



Conference Proceedings

E-HRM AND THE APPLICATION OF AI FOR GLOBALIZATION AND SUSTAINABLE DEVELOPMENT

Berislav Andrić¹

Bajeesh Balakrishnan²

Swetha Appaji Parivara³

DOI: 10.5937/EEE24008A

JEL: M54

Review Scientific Paper

ABSTRACT

The role of technology is significant in driving the work activities of human resources departments in organisations. This practically introduces the concept of E-HRM system. The E-HRM concept is adopted by organisations to ensure a smooth flow of employee related matters such as: employee database management, employee onboarding, employee grievance, employee separation that is executed and controlled through digital transformation. The researchers conducted a pilot survey to collect certain data that are in lines to the human resources activities performed with the help of E-HRM system. The collected data tested the E-HRM application and its effectiveness while measuring the operational outputs of human resources functions in the IT and biomedical sectors. Since the philosophy of E-HRM is focused on digitization of the human resources processes in organisations so there is a space to cultivate the whole human resources process by virtue of the presence of Artificial Intelligence. It can be categorically stated that E-HRM system combined with Artificial Intelligence can help creating a value addition by driving the human resources systems to act faster as well as helping the organisations to proactively achieve their strategic goals and thereby enabling a culture of sustainable development.

KEYWORDS

E-HRM, artificial intelligence, organisation, process

INTRODUCTION

There are ample challenges that come across while managing a global workforce that operates out of different countries under an umbrella of one entity. This relates to the real-time existence of multiple entities having their workforces operating globally in different regions. Information Technology and biomedical engineering are sectors that have consistently focused on bringing and developing a global workforce that operates from different regions (Cascio, Montealegre, 2016). This results in diversity and inclusion. One of the primary challenges of the industry is managing their resources efficiently and effectively. With the competition of skills in the job market and different organisations looking for skilled

¹ J. J. Strossmayer University of Osijek, Faculty of Tourism and Rural Development in Pozega, Pozega, Croatia, bandrlic@ftrr.hr, ORCID: 0000-0002-1345-0241

² Garden City University, Department of Commerce and Management, Bengaluru, Karnataka, India, bajeeshb@gmail.com, ORCID: 0000-0002-7035-2349

³ Garden City University, Department of Commerce and Management, Bengaluru, Karnataka, India, swetha.parivara@gardencity.university, ORCID: 0009-0008-1215-154X



Conference Proceedings

resources, there are chances of losing the best of the resources to another competitor. One of the ways to mitigate these challenges and difficulties is by having a systematic tool in place that is capable of handling tasks that are easy to use and at the same time it is easy to get the required output.

In such instances, it is E-HRM that helps organisation to manage such challenges with ease and covering the workforces not just locally, but across the globe. Now, to explain this better let's take an example of the covid-19 pandemic situation that literally pushed people to work and carry out activities remotely. In such instances, the challenges of controlling the workforce be-came more demanding as people spread across different geographies. It is human resources management which is vital for an organisation to run its business (Campbell et. al., 2012).

In this paper, the researchers tried to explain the core importance of E-HRM system in IT and biomedical engineering organisations and how such a digital system can help in automating the HR (Human Resources) processes and thereby helping to globalize the organisation's businesses by dealing with multiple workforces who are located globally. Not just that, but out of the many activities that are lined up in the corporate environment, one of the core activities and focus from an organisational standpoint is how much they can automate their key HR processes to achieve better results and correspondingly increase the overall productivity and efficiency among their workforces.

LITERATURE REVIEW

It is "War for Talent" when it comes to hiring the best of the best resources for an organisation. This is generating great competition (Chambers et. al., 1998). Various survey and job market analysis has thrown enough lights to the fact that majority of the organisations across all the sectors are facing a fierce competition for the right talent and are not able to fill in their open job positions throughout the year, and this is happening since many years (George et. al., 2014). There is enough pressure on HR managers to transform their role and their team member role to become strategist. This is referring to HR transformation (Ulrich et.al., 2010).

One of the core issues noticed against the HR professionals is they are not technical and there arises a dependency factor. Here, the HR and the IT managers are expected to collaborate to ensure that the automation of the HR processes that are laid out are working fine. It is equally important for the IT department to create the value addition (Weill et. al., 2013).

It is important to ensure that IT and business synchronize with each other and agree to the strategies at the same time. In a practical case, such synchronization between IT and HR is a challenge (Kappelman et.al.2013). Various reports suggest that both the HR and the IT departments have shown enough of symptoms of slow growing in the organisation. This also indicates the level of maturity in the job profile as well as a tendency to collaborate and arrive at a common solution to the problems faced, which is including and not limited to addressing those problems in a common forum.

Overall, this is an area of concern to the management or people who are running the organisation as it deals with an issue of in-tra-department communication gap (Laumer et.al., 2010). Overall, it is equally important for a HR professional to have a good know-how of the technological system such as E-HRM in their workplace as this will help them to perform better in their job role.



Conference Proceedings

E-HRM and Sustainable Development

The concept of E-HRM is primarily utilized for different purposes in organisations and some of them are notably in the lines of decision making, evaluate the cost effectiveness, incorporate environment friendly measures to gain the momentum in the business (Hosain, 2017). The value addition of E-HRM comes from the stakeholder management. These are the aspects of employee and employer relations especially from an employee, manager, and HR professionals' perspective. All these stakeholders perform a key role in executing the HR related functions in organisations (Waheed, 2020). This is aligned to the fact that the application of E-HRM in organisations is directly linked to the technical and strategic efficacy and thereby significant in improving the service level of HR (L'Écuyer, Raymond, 2020). Thus, it overall indicates the role of E-HRM that is significant in corporate sustainable development in terms of value addition, cost effectiveness and benefits (Oswal, Narayanappa, 2015).

AI (Artificial Intelligence) and Sustainable Development

Sustainable development was first initiated by the United Nations as part of a global initiative. Even though there are research performed in this area, but this is still in the emerging state (Baumgartner, 2011). The definition of sustainable development was earlier stated as 'development that is meeting the needs of the current state without negotiating the requirements of future generations' (United Nations, 1987). The appearance of artificial intelligence is proving to have a direct impact on globalization, productivity, environment sanitization and a few other areas. It can be explicitly concluded that the overall framework of artificial intelligence has created an impact on the overall business functions and the way it should operate. This has a say in the sustainable development goal as set by the organisation. Artificial intelligence has changed the overall business model of how a business should work in a corporate environment. Having said that this transformation of change management towards sustainable goal and development of the organisation has a dependency on culture, mindset, and capability of people (Bolukbasi et. al., 2016).

RESEARCH OBJECTIVES AND METHODOLOGY

The world is moving towards a continuous development and as the day passes there arise certain innovations that catch the momentum of the people. Advancement of technology is one of the areas of continuous development that is growing bigger and has this ability to catch the attention. It is not very relevant to say in which business sector that an organisation is functioning, but what is important is to know how the organisations are running their businesses and what are all the challenges faced by them (Lee et. al., 2018). A stable workforce or employees in the organisation can help create a stable business for the organisation. Hence, it is important to ensure to nurture the employees as it relates to the success of an organisation (Wirtz, Jerger, 2017). The problem comes for the human resources department when the workforce is diversified and spread across different locations. The first question that comes here is: how to manage a workforce that is aligned globally? The second question would be: How to align these diversified workforces in a centralized environment to ensure proper synchronization? The last but not the least: How to ensure an environment sustainability keeping in mind of having a diversified workforces operating out of different location and what value addition that an organisation can give to this planet to ensure its safety and sustainability. The concept of Electronic Human Resources



Conference Proceedings

Management System has probably found few solutions that can help to create the required balance in managing the requirements of the employees as well as its organisation. In this paper, the researchers tried to highlight a scenario of employee separation process by having an E-HRM system in place and correspondingly the kind of value addition that such technological system can generate for their respective employees.

Based on the review of literature, the hypothesis for the research is arrived as:

H1A: HRM practices if adopted well has a direct impact and value addition in executing the strategies of globalization and sustainability.

H1B: E-HRM practices if adopted well have a direct impact and value addition in executing the strategies of globalization and sustainability.

H1C: AI practices if adopted well have a direct impact and value addition in executing the strategies of globalization and sustainability.

The method used for the research study is in line to the core components of the research study and that is the 'topic of the research', 'review of literature', 'analysis of the data', 'logical facts between literature review and the results obtained', and last but not the least 'evaluation criteria' (Yin, 2014). The researchers followed the pattern of the research method as prescribed in the core components. Here, the topic of the research opted is to explain the features of E-HRM, AI and the link to these two elements, which is economic sustainable development. The data available in review of literature is taken into consideration as secondary sources of data. These secondary sources of data are then compared with the data obtained after the research being carried out in the form of data analysis and interpretation. The last component is buttressing the claims of literature review with the data captured and providing them for further discussion.

The contribution to the responses on the questionnaire and the respondents of the survey conducted are from the HR department of IT and biomedical organisations who are working in the E-HRM and AI platform. Such professionals also carry rich experience in the HR operations segment wherein they are handling the HR related transactions using digital automation on a day-to-day basis. The researchers gathered about 50 HR professionals from IT and biomedical organisations that are operating and having their presence globally.

RESEARCH RESULTS

While there are multiple HR processes in an organisation but here the researchers emphasized their study on the module of employee retention and employee separation process. Here, the employee retention process is enabled through E-HRM coupled with artificial intelligence to predict employee attrition in organisation. On the other side, the employee separation process is a walkthrough and assessment of the current E-HRM set up in the organisation.

The collected data from the HR professionals were aligned primarily into different scenarios and mapping them with the employee experiences and in line with the operational activities that is faced by the HR professionals on a day-to-day basis. As the morale and motivation of the employees are high, it means a positive impact on the productivity of the organisation (Bailey, 2019).

It is important to ensure that the employees leaving the organisations are given a fair and transparent exit irrespective of the fact that it is a voluntary or involuntary exit. Having a fair and transparent exit

Conference Proceedings

process makes the employees leaving the organisation happy (Jeske et. al., 2021). There is always a demand of skills which are required for an organisation to operate their businesses. These skills are coming from the employees of an organisation (Ronald, Washington, 2003). At times and in general, there are employees who wish to go back to their previous organisation due to various reasons. A proper employee separation process helps to deal with situations wherein it becomes a trend setter for the organisation to upkeep their level and standard at any locations from wherever they operate. Employees leaving the organisation are generally unhappy and if the employee exit or the separation process is not fair and transparent, then it is causing more problems for the HR department as well as for the organisation.

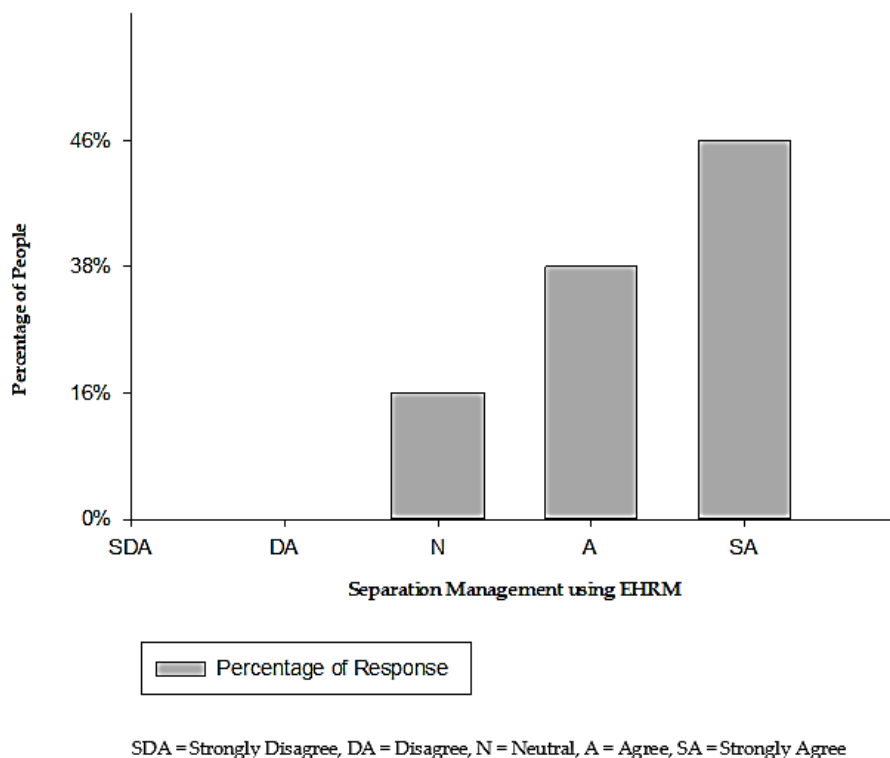


Figure 1. HRM and Separation Management

Source: Authors research

The given scenario on Figure 1 helps to arrive at a conclusion that round about 84% of the respondents (HR professionals) are either agreeing (38%) or strongly agreeing (46%) to the fact that due to the presence of E-HRM, there is an ease of managing the employee separation process. There is about 16% of respondents in the neutral state. However, being neutral does not indicate any negative side of the E-HRM system. The reason for them being neutral is because their organisation is yet to adopt a digital process for employee separation process or are in the mode of a digital evaluation process and consideration.

Table 1 indicates the variable type used for the survey followed by a brief description of the variable and its use cases. As shown in the table, the independent variables are E-HRM, Artificial Intelligence and Human Resources Management. The dependent variable is talking more about Globalization and Sustainability.



Conference Proceedings

Table 1. Variable and use cases

Variable type	Variable description	Variable use case
Independent	E-HRM	Information Technology Sector HR Process Automation HR Decision Making HR Communication
	Artificial Intelligence	Enhance Employee Experience Fast Processing of HR Transaction Streamlining HR Process Automating Repetitive Tasks
	Human Resource Management	Employee Separation Decision Making
Dependent	Globalization and Sustainability	Process Efficiency Sustainable Growth Sustainable Revenue Sustainable Market Presence Sustainable Social Responsibility

Source: Authors research

The descriptive analysis is performed as shown in Table 2. Here, the items measured are in the form of mean and standard deviation. The value of standard deviation is in the range of 1.12 to 1.65, which is found to be suitable as they are of ordinal type. The Cronbach's alpha is in the range of .928 to .963 and that shows the reliability of the questionnaire used for the survey is reliable and appropriate. The variable used are in the form of AI (Artificial Intelligence), HRM (Human Resources Management) and GS (Globalization and Sustainability).

Table 2. Descriptive analysis

	E-HRM	AI	HRM	GS
Mean	5,29	5,36	5,32	5,38
Standard Deviation	1,64	1,65	1,24	1,12
Cronbach's Alpha	0,963	0,947	0,931	0,928

Source: Authors research

The correlation analysis was conducted and has the significance of 5% as shown in Table 3. There seem to be a strong correlation between E-HRM and AI (0.67), followed by a similar value of correlation obtained between E-HRM and HRM processes (0.69). Last but not least, the test also throws light on the correlation between E-HRM and 'Globalization and Sustainability' (0.71). This significantly proves that there is a strong correlation between E-HRM, AI, and HRM that helps to effectively drive the objectives of globalization and sustainable development.

Table 3. Correlation analysis

	E-HRM	AI	HRM	GS
E-HRM	1,00			
AI	0,67	1,00		
HRM	0,69	0,64	1,00	
GS	0,71	0,69	0,68	1,00

Significance: 5%

Source: Authors research



Conference Proceedings

Regression analysis was performed as indicated in Table 4. Here, the concept of E-HRM, AI and HRM is considered as independent variables (denoted as Y) and globalization and sustainability is treated as dependent variable (denoted as X). The R^2 value of 0.68 indicates a positive correlation between the dependent (GS) and independent variables (E-HRM, AI and HRM). The p-value is found to be significant.

Table 4. Regression Analysis

X	Y	R ²	F	p-value	F Sig.
GS	E-HRM				
	AI	0,68	163,21	< 0,0001	< 0,0001
	HRM				

GS – Globalization and Sustainability; E-HRM – Electronic Human Resource Management; AI – Artificial Intelligence; HRM – Human Resource Management

Source: Authors research

Hence, it can be concluded that the alternate hypothesis is accepted. This indicates that in an environment of running an organisation that carries its business functions and by virtue of having a strong presence of a quality HR processes that is combined with E-HRM and enabled with high technological systems in the form of artificial intelligence and machine learning has a significant impact in driving the workforces globally and ensuring sustainable economic development for the organisation and its people.

While there are multiple HR processes in an organisation but here the researchers emphasized their study on the module of employee retention and employee separation process. Now, the employee retention process is enabled through E-HRM and combined with artificial intelligence to predict employee attrition in organisations. On the other side, the employee separation process is a walkthrough and assessment of the current E-HRM set up in their organisation.

There are multiple challenges in retaining the workforce and that too when it comes to the retention of the workforce in the Information Technology sector. One of the primary reasons of this challenge is globalization that makes the employee with the right skills as the soft target for better opportunities in a competitive job market (Vasquez, 2014). Now, the role of Artificial Intelligence is significant in such conditions wherein this challenge of retaining the workforce requires attention from the organisation. It means the organisation should proactively plan to mitigate employee attrition. One of the core features of the artificial intelligence system coupled with machine learning is to predict the employee attrition in advance and project the employee retention technique well in advance to the department of human resources and the management of an organisation (Al-Darraj et. al., 2021).

Here, the researchers went a few steps ahead and implanted a device that can perform this employee retention predictions by virtue of having a smart device in place that when coupled with a computer performs action that pro-actively provides enough of hints and messages to the department of human resources to pro-actively address the employee emotions and sentiments that would try and negate them to look for opportunities outside the organisation.

The concept and working of the smart device and technique is copywritten and the product patent is currently under progress. A typical block diagram of the smart device coupled with E-HRM, and AI and its functioning is as shown in Figure 2. With the new age technology and the so-called millennial workforces, it is imperative to have a robust employee retention model that an organisation should adopt in the best interest of their nature of business that they expect to grow (Ngotngamwong, 2020). The presence of E-HRM can help boost the human resources function in the organisation (Parry, 2021). Further, it helps to reduce the amount of paperwork involved with all the human resources related

Conference Proceedings

activities and transactions, which can be performed digitally and supportive of sustained Green Human Resources Management process.

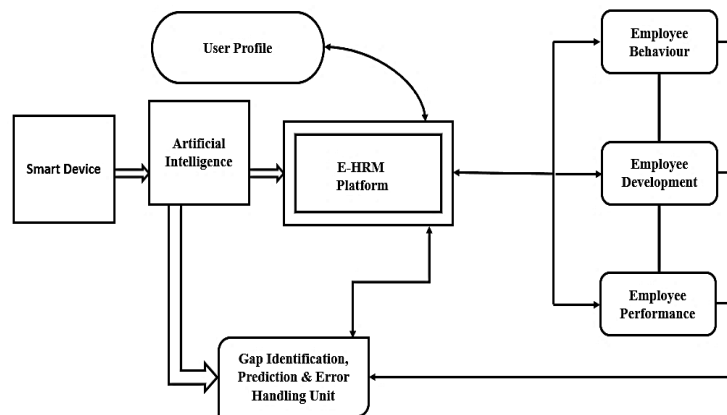


Figure 2. E-HRM platform

Source: Authors research

The process of human resources in organisations has multiple roles to cater for and this could be in the form of recruitment, performance management, training, rewards, employee engagement and employee grievances. The list does not end here. The role of artificial intelligence is very significant. This constitutes machine learning, robotics, computers and so on. All of these have their own role to perform. However, it is not that everything is possible and achieved by science and machine. Hence, there will be instances where human intervention is required and that cannot be ignored. Now that does not mean that this science and machines can be ignored. The organisation that shows its inability to adapt to the high-end technology system such as artificial intelligence will fall behind in the race of economic and sustainable development (Garg, 2018).

CONCLUSION

From the above scenarios, it is observed that by having a steady HR system in place and by having a strong HR team in existence, it is possible to bring the required ease of automating the HR processes in the organisations. Even though the current research was carried out in the IT and biomedical organisations, but the workforce conditions towards HR related matters remains similar across all the industries except for few changes that are directly related to a sector or industry wise classification. The core focus of the paper is to highlight the advantages of E-HRM by creating an environment wherein the effectiveness of E-HRM is at its best possible state and it can create a platform for helping the HR professionals to manage the people matters more efficiently and effectively. In addition, the paper also addresses the concept of globalization and its impact in the organisations by introducing the software product by means of artificial intelligence and machine learning. Out of the many goals set by the organisation to achieve and as part of their corporate activities, one of the key goals is to ensure that the environment that they operate is safe and eco-friendly (Vel'as et. al. 2022). The logic of E-HRM helps the organisation in great deal to raise their conscious level of becoming environmentally friendly that believes in investing on technology that will also cater to digital transformation. The concept of artificial intelligence can be used as a predictor tool not just for employee separation and retention processes but



Conference Proceedings

also to various other processes (Votto et. al., 2021). Technology acts as a gateway and has a significant role in shaping an organisation. It helps the workforce in organisations become more effective in their day-to-day work, which in turn helps the organisation achieve its productivity (Andrić et. al., 2023). Hence, creating an environment of continuous sustainable development by empowering technology that helps the organisation to run its businesses effectively.

REFERENCES

- Cascio, W., Montealegre, R. (2016). How Technology Is Changing Work and Organisations. *Annual Review of Organisational Psychology and Organisational Behavior*, 3, 349-375.
- Campbell, B. A., Coff, R., Kryscynski, D. (2012) Rethinking sustained competitive advantage from human capital. *The Academy of Management Review*, 37 (3), 376–395.
- Chambers, E.G., Foulon, M., Handfield-Jones, H., Hankin, S., Michaels, E. (1998). The War for Talent. *The McKinsey Quarterly*, 3, 44-57.
- George, B., Hirschheim, R., Von Stetten, A. (2014). Through the lens of social capital: A research agenda for studying IT outsourcing. *Strategic Outsourcing*, 7(2), 107-134.
- Ulrich, D., Allen, J., Brockbank, W., Younger, J., Nyman, M. (2010). HR Transformation: Building Human Resources from the outside in. *NHRD Network Journal*, 3(4), 102-120.
- Weill, P., Woerner, S. L. (2013). The Future of the CIO in a Digital Economy, *MIS Quarterly Executive*, vol. 12(2), Article 3.
- Kappelman, L., McLean, E., Luftman, J., Johnson, V. (2013). Key issues of IT organisations and their leadership: The 2013 SIM IT trends study. *MIS Quarterly Executive*, 12, 227-240.
- Laumer, S., Eckhardt, A., Weitzel, T. (2010). Electronic Human Resources Management in an E-Business Environment. *Journal of Electronic Commerce Research*, 11(4), 240 – 265.
- Hosain, S. (2017). The Impact of E-HRM on Organisational Performance: Evidence from Selective Service Sectors of Bangladesh. *International Journal of Human Resources Management*, 6(3), 1-14.
- Waheed, A., Xiaoming, M., Waheed, S., Ahmad, N., Tian-tian, S. (2020). E-HRM implementation, adoption, and its predictors: a case of small and medium enterprises of Pakistan. *International Journal of Information Technology and Management*, 19, 162-180.
- L'Écuyer, F., Raymond, L. (2020). Aligning the e-HRM and Strategic HRM Capabilities of Manufacturing SMEs: A “Gestalts” Perspective. In: *Electronic HRM in the Smart Era*. Emerald Publishing Limited, Bingley.
- Oswal, N., Narayanappa, G.L (2015). Evolution of HRM to E-HRM to Achieve Organisational Effectiveness and Sustainability. *International Journal of Business Administration and Management Research*, 1(2), 22-26.
- Baumgartner, R. (2011). Critical perspectives of sustainable development research and practice. *Journal of Cleaner Production*, 19(8), 783-786.
- United Nations, General Assembly (1987). Report of the World Commission on Environment and Development: Our Common Future, transmitted to the General Assembly as an Annex to document. Article 42, pp. 427, New York.



Conference Proceedings

- Bolukbasi, T., Chang, K.W., Zou, J., Saligrama, V., Kalai, A. (2016). Man is to Computer Programmer as Woman is to Homemaker, debiasing word embeddings. In *Advances in neural information processing systems*, 29, 4349-4357.
- Lee, J.; Davari, H.; Singh, J.; Pandhare, V.J.M. (2018). Industrial Artificial Intelligence for Industry 4.0-based manufacturing systems. *Manufacturing Letters*, 18, 20–23.
- Burgess J, Connell J. (2020). New technology and work: Exploring the challenges. *The Economic and Labour Relations Review*, 31(3), 310-323.
- Wirtz, J., Jerger, C. (2017). Managing Service Employees: Literature Review, Expert Opinions, and Research Directions. *Service Industries Journal*, 36 (15), 757 – 788.
- Yin, R. (2014). *Case Study Research Design and Methods* (5th ed.). The Canadian Journal of Program Evaluation. Sage Publishing, Thousand Oaks.
- Bailey C, Yeoman R, Madden A, Thompson M., Kerridge G. A (2019). Review of the Empirical Literature on Meaningful Work: Progress and Research Agenda. *Human Resource Development Review*, 18(1), 83-113.
- Jeske Van B., Van De Voorde, K., Veldhoven, M. (2021). The employee perspective on HR practices: A systematic literature review, integration and outlook. *The International Journal of Human Resource Management*, 32(2), 359-393.
- Ronald J., Washington, C. (2003). Employee development and organisational performance: a review of literature and directions for future research. *Human Resource Development International*, 6(3), 343-354.
- Vasquez, D. (2014). Employee retention for economic stabilization: A qualitative phenomenological study in the hospitality sector. *International Journal of Management, Economics and Social Sciences*, 3(1), 1-17.
- Al-Darraj, S., Honi, D.G., Fallucchi, F., Abdulsada, A.I., Giuliano, R., Abdulmalik, H.A. (2021). Employee Attrition Prediction Using Deep Neural Networks. *Computers*, 10, 141.
- Ngotngamwong, R. (2020). A Study of Millennial Job Satisfaction and Retention. *Human Behavior, Development and Society*, 21(3), 47-58.
- Parry, E. (2021). An examination of e-HRM as a means to increase the value of the HR function. *The International Journal of Human Resource Management*, 22(5), 1146-1162.
- Garg, V. (2018). Application of Artificial Intelligence for Sustaining Green Human Resource Management. *International Conference on Automation and Computational Engineering*, 113-116.
- Delvallee, D.R., Yewan, S.Y., Bansal, U., Deng, X. (2020). *IETI Transactions on Economics and Management*, pp. 19-33.
- Veľas, A., Halaj, M., Hofreiter, L. (2022). Research of security and safety culture within an organisation. The case study within the Slovak Republic. *Security Journal*, 35, 571–599.
- Andrić, B., Hak, M., Balakrishnan, B. (2023). The Impact of e-HRM on Organisational Citizenship Behaviour—A Study Outlined in the IT Sector. In: *14th International Odyssey Conference on Economics and Business* (pp. 18-25). Ekonomski fakultet Sveučilišta u Zagrebu.
- Votto, A. M., Valecha, R., Najafirad, P., Rao, H. R. (2021). Artificial intelligence in tactical human resource management: A systematic literature review. *International Journal of Information Management Data Insights*, 1(2), 100047.