents and consequences of chatbot initial trust. Eur J Mark. 56, (2022). https://doi.org/10.1108/EJM-02-2020-0084

47. Wang, H., Gupta, S., Singhal, A., Muttreja, P., Singh, S., Sharma, P., Piterova, A.: An Artificial Intelligence Chatbot for Young People's Sexual and Reproductive Health in India (SnehAI): Instrumental Case Study. J Med Internet Res. 24, (2022). https://doi.org/10.2196/29969

48. Cheng, Y., Jiang, H.: AI-Powered mental health chatbots: Examining users' motivations, active communicative action and engagement after mass-shooting disasters. Journal of Contingencies and Crisis Management. 28, (2020). https://doi.org/10.1111/1468-5973.12319

49. Sharma, A., Sharma, T.: HR analytics and performance appraisal system: A conceptual framework for employee performance improvement. Management Research Review. 40, (2017). https://doi.org/10.1108/MRR-04-2016-0084

50. Popovič, A., Hackney, R., Tassabehji, R., Castelli, M.: The impact of big data analytics on firms' high value business performance. Information Systems Frontiers. 20, (2018). https://doi.org/10.1007/s10796-016-9720-4

51. Dachner, A.M., Ellingson, J.E., Noe, R.A., Saxton, B.M.: The future of employee development. Human Resource Management Review. 31, (2021). https://doi.org/10.1016/j.hrmr.2019.100732

52. Gupta, A., Gomathi, S.: A review on gamification and its potential to motivate and engage employees and customers: Employee engagement through gamification, (2017)

53. Wingard, D.: Data-driven Automated Decision-Making in Assessing Employee Performance and Productivity: Designing and Implementing Workforce Metrics and Analytics. Psychosociological Issues in Human Resource Management. 7, (2019)

54. Mehta, B.S., Awasthi, I.C.: Industry 4.0 and Future of Work in India. FIIB Business Review. 8, (2019). https://doi.org/10.1177/2319714519830489